# AUTOMATION TECHNOLOGY
## (FOUO 2/80)

22 JANUARY 1980

FOR OFFICIAL USE ONLY

JPRS L/8876

22 January 1980

# USSR Report

CYBERNETICS, COMPUTERS AND
AUTOMATION TECHNOLOGY

(FOUO 2/80)

FBIS    FOREIGN BROADCAST INFORMATION SERVICE

FOR OFFICIAL USE ONLY

NOTE

JPRS publications contain information primarily from foreign
newspapers, periodicals and books, but also from news agency
transmissions and broadcasts. Materials from foreign-language
sources are translated; those from English-language sources
are transcribed or reprinted, with the original phrasing and
other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets
[] are supplied by JPRS. Processing indicators such as [Text]
or [Excerpt] in the first line of each item, or following the
last line of a brief, indicate how the original information was
processed. Where no processing indicator is given, the infor-
mation was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are
enclosed in parentheses. Words or names preceded by a ques-
tion mark and enclosed in parentheses were not clear in the
original but have been supplied as appropriate in context.
Other unattributed parenthetical notes within the body of an
item originate with the source. Times within items are as
given by source.

The contents of this publication in no way represent the poli-
cies, views or attitudes of the U.S. Government.

For further information on report content
call (703) 351-2938 (economic); 3468
(political, sociological, military); 2726
(life sciences); 2725 (physical sciences).

FOR OFFICIAL USE ONLY

JPRS L/8876

22 January 1980

# USSR REPORT

## CYBERNETICS, COMPUTERS AND

## AUTOMATION TECHNOLOGY

### (FOUO 2/80)

This serial publication contains articles, abstracts of articles and news items from USSR scientific and technical journals on the specific subjects reflected in the table of contents.

Photoduplications of foreign-language sources may be obtained from the Photoduplication Service, Library of Congress, Washington, D. C. 20540. Requests should provide adequate identification both as to the source and the individual article(s) desired.

## CONTENTS         PAGE

- a -      [III - USSR - 21C S&T FOUO]

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                    Page

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                              Page

- c -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                    Page

- d -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                    Page

- e -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                    Page

- f -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                    Page

- g -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                        Page

- h -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                      Page

- i -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                    Page

- j -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                     Page

- k -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

- 1 -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

- m -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

- n -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CONTENTS (Continued)                                                Page

- o -

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

I. DEVELOPMENT AND PRODUCTION OF COMPUTERS AND CONTROL EQUIPMENT

A. General Treatment

USSR                                                              UDC 681.322.01

A MODULAR, ASYNCHRONOUS, DEVELOPED SYSTEM (CONCEPT): PART 2. BASIC PRIN-
CIPLES AND SPECIAL FEATURES

MODUL'NAYA ASINKHRONNAYA RAZVIVAYEMAYA SISTEMA (KONTSEPTSIYA). CH. II.
OSNOVNYYE PRINTSIPY I OSOBENNOSTI [title as above]. Russian Computer Center
of the Siberian Department of the USSR Academy of Sciences Preprint No 87,
1978 51 pp

MARCHUK, G. I. and KOTOV, V. YE.

[Text] The basic principles of a modular, asynchronous, developed system
are discussed and substantiated. The proposed concept of a modular, asyn-
chronous, developed system is the basis for a more specific formulation of
the problem of developing and substantiating the architecture of highly
productive systems in subsequent generations and systems that are economi-
cal and efficient in different spheres of use.
[3-11746]


11746
CSO:  1863


1

FOR OFFICIAL USE ONLY

B. Unified System or Ryad Series

USSR                                                        UDC  681.32.06.001

ANALYSIS OF THE OPERATIONAL EFFICIENCY OF UNIFIED SYSTEM COMPUTERS WHEN
CONTROLLED BY THE UNIFIED SYSTEM OPERATING SYSTEM

RECHENTECHNIK/DATENVERARBEITUNG in German Vol 15 No 3, 1978 pp 26-31

KRIEGENHERDT, HEINZ, and KLAUS, WERNER, Karl Marx University, Leipzig, GDR

[From REFERATIVNYY ZHURNAL. AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B106 by B. I. Ziskand]

[Text]  The quantities which characterize computer operation in a problem
division mode are analyzed.  The standard SMF program, included in the OS
YeS [unified system operating system] was employed to measure the character-
istics on a working computer.  The samples of the protocol documents given
contain the following data:  the number of tasks with a breakdown into
classes, the access time, the time for finding a problem in the memory and
the processor operational time.  The results of measurement performed on
two YeS 1040 computers for 3,000 problems are given.  Figures 11.
[4-8225]


8225
CSO:  1863


USSR                                                        UDC  681.51:519.876.3

THE A400-YeS CROSS-ASSEMBLER.  PART I:  DESCRIPTION OF THE LANGUAGE

Vladivostok KROSS-ASSEMBLER A400-YeS.  CH. I.  OPISANIYE YAZYKA [title as
above] in Russian Preprint, 1978 15 pp

SEMENOV, S. M.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 11, 1978 Abstract
No 11.81.458K by S. G. Romanova]

[Text]  The author describes the A400-YeS.I cross-assembler and the language
it uses.  The A400-YeS.I assembler makes it possible to write original pro-
grams, using letters, numbers and the usual symbols, and then to combine the
original programs and computer modules in the input format of the AZAGR pro-
gram.  The input set of data for the A400-YeS.I can be placed in a direct-
access volume, on magnetic tape and on punched cards, which makes it possible

FOR OFFICIAL USE ONLY


to organize the translation process in a mode that is convenient for the
user. The basic differences between the A400-YeS.I assembler's language
and the ASS400A assembler's base language are: arithmetic expressions can
have up to three components; the user's symbols cannot be used to designate
the word-index when addressing with indexation is used. The author discuss-
es the possible services that can be performed by the A400-YeS.I cross-as-
sembler: creation of an intermediate set of data containing a program in
absolute binary format; control of the printing of the listing and the out-
put of punched tape; verification of the check sum; production of a copy of
the punched tape; identification of punched tape, and others. References 3.
[18-11746]



11746
CSO: 1863




USSR                                                       UDC 681.322.06

SOME AUXILIARY PROGRAMS FOR THE OPERATING SYSTEM OF YeS EVM COMPUTERS

Moscow NEKOTORYYE VSPOMOGATEL'NYYE PROGRAMMY DLYA OS YeS EVM in Russian,
Institute of Theoretical and Experimental Physics, Preprint No 117, 1978,
16 pp

DOBROLYUBOV, L. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B179 (résumé)]

[Text] The BRP program is proposed for processing programmed interruptions
during execution of the loading module of the FORTRAN program. In the case
of entry of certain kinds of programmed interruptions, this program trans-
fers control to a tag in the head FORTRAN program. An examination is made
of the SOPR program for transferring control from the PL/1 module to the
head FORTRAN program, and the SAPR program for transferring control from
the FORTRAN module to the PL/1 procedure. The work is done in the framework
of the operating system of YeS EVM computers. Figures 2; references 2.
[15-6610]



6610
CSO: 1863

3

FOR OFFICIAL USE ONLY

USSR                                                          UDC  681.322.013

USER MODE MULTIPROGRAM OPERATION WITH THE YeS-1010 COMPUTER

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY.  DUBNA.  SOOBSHCHENIYA
in Russian No 11229, 1978 14 pp

GALAKTIONOV, V. V.

[From REFERATIVNYY ZHURNAL.  AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B38]

[Text]  Planning programs developed and realized for the organization of
multiprogramming with the YeS-1010 computer in a user mode are described.
The multiprogramming system was designed primarily for controlling the opera-
tion of a concentrator for terminals, where the concentrator is based on the
YeS-1010 computer, and it is interfaced to a BESM-0 computer.
[4-8225]

8225
CSO:  1863

USSR                                                          UDC  681.322.013.2

ANOTHER REPORT ON CHANGING THE PRIORITIES IN THE YeS EVM'S MULTIPROGRAM
OPERATING MODE WITHIN THE FRAMEWORK OF THE DOS/YeS

Dubna YESHCHE RAZ O SMENE PRIORITETOV V MUL'TIPROGRAMMNOM REZHIME RABOTY YeS
EVM V RAMKAKH DOS/YeS [Title as above] in Russian Joint Institute of Nuclear
Research Preprint No 11-11245, 1978 7 pp

BALASHOV, V. K., GORBUNOV, N. V., VITSEV, V. V., MAL'TSEV, E. I., PETUKHOV,
YU. P. and SUKHORUKOV, A. N.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B51]

[Text]  The authors propose a method for changing priorities in the BC, F1
and F2 sections, in the YeS EVM's [Unified System of Computers] multiprogram
operating mode and within the framework of the DOS/YeS [disk operating sys-
tem of the Unified System], that is a more general-purpose method than the

4

existing ones. Redistribution can be carried out from any active section, in an arbitrary manner. References 1.
[3-11746]


11746
CSO: 1863


USSR                                                        UDC 681.326.34

A METHOD OF COUPLING A "VIDEOTON-340" VIDEO TERMINAL WITH THE UNIFIED SYSTEM
OF COMPUTERS

UPRAVLYAYUSHCHIYE SISTEMY I MASHINY [Control Systems and Computers] in Russian No 1, 1978 pp 132-137

VINNITSKIY, V. P., SERGEYEV, A. A. and LYSENKO, A. YE.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B582]

[Text] A unit for linking a "Videoton-340" video terminal with the TA-1 of
an MPD-3 multiplexor is described. This unit realizes information exchange
with the Unified System of Computers over separate telegraph or physical
lines, in a semiduplex start-stop mode, at a rate of 200 bits/sec. Figures
2.
[3-11746]


11746
CSO: 1863


5

USSR                                                           UDC 681.326.34

YeS-1010 SOFTWARE FOR DEBUGGING RECORDING EQUIPMENT IN THE CAMAC STANDARD

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY. SOOBSHCH. [Joint In-
stitute of Nuclear Research: Reports] in Russian No 10-11124, 1977 13 pp

ABLEYEV, V. G., BASILADZE, S. G., ZAPOROZHETS, S. A., PISKUNOV, N. M.,
RYABTSOV, V. D., SITNIK, I. M., STROKOVSKIY, YE. A. and SHAROV, R. I.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B578K]

[Text] Computer-assisted programs for debugging digital and analog-to-digi-
tal units in the CAMAC standard that are used in large physical experiments
are described. The dialog and data storage, processing and monitoring algo-
rithms are written in FORTRAN-4, while control of the CAMAC equipment and
the exchange of information are performed with the help of subprograms rea-
lized on a YeS-1010 unit in the ASSEMBLER language, which makes it possible
to use the advantages of a high-level language to process and present data
and to organize communications with the CAMAC equipment, allowing for the
specific nature of the computer-CAMAC linkage. The use of this software
makes it possible to substantially improve the quality of the adjustment of
CAMAC units and to obtain their operating characteristics.
[3-11746]

11746
CSO: 1863

FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.327.2.06

DISPLAYING INFORMATION FROM USER PROGRAMS ON THE SCREENS OF UNIFIED SYSTEM
COMPUTER DISPLAYS

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY.  DUBNA.  PREPRINT in
Russian No 11-11246, 1978 16 pp

BALASHOV, V. K., VITSEV, V. V., GORBUNOV, N. V., MAL'TSEV, E. I., PETUKHOV,
YU. P. and SUKHORUKOV, A. N.

[From REFERATIVNYY ZHURNAL.  AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B33]

[Text]  A description of and the text and instructions for working with the
SCREEN program are presented, by means of which information is displayed
from user programs written in high level languages.  The display is realized
on display screens of any type working with the unified system of computers
within the framework of the DOS/YeS [disk operating system/unified system]
operating system in any variant.  A provision is made for the capability of
transferring the screen contents to printout.
[4-8225]

8225
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.327.21

PROCESSING FORTRAN PROGRAM TEXTS FROM A SEQUENTIAL SET OF DATA ON YeS EVM
COMPUTERS IN THE OS SYSTEM

Dubna OBRABOTKA TEKSTOV PROGRAMM NA FORTRANE IZ POSLEDOVATEL'NOGO NABORA
DANNYKH NA YeS EVM V SISTEME OS in Russian, Joint Institute of Nuclear Re-
search, Report No 11-11134, 1977 9 pp

GALAKTIONOV, V. V. and KOREN'KOV, V. V.

[Text]  The paper describes the functions, possibilities and method of using
the UPFORIXT program designed for use on the YeS EVM computers in the OS
system to process program texts in FORTRAN that form a sequential data set.
References 3.
[443-6610]

6610
CSO:  1863

USSR                                                    UDC  681.327.31

PROCESSING PUNCHED TAPES ON THE YeS 1040 WITH THE OS/ES OPERATING SYSTEM

RECHENTECH./DATENVERARB. in German Vol 15 No 1, 1978 pp 26-29

KIRKAM, HAGEN, WÜRFEL, JÜRGEN, ANDREAS, GÜNTER and RÖMER, JÜRGEN

[Text]  A description is given of the LSMB service program package designed
for data readout from punched tape.  The service program package is a ra-
tional supplement to the overall computer software, enabling controlled
input of data from punched tape, primary processing and formation of output
files.  The purpose of the service program package is described in detail,
its characteristics are given and also the possibilities of modification
for specific cases of application.  Figure 1.
[443-6610]

6610                                8
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                    UDC 681.327.634

TIME RESPONSES OF THE YeS-5050, YeS-5052 AND YeS-5056 DISK DRIVES

VREMENNYYE KHARAKTERISTIKI DISKOVODOV YeS-5050, YeS-5052 I YeS-5056 [title
as above] in Russian Institute of Mathematics of the Belorussian SSR Academy
of Sciences No 16, 1977 10 pp

KALININ, V. S. and LAUZHEL', G. O.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B423K (résumé)]

[Text]  The results are presented of measurements of the time responses of
the YeS-5050, YeS-5052 and YeS-5056 disk drives, which measurements were
made within the framework of the SIMPBAD project.  For each type of disk
drive, the access mechanism's shift time is presented, as a function of the
number of intersecting cylinders, in the form of graphs and tables.  The
"complete" time (allowing for the operation of the computer system) is also
evaluated for input-output operations on the physical level and the sequen-
tial and direct methods of access of the Unified System's disk operating
system.  References 4.
[3-11746]

11746
CSO:  1863

9

FOR OFFICIAL USE ONLY

C. Hardware

USSR                                                                UDC   621.3.035

AN ELECTROCHEMICAL CONTROLLABLE MEMORIZING RESISTOR

SHORYGIN, A. P., KAZARYAN, E. V., SARKISYAN, N. R. and DANIYELYAN, G. L.,
Institute of Control Problems, Academy of Sciences USSR

[Text]  An electrochemical controllable memorizing resistor is proposed that
contains a hermetically sealed chamber filled with an electrolyte and
equipped with a first electrode with developed surface made of a liquid met-
al such a mercury, and a capillary that communicates with the hermetically
sealed chamber and has electrodes made of the same metal as the first elec-
trode.  These electrodes, and the electrolyte that separates them, form
control and readout circuits.

To reduce the resistance of the control circuit and increase speed in the
readout circuit, the capillary has a longitudinal groove.  The cross sec-
tional area of the longitudinal groove is made greater than that of the
capillary.  Figures 1; references 2.
[15-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY


USSR                                                UDC  658.012.011.56

A PROGRAM TIMER DESIGNED TO CAMAC STANDARDS

Moscow INSTITUT TEORETICHESKOY I EKSPERIMENTAL'NOY F"'IKI – PREPRINT in
Russian No 25, 1978 9 pp

KOLOTAYEV, YU. T. and SEMENOV, YU. A.

[Text]  A program timer is described which is designed to CAMAC standards
and differs substantially from the well-known timers in the program operat-
ing mode.  This mode permits the generation of a sequence of signals, the
delays between which are specified in the memory of the device (the capacity
of the internal memory is 64 x 12 bit words and provides for the generation
of pulses with 64 possible delays).  The memory can be constructed as a read
only memory or an immediate access main memory.  The amounts of the delays
can also be specified by means of an external memory.  There is the capabili-
ty of automatically switching from one program to another.  Figures 2; refer-
ences 2.
[4-8225]


8225
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                        UDC  681.3.008

TOPOLOGY OF A COMPUTING COMPLEX ORGANIZED ON THE BASIS OF A BESM-6 COMPUTER

Moscow TOPOLOGIYA VYCHISLITEL'NOGO KOMPLEKSA, ORGANIZUYEMOGO NA BAZE EVM
BESM-6 in Russian, Institute of Theoretical and Experimental Physics, Pre-
print No 134, 1977, 21 pp

GREBENIKOV, YE. A., DOBROLYUBOV, L. V., OVCHARENKO, G. A., TYURIN, V. F.
and CHUVILO, I. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B71 (résumé)]

[Text]  An examination is made of one of the possible configurations of a
computing complex designed around a BESM-6 computer.  It is proposed that
the DISPAK system be used as the base operating system.
[444-6610]

6610
CSO: 1863

USSR                                                        UDC  681.34

THE GVS-2 HYBRID MULTIPROCESSOR COMPUTER SYSTEM

INSTITUT ELEKTRODINAMIKI AN USSR, PREPRINT in Russian 1977 65 pp

ARISTOV, V. V., SAMOYLOV, V. D. and ZARANOVSKIY, A. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B853]

[Text] The GVS-2 multiprocessor hybrid computer system is described, which
is intended for solving problems of parametric optimization of dynamic ob-
jects, the identification of objects with distributed parameters and the
modeling of objects on various time scales, including real time.  The opera-
tion of the system interface (USS) is considered, which is designed to couple
the computer to several analog computers.  The calculation of the annual
economic impact of the GVS-2 is presented.  Figures 8; references 8.
[4-8225]

8225
CSO: 1863                                 12

USSR                                                         UDC  681.51:519.876

THE TECHNICAL BASE OF AN AUTOMATED MANAGEMENT SYSTEM AND THE PROBLEM OF
OPTIMAL SELECTION OF A HARDWARE COMPLEX

Kiev INSTITUT KIBERNETIKI AN USSR. PREPRINTY [Institute of Cybernetics of
the Ukrainian SSR Academy of Sciences (Preprints)] in Russian No 13, 1978
32 pp

VOLKOV, A. A., KLYUYEV, YE. I. and YAKIMENKO, L. I.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 11, 1978 Abstract
No 11.81.464]

[Text]  The authors review the present state of the problem of selecting
the hardware complex for an automated management system.  They present a
classification of hardware according to functional characteristics and
briefly discuss the structural features and basic system characteristics
of different types of units.  They also examine the problem of optimizing
the structure and composition of a hardware complex.  They give a general
formulation of the problem, discuss the parameters characterizing hardware
complexes, describe the minimizing criteria, and explain methods for optim-
izing the structure and selection of a hardware complex.
[18-11746]


11746
CSO:  1863


USSR                                                           UDC  681.322

THE MERA-9150 SYSTEM FOR RECORDING AND PRELIMINARY PROCESSING OF DATA.
GENERAL WORKING PRINCIPLES OF THE SYSTEM

BIUL. MERA in Polish Vol 16 No 2, 1977 pp 23-27

BIALCZYK, ZBIGNIEW

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B242 by A. D. Pitman]

[Text]  Basic characteristics are presented as well as a brief description
of the layout and operation of the Mera-9150 system.  This system is made
up of the following main devices:  input data consoles (maximum number of

13

FOR OFFICIAL USE ONLY

consoles in the system 32), control device, disk and magnetic tape storage. The data input console is an alphanumeric display with a screen size of 12 40-bit lines and a keyboard that contains 17 function selecting keys in addition to the symbol keys.

The control device contains a core store with capacity of 32K 16-bit words with cycle time of 1200 ns, a channel for direct access to storage, a priority interrupt channel and a number of registers. The magnetic disk memory used for temporary storage of data before recording on magnetic tape has the following parameters: capacity 2.4M bytes, average access time 67 ns, transmission rate 1560 kbits/s. Up to four magnetic tape memories can be connected to one control device. Figures 4.
[444-6610]

6610
CSO: 1863

USSR                                                    UDC 681.322.001.4

EVALUATION OF THE QUALITY OF THE MERA-400 DIGITAL SYSTEM

BIUL. MERA in Polish Vol 15 No 12, 1976 pp 16-20

KAPRINSKA, HALINA, "Mera-System" Computer Systems Enterprise, Poland

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 8, 1978 Abstract No 8B291 by A. M. Ginzburg]

[Text] An evaluation is made of the quality of the MERA 400 computer based on Janicki's intuitive-statistical method (Biul. MERA, No 11, 1976 pp 4-11) requiring assignment of 42 computer parameters. A program of quality calculation is given in BASIC. The quality parameters of this computer are compared with those of the Intel-8080 and Motorola-6800. Tables 2; references 5.
[444-6610]

6610
CSO: 1863

14

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                          UDC 681.322.01

KANVA: A COMPLETE ANALYTICAL CALCULATOR - ORGANIZATION AND NODAL ALGORITHMS

KALININA, N. A.

[From REFERATIVNYY ZHURNAL. AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B16 by S. G. Romanova]

[Text] The experimental realization of an analytical calculator, which is
the nucleus of a system of analytical mathematical operations is described.
A scheme is adduced for the interaction of the calculator with the other
components of the system. It is shown that the analytical calculator is a
symbolic computational mechanism for the main transforming constructs of the
language of a universal system of analytical mathematical operations. The
main forms of calculator data, the computational process and the types of
rule transformation, where the rule is located in the working range, are
described, as well as operations of model comparison. Figures 1; references
4.
[4-8225]


8225
CSO: 1863


15

FOR OFFICIAL USE ONLY

USSR                                                                    UDC 681.322.01

CALCULATING ELEMENTS AND FIELDS OF GENERAL-PURPOSE COMPUTERS

MEZHVUZNYY SBORNIK LENINGRADSKOGO ELEKTROTEKHNICHESKOGO INSTITUTA [Inter-VUZ Collection of Works From the Leningrad Electrotechnical Institute] in Russian No 112, 1978 pp 8-14

KISEL'NIKOV, V. M. and TORGASHEV, V. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 9, 1978 Abstract No 9B30]

[Text]  Questions relating to the building of processors consisting of a large number of simultaneously operating calculating elements are discussed. They describe the structures of such processors and analyze their advantages and disadvantages, as well as possible areas in which they can be used.  They also suggest and substantiate a structure and a set of elements for a general-purpose multielement processor.  References 9.
[3-11746]

11746
CSO:  1863

USSR                                                                    UDC 681.322.013

MULTIPROGRAM SYSTEM FOR PROCESSING JOB STACKS ON THE M-222 COMPUTER

VYCHISLITEL'NAYA TEKHNIKA I VOPROSY KIBERNETIKI in Russian No 14, 1977 pp 11-18

RUMYANTSEV, A. N.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 8, 1978 Abstract No 8B45 by S. G. Romanova]

[Text]  The paper describes the basic principles and structure of a multi-programming system for processing job stacks that is realized on the M-222 computer.  The system is designed as a set of sequential processes that oper-ate with undefined relations and speed.  A diagram of interaction of process-es is given.  Parallel operation of the processes interacting with one an-other is regulated by common synchronizing conditions.  The movement of user programs in the system is considered.

It is pointed out that to simplify the problem of distributing the resources of the system among the working jobs, the main one is taken as that whose solution cannot be interrupted at an arbitrary instant. Questions are considered that relate to division of the dynamic memory among working programs, operation with tape, modeling of input/output data.

A description is given of the VYBOR coordinating program that handles all work on matching the operation of all processes, i.e., that organizes the joint operation of user programs and the sub-programs of the system. Figures 1; references 2.
[444-6610]

6610
CSO: 1863

USSR                                                          UDC 681.324

A DEVICE FOR CONVERSION OF CONNECTIONS OF THE SECOND-LEVEL CHANNEL FOR AN AS-6 AND MAIN COMMUNICATION LINE

Moscow USTROYSTVO PREOBRAZOVANIYA SOPRYAZHENIY KANALA VTOROGO UROVNYA AS-6 I MAGISTRAL'NOY LINII SVYAZI in Russian, Institute of Theoretical and Experimental Physics, Preprint No 61, 1977 28 pp

AVDEYEV, N. F., ZVEREV, B. P., KARGALOV, S. A., KRYLOV, A. V., TSVETKOV, N. A. and CHUSOV, V. YE.

[Text] The paper describes a system for connecting peripheral computers to BESM-6 computers through an interface coupling processor based on AS-6 devices. Conversion of connections of the second-level channel of the AS-6 and the main communication line is handled by a connection conversion device. This device, like the peripheral PM-6 computer, the dynamic memory modules and the first-level and second-level channel devices is a functional module of the compu:er communication network.

The part of this equipment, including the connection conversion device, that is intended for organizing information exchange between the subscriber computers of the network, can be unified under the term interface coupling

17

FOR OFFICIAL USE ONLY

processor, which exchanges data files with other computers as a subscriber of the main line. The paper gives the technical characteristics, command system, general algorithms of data exchange and a block diagram of the connection conversion device.
[444-6610

6610
CSO: 1863

USSR                                                    UDC  681.325.5

ON THE OPERATIONAL SPEED CHARACTERISTIC OF SPECIAL PROCESSORS

CHERKASSKIY, N. V.

[Text]  In specialized processors, in contrast to computer processors, considerable attention is devoted to time sharing of operations. The speed characteristic which is adopted for a general purpose computer, the time for the execution of one operation, does not allow for the evaluation of the operational speed of a specal processor as a whole. It is shown that an additional parameter which is introduced to evaluate the operational speed--the carrying capacity of the arithmetic/logic channel of the special processor--eliminates ambiguity in the evaluation system for the speed of special processors without taking into account the exchange time with the main memory of the computer, reveals the quality of the engineering design solutions for the choice of the structural configuration of the processor and takes into account the extent of the time sharing of operations. References 2.
[4-8225]

8225
CSO: 1863

18

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

ASATIANI, G. G., IGNATUSHCHENKO, V. V., PANTSKHAVA, L. I. and CHACHANIDZE,
V. G., Institute of Control Problems

[Text]  The proposed device contains two operand storage registers with in-
puts connected to the corresponding information inputs of the device, a trig-
ger signal storage flip-flop with set terminal connected to the first control-
ling input of the device, a control flip-flop with set terminal connected to
the second controlling input of the device, two register control flip-flops,
delay circuits, AND and NOT gates.

To simplify the commutation of operands to the input of the device, and to
extend its field of application, the outputs of the operand storage registers
are connected to the corresponding information outputs of the device through
AND gates.  The other inputs of the circuit are connected to the "1" output
of the control flip-flop.  The outputs of the operand storage registers are
connected to the set terminals of the corresponding register control flip-
flops through the corresponding AND gates, whose other inputs are connected
through the corresponding NOT gates to the "1" output of the control flip-
flop.

The reset terminals of the register control flip-flops are connected to the
"1" output of the control flip-flop, and the "1" outputs of the register con-
trol flip-flops are connected through the first and second delay circuits
respectively to the controlling inputs of the operand storage registers and
to the first and second inputs of the AND gate.  The third input of the AND
gate is connected to the "1" output of the trigger signal storage flip-flop,
and the output of the AND gate is connected to the set terminal of the con-
trol flip-flop.  The "1" output of this flip-flop is connected through a
third delay circuit to the reset terminals of the control flip-flop and the
trigger signal storage flip-flop.  Figures 2.
[444-6610]

6610
CSO:  1863

19

FOR OFFICIAL USE ONLY

USSR                                          UDC  681.326.3(088.8)(47)

MICROPROGRAM CONTROL UNIT

MIKROPROGRAMMNOYE USTROYSTVO UPRAVLENIYA [title as above] in Russian USSR
Author's Certificate, Class G 06 F 9/16, No 561964, Application 19 Sep 75,
No 2173258, published 3 Aug 77

YEGORYCHEVA, N. V., AVTONOMOV, B. B., SHUL'GIN, A. A., RABINS, M. V.,
KOKHANOVA, R. I. and CHERNIGOVSKAYA, V. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B312P]

[Text]  This unit contains groups of "AND," "OR" and "NOT" elements and basic
and supplementary microprogram storage blocks.  Figures 1.
[3-11746]

11746
CSO:  1863

USSR                                               UDC  681.326.34

A DEVICE FOR CONNECTING A HIGH-SPEED ANALOG-DIGITAL CONVERTER TO A COMPUTER

VOPROSY TELEVIZIONNOY TEKHNIKI in Russian No 2, 1977 pp 170-173

PROTEKHIN, V. A. and MEL'NIKOV, V. G.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B653 by O. G. Meylakh]

[Text] A device is described that connects a six-digit analog-digital con-
verter with conversion rate of 250 kHz to a computer in which the maximum
speed of reception of 48-digit words is lower than this speed.  A block dia-
gram of the device is given and its working principle is presented.  It is
noted that the described device has been successfully used in experimental
research on data input to computers.  Figures 2; references 3.
[444-6610]

6610
CSO:  1863
                                20

USSR                                                              UDC  681.326.34

CONNECTING A COMPUTER TO A GRAPHIC MEMORY DISPLAY

Serpukhov SOPRYAZHENIYE EVM S ZAPOMINAYUSHCHIM GRAFICHESKIM DISPLEYEM in
Russian, Institute of High-Energy Physics, Preprint No 124, 1977 12 pp

KAMINSKIY, L. G., KLIMENKO, S. V., LEBEDEV, A. A. and MIKHAYLOV, YU. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B651 (résumé)]

[Text]  A hardware-software complex for computer-display connection is de-
scribed that has been developed with consideration of the peculiarities of
using the display in a non-autonomous mode of operation in experiments.  It
is shown that combined analysis of the characteristics of display and compu-
ter leads to the possibility of active utilization of programmed control of
electronic output to the display, which reduces the cost of the connection
while at the same time expanding its functional capabilities.  The described
complex has been used for connecting the TEXTRONIX 611 display to IBM 1800
and HP2100 computers utilized in the CIBS and Sigma multiple-field automated
spectrometers.
[444-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                                    UDC 681.326.34

BILATERAL COMMUNICATIONS BETWEEN A VT-340 DISPLAY AND A DATA PREPARATION
UNIT OF THE "PREPAMAT" TYPE

Dubna DVUSTORONNYAYA SVYAZ' DISPLEYA VT-340 S USTROYSTVOM PODGOTOVKI DANNYKH
TIPA "PREPAMAT" [title as above] in Russian Joint Institute of Nuclear Re-
search Preprint No 11-10933 5 pp

DAMATOV, YA. M. and NIKITYUK, N. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B579]

[Text]  The structural layout and operating modes are described as a unit
for preparing data on punched tape that is based on a VT-340 display unit
and a punched-tape station of the "Prepamat" type.  Figures 2; references 2.
[3-11746]

11746
CSO:  1863

USSR                                                                    UDC 681.326.34

A CONTROLLED NANOSECOND-RANGE DELAY UNIT IN THE CAMAC STANDARD

Dubna UPRAVLYAYEMYY BLOK ZADERZHKI NANOSEKUNDNOGO DIAPAZONA V STANDARTE
CAMAC [title as above] in Russian Joint Institute of Nuclear Research Pre-
print No R13-11227, 1978 8 pp

LEMANN, D., MYULLER, G. and SHCHORNAK, G.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B567 (résumé)]

[Text]  A controlled unit made in the CAMAC standard is described.  The de-
lay range is 40-500 ns, the temperature instability is less than $+0.01/°C$
in the 0-50°C range, and the other delay instabilities are $-2 \cdot 10^{-4}$.  The
possibility of measuring an established delay value with an error of less
than $\pm 100$ picosec during an experiment is provided for.
[3-11746]

11746
CSO:  1863                                    22
FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.326.34

PRODUCING A DEVELOPED INTERRUPTER SYSTEM FOR CONNECTING SEMIAUTOMATIC SCANNERS
IN THE DEPENDENT MODE

Minsk VYCHISLITEL'NAYA TEKHNIKA I MASHINOSTROYENIYE in Russian No 4, 1978
pp 73-74

KHECHINASHVILI, V. S.

[From REFERATIVNYY ZHURNAL:  AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract No 7B733]

[Text]  An interrupter system is described which has been built on an M-220M
computer for the latter's operation with semiautomatic scanners in the de-
pendent mode.  The number of interrupt sources is 10.  The causes of inter-
rupts are divided into two groups:  internal ones associated with the pro-
cessor operation and external ones associated with the operation of peri-
pheral equipment.  There also has been developed a scheme for analysis of in-
terrupt queries.  Figures 1.
[39-2415]

2415
CSO:  1863

USSR                                               UDC  681.326.34.001.24

THE RESULTS OF A RELIABILITY STUDY AND FAILURE MODELS OF HYBRID INTEGRATED
CIRCUITS OF THE GC SERIES

Warsaw ZESZYTY NAUKOWE AKADEMII GORNICZO-HUTNICZEJ in Polish No 598, 1977
pp 41-56

KAZIMIERZ, DURAK, ZIGNIEW, WASOWICZ and PIOTR, WLOKA

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B333 by A. D. Plitman]

[Text]  The procedure and results of a comprehensive analysis of the relia-
bility and failure models of thick film hybrid microcircuits of the GC series
are given.  The GC series microcircuits are intended for applications in digi-
tal equipment and computers.  Type GC 009 microcircuits were studied, which
are matrix decoders and are the most complex in the GC series; the results

FOR OFFICIAL USE ONLY

obtained can be extended to all the remaining microcircuits of this series.
Proposals are formulated on the basis of the analysis to boost the reliability of GC series microcircuits. Figures 10; references 27.
[4-8225]

8225
CSO: 1863

USSR                                                    UDC 681.326.34.001.2

INFORMATION FACILITIES OF AN AUTOMATED SYSTEM FOR MODELING DIGITAL DEVICES

INFORMATSIONNOYE OBESPECHENIYE AVTOMATIZIROVANNOYE SISTEME DLYA MODELIRO-
VANIYA TSIFROVYKH USTROYSTV [title as above] in Russian Institute of Pre-
cision Mechanics and Computer Technology of the USSR Academy of Sciences
Preprint No 17, 1978 19 pp

KHROL', V. I. and FETISOV, N. S.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B261 by S. G. Romanova]

[Text] The information facilities are described for an automated modeling
system that makes it possible to model the functioning of digital devices
of the sequential type, the components of which in the model can be studied
in detail from the functional units (such as decoders, registers, accumula-
tors and so on) to the elementary logic gates. It is also possible to syn-
thesize check and diagnostic tests for these devices, in addition to solving
several other problems relating to the technical diagnostics and designing
of computers. The functioning modeling algorithm does not require ranking
of the modeling circuitry, which makes it possible to model both synchronous
and asynchronous devices of any degree of complexity. Figures 10; references
3.
[3-11746]

11746
CSO: 1863

24

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.327.2

A DEVICE FOR CONNECTING THE CDC-1604A TO THE MAINLINE OF A CAMAC CRATE IN
THE SYSTEM OF THE HPD-2 SCANNING AUTOMATION

Dubna USTROYSTVO SVYAZI EVM CDC-1604A S MAGISTRAL'YU KASSETY CAMAC V SISTEME
SKANIRUYUSHCHEGO AVTOMATA HPD-2 in Russian, Joint Institute of Nuclear Re-
search, Report NP10-11037, 1977 11 pp

RUBTSOV, V. F., SMIRNOV, V. N. and SUSOV, YU. I.

[Text]  The paper describes a coupling device for connecting two CDC-1604 A
and TPA-10014 computers that are components of the HPD scanning automation.
On the one side, the coupling device is connected through the mainline of a
CAMAC crate to the controller of the program and self-contained channels of
the TPA-11014 computer, and on the other side through plugs on the forward
panel and a coupling line to the fifth and sixth buffer channels of the CDC-
1604 A computer.  The connecting device provides bilateral information ex-
change between the computers.  Either of the computers can initiate the ex-
change.
[443-6610

6610
CSO:  1863

25

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                          UDC 681.327.5'8

STANDARD MAGNETIC TAPE STORAGE UNITS FOR THE M-222 COMPUTER

Dubna STANDARTNYYE NAKOPITELI NA ML NA EVM M-222 in Russian, Joint Institute
of Nuclear Research Report No 11-11177, 1977 11 pp

BUDNYAM, S., VINOGRADOV, A. F., DORZHGOTOV, D., PERVUSHOV, V. I., PUZYNINA,
T. P., SAMOLYLOV, V. N., SHCHELEV, S. A. and ERDENEDELGER, T.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B519K (résumé)]

[Text] An examination is made of a plan for connecting standard magnetic
tape storage units to the M-222 computer, realization of the recording and
playback format of YeS EVM computers, software. The use of standard nine-
track magnetic tape storage with data transcription on the tape in the YeS
format enables exchange between computers of different classes. The ex-
change logic is described, and also the system of commands for access to the
YeS5012 magnetic tape storage unit, and microcommands of the dispatcher. The
hardware realization of the project completely satisfies the sector-wide stan-
dard for YeS EVM computers.
[444-6610

6610
CSO: 1863

USSR                                                          UDC 681.327.8.01

A PACKAGE OF DISFORT PROGRAMS; THE USE OF ALPHANUMERIC DISPLAYS IN FORTRAN
IN THE OPERATING SYSTEM OF THE UNIFIED SYSTEM OF COMPUTERS

Vladivostok PAKET PROGRAMM DISFORT. ISPOL'ZOVANIYE ALFAVITNOTSIFROVYKH
DISPLEYEV V OS YeS EVM NA YAZYKE FORTRAN [title as above] in Russian Pre-
print, 1978 17 pp

PERCHUK, V. L. (editor)

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B42K]

[Text] A package of DISFORT programs has been developed that insures data
input and output to and from YeS-7066 and SID-1000 alphanumeric displays
from programs in FORTRAN IV. Two goals were pursued in the development of

FOR OFFICIAL USE ONLY
26

the DISFORT package: to create a method for access to an alphanumeric dis-
play that is the simplest and most convenient for users of FORTRAN IV, and
that the package be open for the possibility of working with different types
of alphanumeric displays, providing that a graphic method of OS YeS [Unified
System operating system] access is used. Access to the package for data
input-output onto the display screen from a program is provided by standard
FORTRAN input-output facilities (the operators READ, WRITE, FORMAT) and the
operators CALL GREAD and CALL GWRITE, which are placed immediately in front
of READ or WRITE. Thus, an inquiry on data input-output on an alphanumeric
display within the framework of the DISFORT package differs insignificantly
from the usual input-output requirements of FORTRAN. The program package
also enables the display's operator to function in a dialog mode with the
computer. The package of DISFORT programs functions under the control of
the OS YeS and uses the graphic access method. The programs in the package
are written in the Assembler language. References 3.
[3-11746]


11746
CSO: 1863


USSR                                                              UDC 681.327.13

A DIRECT-ACCESS CHANNEL TO THE MEMORY OF AN M-1000 COMPUTER IN THE 'KSANI'
SYSTEM

Minsk VYCHISLITEL'NAYA TEKHNIKA I MASHINOSTROYENIYE in Russian No 4, 1978
pp 70-72

INASHVILI, A. G.

[From REFERATIVNYY ZHURNAL: AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract No 7B553]

[Text] A device is described which makes possible data recording in and read-
out from the main computer memory at a rate of 100,000 36-digit words per sec-
ond. This device can operate in the multiplexing mode or in the exclusive
mode with a processor, or in parallel with it when addressing another memory
stack. Figures 1.
[39-2415]


2415
CSO: 1863

USSR                                                    UDC 681.327.21(088.8)(47)

A DEVICE FOR DETERMINING INSTANTS OF SIGNAL QUANTIZATION

USSR AUTHOR'S CERTIFICATE No 574852 filed 17 May 76, published 5 Oct 77

ANTONYUK, YE. M., DOLINOV, S. N., ZHURAVIN, L. G., MARINENKO, M. A. and SEMENOV, YE. I., Leningrad Electrical Engineering Institute

[Text] A device is proposed for determining the instants of quantization of a signal. It incorporates a hyperbolic voltage generator and switching elements with controlling inputs connected to the pulse outputs of a comparison element, the output of the latter being connected to the input of the hyperbolic voltage generator. The output of this generator is connected to the inputs of the switching elements, and the outputs of the switching elements are connected to auxiliary inputs of a memory-subtractor. Figures 2. [444-6610]

6610
CSO: 1863

USSR                                                    UDC 681.327.26

ZU-256 x 8 MEMORY

Dubna ZAPOMINAYUSHCHEYE USTROYSTVO ZU-256 x 8 in Russian, Joint Institute of Nuclear Research, Preprint No 13-11109, 1977 8 pp

GERSTENBERGER, R., SMIRNOV, V. I. and CHELNOKOV, L. P.

[Text] The paper describes a memory with a capacity of 256 8-digit words designed around IC storage elements of a MOS structure that contain 256 static flip-flops. Two modes of storage are realized in the device: a mode with addition of a "1" to the contents of the called address, and a mode with sequential filling of the storage addresses with eight-digit input codes.

When the store is filled, the system goes to the mode of output to an ex-
ternal medium (magnetic tape, keypunch and so on), there is a memory self-
clearing cycle, and the system returns to the storage mode. The memory de-
vice is being used in a facility for finding superheavy elements in nature.
[444-6610]


6510
CSO: 1863




USSR                                                    UDC  681.327.66

A MEMORY DEVICE WITH SELF-CHECKING

USSR AUTHOR'S CERTIFICATE No 557419, filed 30 Jan 76, published 23 Jun 77

DROZDOV, YE. A. and TAFINTSEV, V. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B409P]

[Text] A self-checking memory device is proposed that contains an accumula-
tor connected to a number register and to an address commutator that is con-
nected in turn to an address register. The device also contains a compari-
son unit with inputs connected to the outputs of a module for convolution
with respect to a given modulus and to one of the outputs of the number
register, the other output being connected to the input of the module for
convolution with respect to a given modulus. The device also includes a
control module.

To simplify the device and improve reliability, it contains an AND gate with
some inputs connected to the corresponding outputs of the address register,
and the other inputs connected to the output of the control module, while
the outputs of the AND gate are connected to the count inputs of the number
register. Figures 1; references 2.
[444-6610]


6610
CSO: 1863


29

USSR                                    UDC  681.327.67'22:003.54

UPDATING THE 128 ALPHANUMERIC PRINTER BY USING A STEP-BY-STEP MOTOR

Novosibirsk MODERNIZATSIYA ATsPU 128 S ISPOL'ZOVANIYEM SHAGOVOGO DVIGATELYA
in Russian, Institute of Nuclear Physics, Siberian Department of the Academy
of Sciences USSR, Prepint No 49, 1977 28 pp

POPOV, V. M. and ROMANOV, A. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B560 (résumé)]

[Text]  The article gives the basic reasons for failure of the 128 alphanu-
meric printer, and steps to eliminate them.  The ShD-4 step-by-step motor is
substituted for the interval paper transport mechanism.  This substitution
preserves all signal and time parameters of the printer.  The paper gives
the diagram, design, and overall view of the new drive and its elements.
[444-6610]

6610
CSO:  1863


USSR                                    UDC  681.327.67'22:003.54

A METHOD OF INCREASING THE SPEED OF DIGITAL PRINTOUT ON THE BESM-6 COMPUTER

VYCHISLITEL'NAYA TEKHNIKA I VOPROSY KIBERNETIKI in Russian No 14, 1977 pp
167-174

OSTROVSKIY, V. V. and PIVCHENKO, N. N.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B558 (résumé)]

[Text]  A method is proposed for doubling the rate of digital data printout
on the ATsPU-128 printer of the BESM-6 computer.  One rotation of the type
wheels prints two lines, rather than the usual single line:  1--standard
figures; 2--characters resembling Cyrillic and Latin letters.  The increased
load on the device is considerably compensated by leaving spaces for insig-
nificant zeros, and shifting the format over the width of the paper tape.

An analogous method can be used for increasing the rate of printout of any data flow in a sufficiently sparse alphabet. Figures 3; tables 1; references 1.
[444-6610]

6610
CSO: 1863

USSR                                                    UDC 681.327.68

READING BINARY INFORMATION IN OPTICAL MEMORY UNITS

Minsk OPTICHESKIYE METODY OBRABOTKI INFORMATSII [Optical Methods for Processing Information] in Russian 1978 pp 73-84

SHMATIN, S. G., KULESHOV, V. K. and YESMAN, A. K.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 9, 1978 Abstract No 9B417 by V. T. Mitroshina]

[Text] The use of the a diode-photodiode matrix in optical memory units and its operation in the mode of linear transformation of a light flow into an electrical signal are discussed. Questions are investigated relating to the use of a phototransistor matrix in optical memories and its operation in the charge accumulation mode. Also described is a binary information reader for a permanent holographic memory unit. The electronic part of the unit is based on Series 155 integrated circuits and insures the reader's operation with both photodiode and phototransistor matrices in the charge accumulation and linear transformation of a light signal into an electrical signal mode. It is noted that at this stage it is advisable to create hybrid matrices that fully satisfy the demands made of the matrices of photoreceivers for holographic memories as far as operating speed, sensitivity and error detection are concerned. Some attention is also given to the creation of a high-speed phototransistor matrix with two emitters, the use of which in optical memories will make it possible to achieve an extremely substantial simplification of the circuits for controlling and amplifying the reader's signals. Figures 7; references 16.
[3-11746]

11746
CSO: 1863

31

USSR                                                    UDC 681.327.68'22

A MONITOR SYSTEM

MONITORNAYA SISTEMA in Russian, Physics Institute, Academy of Sciences USSR,
Preprint No 58, 1977 48 pp

SLOVOKHOTOV, L. I. and YURCHENKO, V. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B602 by O. G. Meylakh]

[Text]  The paper describes a monitor system (MONITOR program).  An examina-
tion is made of some peculiarities of the operation of the monitor and the
sequence of execution of instructions; formation of the working library;
call-up and solution of system blocks; system macrocommands; input and out-
put of information from external media; call-up and solution of user jobs;
organization of the operation of the monitor.

The authors propose a monitor adjustment module; an instruction input module;
a monitor readjustment module; a driver module; a module for job call-up and
solution; a module for message output; a macrocommand module; a catalog lock-
up subprogram; a transposer subprogram.  Variables and data files are de-
scribed, monitor messages are presented, and also the module for exchange
with external media (input/output).
[444-6610]

6610
CSO: 1863

PROGRAMS FOR CALIBRATING THE AELT-2/160 AUTOMATIC SCANNING MONITOR. 11.
THE FIT PROGRAM FOR FINDING THE COEFFICIENTS OF CALIBRATION TRANSFORMATIONS

Dubna PROGRAMMY KALIBROVKI MONITORNOGO SKANIRUYUSHCHEGO AVTOMATA AELT-2/160.
11. PROGRAMMA FIT DLYA NAKHOZHDENIYA KOEFFITSIENTOV KALIBROVOCHNYKH PREO-
BRAZOVANIY in Russian, Joint Institute of Nuclear Research, Report No 10-
11155, 1977 17 pp

KARLOV, A. A. and SENCHENKO, V. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B586K (résumé)]

[Text] The paper describes the FIT program that accounts for the results of
measurements of crosses of the calibration grid of the AELT-2/160 automatic
scanning monitor. The program determines the coefficients of calibration
transformations that relate the ronlinear coordinate system of the CRT to
the ideal (rated) coordinate system of the calibration grating. The program
is written in FORTRAN for the CDC-6500 computer.
[444-6610]

6610
CSO: 1863

OPTICAL RECORDING AND READOUT OF A STORAGE MEDIUM

RADIOELEKTRONIKA LETATEL'NYKH APPARATOV in Russian No 9, 1977 pp 110-112

GAPLEVSKAYA, L. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B454 by V. A. Nikitov]

[Text] The paper discusses the feasibility of photoelectric recording, read-
out and storage of information on cuprous oxide. When $Cu_2O$ is exposed to
light with a wavelength of 630 nm (data transcription), the coefficients of
absorption ($\alpha$) and transmission of light are changed as a consequence of

33

photochemical reactions. In phototranscription it is desirable to meet the condition $\alpha d < 1$ (d is the thickness of the $Cu_2O$ film) so that the beam intensity will be constant through the thickness of the film for uniformity of recording.

Information can be recorded by a helium-neon laser ($\lambda = 633$ nm) and read out by a GaAs laser ($\lambda = 905$ nm) or a neodymium glass laser ($\lambda = 1060$ nm). High resolution cannot be achieved with existing methods of growing $Cu_2O$ films. Figures 1; references 3.
[444-6610]

6610
CSO: 1863

USSR                                                           UDC 621.327.664.4

A COMPUTER MEMORY AND LOGIC ON MAGNETIC DOMAINS

Moscow TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN in Russian No 69, 1978 170 pp

[From REFERATIVNYY ZHURNAL: AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, Jul 79 Abstract No 7B491]

[Text] The collection of articles contains papers presented at the Second All-Union Joint Seminar on the subject of cylindrical magnetic domains: experience in development of materials, technology and devices. This seminar was held on 23-26 May 78 at the Institute of Electronic Control Machines in memory of the Institute's past deputy director, the late professor M. A. Voyarchenkov.
[39-2415]

2415
CSO: 1863

34

FOR OFFICIAL USE ONLY

A SIGNAL TRANSMISSION DEVICE

TAL', A. A., LIMONOVA, M. YE., CHERNYSHEV, V. I., SHEVCHENKO, B. S., KENGER-LINSKIY, A. I., ATLAS, P. M., BARSKIY, YE. O., PERSHENKOV, V. I. and CHANOV, V. V., Institute of Control Problems. Moscow Precision Measuring Instrument Plant

[Text] A signal transmission device is proposed that contains a pneumatic signal generator with input connected to the input of the device, and output connected to the input of a pneumoelectric converter. One end of the first and second wires of the communication line is connected to the outputs of the pneumoelectric converter, and the other ends of these wires are connected to the inputs of an electropneumatic converter with output connected to the output of the device. To improve immunity from interference, the device incorporates an inverter, an additional pneumoelectric converter, an additional pneumatic signal generator, first and second diodes and a controlled rectifier.

The input of the device is connected through the inverter and the additional pneumatic pulse generator to the input of the additional pneumoelectric converter. The first output of the converter is connected through the corresponding first diode to one end of the second wire of the communication line, and the second output of the converter is connected to the input of the controlled rectifier. The first output of the electropneumatic converter is connected through the corresponding first diode to one end of the first wire of the communication line. The second diodes are connected in parallel with each pneumoelectric converter, and the outputs of the controlled rectifier are connected in parallel with the wires of the communication line. Figures 1. [15-6610]

6610
CSO: 1863

35

FOR OFFICIAL USE ONLY

USSR                                                          UDC  681.31

COMBINED COMPLEXES OF UNIVERSAL AND PROBLEM-ORIENTED COMPUTER FACILITIES

ODNORODNYYE TSIFROVYYE VYCHISLITEL'NYYE I INTEGRIRUYUSHCHIYE STRUKTURY in
Russian No 8, 1977 pp 12-18

AVDEYEV, V. A. and MAKAREVICH, O. B.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B51 by Yu. G. Yerokhin]

[Text]  An examination is made of principles of designing computer complexes
with a variable processor and with variable structural and commutational
principles of programming.  A description is given of the structure of a
device for coupling the universal and specialized parts of the complex.  An
example is given of design of a two-channel memory device that permits ac-
cess both on the part of a general-purpose computer, and on the part of spe-
cialized computing automata.  Figures 4.
[443-6610]


6610
CSO:  1863


USSR                                                          UDC  681.34

PROCESSING ANALOG INTERRUPTIONS IN HYBRID COMPUTING SYSTEMS

PROGRAMMIROVANIYE in Russian No 4, 1978 pp 53-59

KOGAN, B. I.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B896]

[Text]  An examination is made of a description of subprograms for processing
user-accessible analog interruptions in an initial hybrid program, and also
an analysis of the hybrid computing process at the instant of interruption
and when leaving the subprogram for processing an analog interruption.
[15-6610]

6610
CSO:  1863                                    36

USSR                                                          UDC  681.34

AN ANALOG-DIGITAL COMPUTER COMPLEX FOR SIMULATING CONVERSION DEVICES

Saransk TRUDY VYCHISLITEL'NOGO TSENTRA [Proceedings of the Computing Center]
in Russian, Mordovian University, 1978, pp 116-123 (manuscript deposited in
Informelektron, No 150-d/78 Dep., 17 Aug 78)

KONDRAT'YEV, V. V., KLOKOV, A. A., RUSSKIKH, A. A., STEN'KIN, V. D. and
SHCHERBAKOV, B. F.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B894DEP]

[Text] The paper describes the block diagram and working principle of a
complex based on the Nairi-2 computer and EMU-10 analog computer. For a
small outlay, this complex appreciably expands the capabilities of research-
ers in simulating conversion devices.
[15-6610]

6610
CSO:  1863

USSR                                              UDC  681.51.09:519.873

SOME PROBLEMS IN THE DEVELOPMENT OF HARDWARE FOR AUTOMATIC INSPECTION AND
DIAGNOSIS OF EQUIPMENT

Moscow ITOGI NAUKI I TEKHNIKI, VSESOSYUZNYY INSTITUT NAUCHNOY I TEKHNICHES-
KOY INFORMATSII, AKADEMIA NAUK SSSR, SERIYA TEKHNICHESKAYA KIBERNETIKA In
Russian No 9, 1977 pp 5-99

GOLEMBO, Z. B., VENIKOV, G. V. and RADUTSKIY, O. F.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract
No 8.81.162 by S. G. Romanova]

[Text] Functions of inspecting a complex technical system and of diagnosing
its state are interpreted systematically. The systematic aspects of ensuring
an operational reliability of a complex technical system are analyzed, also
the hierarchy of its purposes and tasks relative to inspection of its tech-
nical state during service, and the strategy of operating for useful service.

37

Discussed, furthermore, are problems of analyzing and generalizing service
data about the reliability and the performance of a complex technical system
as well as problems of engineering standardization of documents for its
maintenance and repair. Figures 12; tables 6.
[17-2415]


2415
CSO: 1863



USSR                                                    UDC  681.51:621.396

MATHEMATICAL AND CYBERNETIC METHODS IN THE DESIGN OF MEASURING-COMPUTING
COMPLEXES

Leningrad TRUDY METROLOGICHESKIKH INSTITUTOV SSSR, VSESOYUZNYYE NAUCHNO-
ISSLEDOVATEL'SKIYE INSTITUTY METROLOGII in Russian No 228/288, 1977 pp 3-80

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract
No 8.81.658 by S. G. Romanova]

[Text]  Reported are the results of basic scientific research and experiment-
al-engineering developments in metrology and measuring techniques.  The de-
sign principle of optical calculators operating in real time is explained.
The coherence factor in optical and optoelectronic components of measuring-
computing complexes is evaluated.  Considered are also problems in determin-
ing the probabilities of classification errors in the recognizer system with
predictor prototypes, in estimating the methodological inaccuracy of measure-
ments with a uniform probability distribution function, and in automatic
selection of the amplitude range of analysis.  An interference classifier
for a detector of signals submerged in an interference spectrum is shown
and a functional converter is described which serves to determine the rela-
tive errors in automatic checking or other systems.
[17-2415]


2415
CSO: 1863

USSR                                                    UDC  681.322

M-6000/M-7000 COMPUTER SYSTEMS

BIUL. TECHN. MERA in Polish No 7, 1977 pp 19-31

WAJCEN, MAREK

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B347 by M. S. Liseyev]

[Text]  A general technical description is given of modular systems of com-
puter facilities type M-6000 and M-7000 with processors of type 6000, 6010
and 7000.  The computer systems have high technical-operational character-
istics and are delivered with a variety of peripheral devices, depending on
their purpose.  Provision is made for expanding the dynamic memory to
131,072 16-place words for the M-7000, using microprogrammed permanent memo-
ries of up to 8,192 words for the M-6010, arithmetic expanders and channels
for direct access to storage.  Figures 4; tables 16.
[15-6610]


6610
CSO:  1863


USSR                                                    UDC  681.322

SOME PROBLEMS OF PARALLELING COMPUTING PROCESSES

Leningrad MEZVUZOVSKIY SBORNIK.  LENINGRADSKIY ELEKTROTEKHNICHESKIY INSTITUT
[Interuniversity Collection.  Leningrad Electrical Engineering Institute] in
Russian No 112, 1977 pp 55-60

SMIRNOV, V. B.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B60 by V. T. Miroshina]

[Text]  It is shown that it is possible to use reverse notation for parallel-
ing computing processes used in zero-address computers and in buffer memories
with magazine addressing.  An algorithm is considered for translating arith-
metic expressions from ALGOL-60 to reverse Polish notation.  First the paren-
theses are enumerated.  Opening parentheses are numbered in ascending order

until a closing parenthesis occurs, which is assigned the number of the last opening parenthesis. The next opening parenthesis is given the same number as the preceding closing parenthesis. The closing parentheses are numbered in decreasing order. Thus the first opening parenthesis and the last closing parenthesis in the arithmetic expression have the same number.

Representation of the algorithm in reverse Polish notation with numbered operators enables assignment of corresponding associative tags to the operands in accordance with a special algorithm: 1) If one operand is located between two operators, it is marked by the tag of the right-hand operator; 2) If two operands are located between two operators, they are both marked by the tag of the right-hand operator; and 3) If there are three or more operands recorded between two operators, the first and second operands on the right are marked analogously to the preceding case, and the third operand from the right is marked with the tag of the nearest operator located directly after the other operator, the fourth operand is marked with the tag of the next analogous operator and so on. Figures 1; tables 1; references 4. [443-6610]

6610
CSO: 1863

USSR                                                           UDC 581.322

ACCOUNTING FOR DELAY IN A DIGITAL CONTROL COMPUTER

BOGACHEV, A. V. and DROZDOV, V. N.

[Text] An expanded difference equation for an automated control system is presented that accounts for delay in the control computer by a time $\tau_0$ that is less than or equal to the discreteness interval T.

A zero-order extrapolator is used as the shaping filter with memorization for the total discreteness interval, and the computer in the control loop

40

is represented in the form of an inertialess module that generates the control law, and a module of pure delay by time $\tau_0$. This quantity $\tau_0$ consists of the time of input/output, data conversion, and also the time that goes for calculating the control law and for organizing the operation of the computer proper.

Such a representation of the computer enables us to account for the delay in the controlling system by introducing an additional vector of state that is equal to the vector of control on the preceding cycle. The order of the resultant expanded difference equation is increased by the dimensionality of the control vector, and the coefficients of the equation are easily calculated on the computer.
[15-6610]

6610
CSO: 1863

USSR                                                                 UDC 681.322.01

A DESIGN PHILOSOPHY OF THE UNIFORM ARRAY-BASED MICROCOMPUTER

Amsterdam SECOND EUROMICRO SYMPOSIUM ON MICROPROCESSING AND MICROPROGRAMMING, VENICE, 1976 in English, 1977 pp 295-298

PRANGISHVILI, I. V. and USKACH, M. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1979 Abstract No 1B327 by S. N. Chelnokov]

[Text]  It is stated that the use of uniform array-based processors is one of the most promising ways to increase the speed of microcomputers.  The processor is a rectangular array made up of identical elements, each of which contains a specification register and a logic converter.  Every element is connected to its own four nearest neighbors and can exchange information only with them.  Figures 1; references 6.
[15-6610

6610
CSO: 1863

USSR                                                    UDC 681.322.004

A MULTIPLEXER CHANNEL FOR COMMUNICATION WITH ICL-1903A COMPUTERS

ZOTOV, V. A., KRYUTCHENKO, YE. V., KURKINA, N. S. and PETUKHOV, V. A.

[Text] A system is described for connecting up to 64 external devices to a single communication channel. A subchannel identifier is used, which considerably simplifies programming, increases the rate of exchange, reduces the amount of equipment and enables parallel operation of external devices. [15-6610]


6610
CSO: 1863




USSR                                                    UDC 681.322-192

METHODS OF STUDYING THE OPERATION OF SHIPBOARD DIGITAL COMPUTERS

VLASENKO, I. YA.

[Text] An investigation is made of two fundamentally different approaches to a solution of deterministic and stochastic problems associated with selection of controlling algorithms of an operating system, the volume of the dynamic memory and speed on the stage of systems design of shipboard computers used in navigation complexes.

FOR OFFICIAL USE ONLY

In the deterministic approach to selection of the algorithm of organizing
the computing process and parameters of the computer, one of the criteria
of quality in organization of the deterministic computing process may be the
reliability of solution of the i-th problem, which is determined by the hard-
ware reliability of the machine and the logical reliability of solution of
the i-th problem.  A comparison of the worst-case and stochastic methods
shows that the stochastic method considerably relaxes the requirements for
computer parameters (by a factor of 1.5-2 with respect to speed, and by a
factor of 2.5-3 with respect to dynamic memory) with a job loss probability
of the order of from $10^{-6}$ to $10^{-7}$.  Episodic loss of a job (of least impor-
tance) with this probability in shipboard computers is completely admissable.
References 3.
[443-6610]

6610
CSO:  1863

USSR                                                      UDC  681.324

PROTOCOL OF INTER-MACHINE EXCHANGE IN A LOCAL COMPUTER NETWORK

Moscow PROTOKOL MEZHMASHINNOGO OBMENA V LOKAL'NOY SETI EVM in Russian,
Moscow State University, 1977 6 pp (manuscript deposited in VINITI, No 671-
78, 28 Feb 78)

LOPATKO, V. B.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B80DEP (résumé)]

[Text]  The paper describes the rules of exchange through a common disk
store for several BESM-6 computers.  The protocol agrees with standards for
transport protocol, but also takes consideration of hardware limitations.
An algorithm is proposed for reducing overhead expenditures of the system
based on keeping track of the intensity of demands for exchange.  References
3.
[443-6610]

6610
CSO:  1863

43

FOR OFFICIAL USE ONLY

USSR                                                        UDC  681.325-185.5

MICROPROCESSOR FACILITIES.  ADVANCES AND PROBLEMS

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 6, 1978 pp 1-3

YAKUBAYTIS, E. A. and BAUMS, A. K.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B382]

[Text]  The major points are presented for a report delivered at the Second
All-Union Conference on Microprocessors dealing with the development of micro-
processor facilities during the period between the first and second confer-
ences (1975-1977).  Figures 1; references 11.
[15-6610]


6610
CSO:  1863




USSR                                                UDC  681.325.621.391.63(088.8)(47)

AN ELECTRO-OPTICAL COMMUTATING DEVICE

USSR AUTHOR'S CERTIFICATE No 528798 filed 10 Oct 75, published 31 Aug 77

PETROV, M. P. and PIKALEV, A. S., Physicotechnical Institute imeni A. F.
Ioffe

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B317]

[Text]  The proposed electro-optical commutating device contains a thin-film
input on a backing with electrodes of comb type applied to its surface.  In
order to provide commutation of a light beam in $N - 2^k$ parallel-shifted posi-
tions, the device contains a row of k serially arranged groups of electrodes,
each group including two identical systems of comb electrodes, and the dis-
tances between groups being determined by a law of geometric progression.
Figure 1; references 3.
[443-6610]


6610
CSO:  1863                                    44

FOR OFFICIAL USE ONLY

USSR                                                          UDC 681.326.7

DIAGNOSIS OF MALFUNCTIONS OF FUNCTIONAL CELLS OF HOMOGENEOUS COMPUTING
STRUCTURES BASED ON MONOFUNCTIONAL AND MULTIFUNCTIONAL THRESHOLD ELEMENTS

ODNORODNYYE TSIFORVYYE VYCHISLITEL'NYYE I INTEGRIRUYUSHCHIYE STRUKTURY in
Russian No 8, 1977 pp 151-161

POTAPOV, V. I., PAL'YANOV, I. A. and YUDIN, V. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B65 by S. G. Romanova]

[Text] It is noted that the regularity of the structure of homogeneous com-
puting systems based on cells of threshold elements enables reduction of the
procedure of monitoring and diagnosis to troubleshooting individual function-
al cells, i.e., monofunctional and multifunctional threshold elements.

However, the very fact of detection of a failed threshold element in a func-
tional cell being checked is frequently insufficient. In a number of cases
it is required to localize the malfunction in the failed threshold element
with accuracy to input/output, and sometimes to the type of malfunction. An
algorithm is presented for synthesis of minimized diagnostic tests that lo-
calize malfunctions with accuracy to the input/output of the threshold ele-
ments, and estimates are made of the length of these tests for monofunction-
al and multifunctional threshold elements.

The authors introduce the concept of the base test set that corresponds to
the test set of a verifying test with negative result of realization. This
concept is used in analyzing the area of a malfunction and constructing an
elementary diagnostic test for a cell of a homogeneous computing structure
based on a monofunctional and multifunctional threshold element. The aggre-
gate of all elementary diagnostic tests forms the complete diagnostic test
for the cell. References 7.
[443-6610]

6610
CSO:  1863

45

FOR OFFICIAL USE ONLY

USSR                                                        UDC  681.326.34

A BESM-6 TERMINAL BASED ON THE VT-340

Dubna TERMINAL BESM-6 NA BAZE VT-340 in Russian, Joint Institute of Nuclear
Research, Report No 10-10996, 1977 7 pp

YEMELIN, I. A., YEMELINA, L. N., MURATOVA, V. V. and SEMASHKO, G. L.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B658K (résumé)]

[Text]  The paper describes variants of connecting the VT-340 display to
BESM-6 computers in the Dubna operating system.  A brief technical descrip-
tion is given with block diagrams of the connection.  The dispatcher pro-
grams that have been altered are listed.  Figures 3; references 3.
[443-6610]


6610
CSO:  1863


USSR                                                        UDC  681.327.2

PROGRAM CHANNEL INTERFACE OF A TPA-1001i COMPUTER FOR A UNIVERSAL CAMAC
BRANCH DRIVER

Dubna INTERFEYS PROGRAMMNOGO KANALA EVM TIPA TPA-1001i DLYA UNIVERSAL'NOGO
DRAYVERA VETVI KAMAK in Russian, Joint Institute of Nuclear Research, Pre-
print No 11157, 1977 11 pp

YEFIMOV, L. G., NGUYEN, FUK and SMIRNOV, V. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B656 (résumé)]

[Text]  The module is a source for control of the universal CAMAC branch
driver from a TPA-1001i minicomputer.  The module is an interface of the
computer program channel and is connected to its internal bus system.  The
maximum data transmission rate is 30,000 24-bit words per second.
[443-6610]

6610
CSO:  1863                                   46

FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.327.07

A SUBOPTIMUM ALGORITHM FOR DETERMINING A COMPACT STRUCTURE OF A SET OF
RECORDINGS

SUBOPTYMALNY ALGORYTM WYZNACZENIA ORGANIZACJI ZWARTEJ ZAPISÓW. PR. IPI PAN
in Polish No 290, 1977 20 pp

GÓRSKI, JANUSZ

[Text]  An algorithm is presented for sequential ordering of recordings in
a computer memory in such a way that the recordings are stored in accordance
with a sequence of priority storage addresses.  The algorithm is written in
FORTRAN IV and has been verified on an ODRA 1305 computer.  Figures 8; ref-
erences 8.
[443-6610]

6610
CSO: 1863

USSR                                                    UDC  681.327.8

COUPLING OF THE VIDEOTON-340 DISPLAY TO THE KONSUL-260 PRINTER

MEKHANIZATSIYA I AVTOMATIZATSIYA UPRAVLENIYA.  NAUCHNO-PROIZVODSTVENNYY
SBORNIK [Mechanization and Automation of Control.  Scientific-Production
Collection] in Russian No 4/94, 1977 pp 51-53

BELYAYEV, YU. I.

[Text]  The paper describes the particulars of connecting the Konsul-260
electric printer to the Videoton-340 display, that is based on integrated
circuitry.  The algorithm is described, and a time diagram is given of the
operation of the coupling device.  It is noted that control of the printer
can be done both by the operator of the display and automatically when the
display receives the proper command from the computer.  Figure 1; references 4.
[443-6610]

6610
CSO: 1863                         FOR OFFICIAL USE ONLY

USSR                                                    UDC 681.327.21

A DATA INPUT DEVICE

USSR AUTHOR'S CERTIFICATE No 563672, filed 30 Jul 75, published 14 Jul 77

BABURIN, A. A., ZEMSKOV, A. P., KOZLOV, A. F., KOTEL'NIKOV, S. S., PASYNKOV, V. V. and TAIROV, V. N., Leningrad Electrical Engineering Institute, Kursk Schetmash Plant

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, 1978 Abstract No 7B545 by V. T. Mitroshina]

[Text]  Devices are known that contain an electret film located between a first electrode fastened on a dielectric plate, and a second electrode with a release spring secured at one end to the housing, and that also contain a key.  To increase reliability, the device contains a cocking spring with one end secured to the key, while the other end of this spring has a projection located beneath the free end of the second electrode.  Figure 1. [443-6610]


6610
CSO:  1863


USSR                                                    UDC 681.327.21

AN INPUT DEVICE FOR THE BZ.18A ELECTRONIC CALCULATOR BASED ON A ONE-CRYSTAL PROCESSOR

Moscow PRIMENENIYE AVTOMATIKI, VYCHISLITEL'NOY TEKHNIKI I MATEMATICHESKIKH METODOV V NEFTYANOY I GAZOVOY PROMYSHLENNOSTI [Using Automation, Computer Technology and Mathematical Methods in the Petroleum and Gas Industry] in Russian, Moscow Institute of the Petrochemical and Gas Industry, pp 73-78 (manuscript deposited in VNIIOENG, No 543 Dep., 18 Sep 78)

KLYUCHNIKOV, A. I.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1979 Abstract No 1B781 DEP by the author]

[Text]  An examination is made of the problem of using one-crystal micro-processors developed for calculators to solve problems in the mathematical processing of controlled parameters that arise in designing instrumentation

systems. A block diagram is given of an input device for a K145IP7 micro-circuit used in the BZ.18A calculator. The particulars of designing an input device for a keyboard computer are considered. Minimized expressions of Boolean functions are given that describe the LSI input logic.

A conclusion is given on the possible fields of application of one-crystal processors developed for calculators as a built-in unit of a computing system, and the resultant advantages.
[15-6610]

6610
CSO: 1863

USSR                                                                UDC 681.327.28

AN ACCUMULATOR FOR A PERMANENT MEMORY

USSR AUTHOR'S CERTIFICATE No 579656 filed 26 Apr 76, published 12 Oct 77

ZHURAVSKIY, N. N. and SELIGEY, A. M., Kiev Computer and Electronic Control Machine Plant

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1979 Abstract No 1B713P]

[Text] The invention applies to the field of automation and computer tech-nology. Accumulators for permanent memories are known that contain an array of address and bit lines with coupling elements connected at some of the in-tersections. A disadvantage of such accumulators for permanent memories is the comparatively high level of zero interference on the bit lines caused by parasitic couplings between bit lines, and couplings through the coupling elements that connect the selected address line to the remaining unselected address lines.

The zero interference level increases with an increase in the information content of the accumulator. The purpose of the invention is to increase the working reliability of the accumulator. This purpose is realized in the proposed accumulator containing an array of address and bit lines with coupling elements connected in some of the intersections, by connecting switching elements in other intersections of the address and bit lines such as transistors with their collectors and bases connected to the bit

49

FOR OFFICIAL USE ONLY

lines and address lines respectively, while the emitter is connected to
zero potential lines. Figures 1; references 1.
[15-6610]


6610
CSO: 1863


USSR                                                         UDC  681.327.66

A PERMANENT MEMORY

USSR AUTHOR'S CERTIFICATE No 581508 filed 3 Sep 75, published 20 Dec 77

SELIGEY, A. M. and TROSTYANETSKIY, D. S., Kiev Computer and Electronic Con-
trol Machine Plant

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B644P]

[Text]  A permanent memory is proposed that contains number matrices con-
nected to a number register with outputs connected to the first inputs of
the data output unit, and a decoder of the ordinal number of the number
matrices.

To increase information capacity, the device contains as many AND gates as
number matrices, and an OR gate for each digit of the number matrix.  The
outputs of the OR gates are connected to the second inputs of the data out-
put unit, and the inputs are connected to the outputs of the AND gates.
The first inputs of the AND gates are connected to the decoder of the ordi-
nal number of the number matrices, and the second inputs are connected to
the corresponding inputs of the device.  Figures 1; references 2.
[15-6610]


6610
CSO:  1863


50

FOR OFFICIAL USE ONLY

USSR                                                          UDC  681.327.67

AN ACCUMULATOR FOR A PERMANENT MEMORY

USSR AUTHOR'S CERTIFICATE No 579655 filed 29 Apr 76, published 10 Dec 77

ZHURAVSKIY, N. N. and SELIGEY, A. M., Kiev Computer and Electronic Control
Machine Plant

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B682P]

[Text]  An accumulator for a permanent memory is proposed that contains ad-
dress lines, main and auxiliary bit lines, and coupling components that are
connected at the points of intersection of the address and bit lines.  To
increase the speed and reliability of the accumulator, it contains switching
elements such as transistors with their bases connected to the auxiliary bit
lines, their collectors connected to the main bit lines, and their emitters
connected to the zero potential line.  Figures 1; references 1.
[15-6610]


6610
CSO:  1863


USSR                                                          UDC  681.327.67

A SEMICONDUCTOR MEMORY DEVICE IN THE CAMAC STANDARD

Dubna POLUPROVODNIKOVOYE ZAPOMINAYUSHCHEYE USTROYSTVO V STANDARTE KAMAK in
Russian, Joint Institute of Nuclear Research, Report No 11-11379, 1978 6 pp

KISSIG, K.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B687]

[Text]  A semiconductor memory in the CAMAC standard is described with
capacity of 256 16-digit words.  The time of a readout (record) cycle is
1 µs.  The memory can be used as dynamic storage or as a buffer store for
accumulating or smoothing statistical information.
[15-6610]

6610
CSO:  1863                                   51

FOR OFFICIAL USE ONLY

USSR                                                                    UDC 681.327.68

AN OPTICAL MEMORY

USSR AUTHOR'S CERTIFICATE No 572848 filed 1 Apr 75, published 14 Sep 77

LEONETS, V. A., PETROV, V. V. and TOKAR', A. P., Institute of Electrodynam-
ics, Academy of Sciences UkrSSR

[Text]  An optical memory is proposed that contains an information disk op-
tically coupled to a photoreceiver through a focusing system mounted on a
movable carriage.  The device also contains a photovoltaic cell, a reversi-
ble counter connected to one of the outputs of the photovoltaic cell, a pho-
tosensing element, a comparison circuit with inputs connected to the given
address register and the reversible counter, while the outputs are connected
to the servomotor of the carriage.

To increase accuracy and reliability of readout and recording of information,
the device contains an amplifier and threshold element connected in series,
the output of the threshold element being connected to the set terminal of
the reversible counter, while the input of the amplifier is connected to the
output of the photoreceiver.  Figures 1; references 2.
[15-6610]

6610
CSO:  1863

52

FOR OFFICIAL USE ONLY

LAPPING THIN FERRITE CORES OF MAGNETIC HEADS

BALYKOV, A. V., VOYNOV, V. A., RURA, M. M., TSESARSKIY, A. A., BATURIN, P.
S. and KULIKOV, B. A.

[Text]  The paper gives the results of experimental research and informa-
tion on design of a technological process for high-speed multistage two-
sided lapping of thin ferrite cores of magnetic heads for the disk stores
of computers.

Recommendations are worked out according to which the finishing of ferrite
cores down to 0.1 mm thick should be done by methods of two-sided diamond
lapping, placing them in a Lavsan cassette and using water suspensions of
diamonds with grain size from ASM 5/3 to ASM 1/10, and concentrations from
3 to 1 percent.  The described technological process gives a surface finish
to the cores with accuracy to 0.004 mm and roughness $R_a$ = 0.04-0.02 μm.
Figures 2; tables 1.
[15-6610]


6610
CSO:  1863


53

FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.327.636(088.8)

A METHOD OF MAKING A WIRE BACKING FOR A MAGNETIC MEMORY

Polish Patent No 87003 filed 16 Oct 73, published 30 Nov 76

WOLSKI, KAZIMIERZ and MIECZNIKOWSKI, ANDRZEJ, Scientific Production Center for Semiconductor Materials

[Text]  The beryllium alloy that is conventionally used as the material of wire backing for thin-film magnetic memories has the disadvantage of toxicity.

A method is proposed for making a wire backing of an alloy that contains 7 percent silver, 0.2-0.3 percent zirconium with the remainder being copper. Bars of such an alloy 3-7 mm in diameter are first heat-treated at 700-800°C, and then plastically worked and aged at 400-500°C. The resultant wire meets all requirements for backings of thin-film magnetic memories.
[443-6610]

6610
CSO:  1863

54

FOR OFFICIAL USE ONLY

USSR                                          UDC   681.335.2:621.376(088.8)(47)

AN OPTOELECTRONIC GALVANIC SEPARATOR

USSR Patent Class H 03 K 17/78, No 2,450,003 14 Sep 78 (disclosure No 627,252 1 Feb 77)

EPSHTEYN, L. YE., MOROZOV, V. I., SMIGEL'SKIY, V. A. and FEDIN, YU. N., Institute of Control Problems, USSR Academy of Sciences

[Text] An optoelectronic galvanic separator is proposed which contains a pulse-width modulator, an optron with a comparator-shaper, and a low-pass filter all connected in series. For the purpose of improving the accuracy and the stability of the performance parameters, also included is a peak detector consisting of a diode and a capacitor in series, and a resistive voltage divider. The optron output is connected to the anode of the detector diode and the capacitor is shunted by the divider, the center point of this divider being connected to the other input of the comparator-shaper. [39-2415]

2415
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                    UDC  772.99:62.50:621.301.156

MICRO-OPTOELECTRONIC PARALLEL PROCESSORS FOR PROBLEM ANALYSIS AND SYSTEMS
CONTROL

Novosibirsk AVTOMETRIYA in Russian No 6, 1977 pp 10-13

BYKHOVSKIY, V. K., PRANGISHVILI, I. V., SONIN, M. S. and USKACH, M. A.

[Text]  The paper proposes principles of design of a processor intended for
problem analysis and systems control.  The processor is based on the princi-
ple of invariant embedding of the model of the investigated object in the
processor.  A system of standards $y_0$ must be recorded in the processor memo-
ry for realization of control operations.  In the process of measurements
the current states of objects y are compared with the standard quantities $y_0$,
and in accordance with measurement results $\Delta y$, the control system selects
a recorded control program p ($\Delta y$) from the memory.

The structure of the control system is presented.  A holographic controlling
processor is constructed on the basis of a controllable matrix of laser di-
odes and a matrix of hologram-microholograms, and is controlled by a program
integrated by optoelectronic circuits of a screen console.  Parallel adjust-
ment of the actuating processor is done by one hologram.

The actuating processor is designed around a homogeneous micro-optoelectronic
matrix.  The actuating processor can be realized on the basis of MOS large-
scale integration.  Methods of realizing the OUT register are discussed.
[443-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

D.  Programming and Software

[Text]  The specific features of the realization of the immediate service,
multilanguage dialog system (DISMO) using the "Minsk-32" computer are pre-
sented in brief and the mechanism for the organization of the system dialog
with subscribers is described, where the subscribers have access to the
computer by means of remote typewriter terminals.  DISMO is intended for
the parallel servicing of several subscribers, each of which can access the
system in one or more dialog languages.  The dialog system can prove to be
particularly useful in the case of hierarchical modeling and the analysis
of various kinds of complex schemes and systems.  The DISMO software is
formatted in the form of a working program, which is run with the priority
of urgent operation under the control of the "Minsk-32" operating system
at one of the operating levels simultaneously with the programs of the set
available at other working levels.  DISMO includes a central monitor, which
executes the overall control of the conduct of the general system dialog,
and individual monitors which interpret specific dialog languages.  The
dialog process which takes place during a session through a terminal is
represented as the functioning of a certain discrete automat, where the sub-
scriber messages sent by them through a terminal serve as the inputs to the
automat, while the outputs are the system messages fed out by it through
the same terminal.  The language for the communications between the sub-
scriber and DISMO is described using a mathematical model of a discrete auto-
mat.  References 4.
[4-8225]

8225
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                    UDC 658.012.011.56

'TOPAZ-N' COMPLEX SYSTEM OF PLANNING THE CALENDER FOR SCIENTIFIC RESEARCH
AND EXPERIMENTAL PROGRAMS

Vilnyus AVTOMATIZATSIYA PROTSESSOV PLANIROVANIYA I UPRAVLENIYA in Russian
No 6, 1978

PIKSHRENE, BIRUTE

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract No 7A383]

[Text]  A brief description is given of the TOPAZ-N system of programs, which
has been developed at the Institute of Mathematics and Cybernetics (Academy
of Sciences of the Lithuanian SSR), and the basic problems solvable with the
aid of this system are enumerated.  The system has been designed for a BESM-
4 high-speed computer or an M-222 computer, it is now used by several indus-
trial scientific-research institutes, design offices and industrial associa-
tions.
[39-2415]


2415
CSO:  1863




USSR                                                    UDC 658.012.011.56

CHECK PROGRAMS FOR PROPORTIONAL CHAMBERS AND ELECTRONICS ON-LINE WITH AN
M-6000 COMPUTER

Dubna OB'YEDINENYY INSTITUT YADERNYKH ISSLEDOVANIY.  DUBNA.  SOOBSHCHENIYA
in Russian No R10-11373, 1978 6 pp

BARANOV, V. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10A491 by V. T. Mitroshina]

[Text]  The programs for monitoring equipment to CAMAC standards, the elec-
tronics of proportional chambers and the proportional chambers themselves
on-line with an M-6000 computer are described.  A subroutine was developed
which permits the execution of all actions which are possible with the

58

FOR OFFICIAL USE ONLY

KK004 controller. A package of subroutines, written in the MNEMOKODO language, was developed for interfacing CAMAC standard equipment and the computer. These subroutines are called up in a standard fashion by the programs written either in FORTRAN or MNEMOKOD languages. Several programs intended for error detection in equipment operation were developed on the basis of these subroutines. The CAMAC instructions are selected from the display control board, and following this, the program begins to execute these instructions in a cycle upon the instruction of the operator. A series of programs was developed to check the operation of the electronics of proportional chambers. The programs make it possible to plot the curves of the delayed coincidences at various strobing widths, as well as to determine the percentage of clusters as a function of the strobing delay time. Figures 1; references 3.
[4-8225]

8225
CSO: 1863

USSR                                                           UDC  658.012.011.56

EXPANDING THE CAPABILITIES OF THE 067 DEBUGGING EXTRA CODE IN THE DUBNA DISPATCHER CONTROL OPERATING SYSTEM USING THE BESM-6 COMPUTER

Dubna OB'YEDINENYY INSTITUT YADERNYKH ISSLEDOVANIY. DUBNA. SOOBSHCHENIYA in Russian No 11-11233, 1978 8 pp

GUSEV, A. V. and SILIN, I. N.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA in Russian No 10, 1978 Abstract No 10A476]

[Text]  The new 067 debugging extra code in the Dubna dispatcher control operating system based on the BESM-6 computer is described. The drawbacks to the previous variant are indicated and the operational logic of the new extra code is described. Figures 1; references 3.
[4-8225]

8225
CSO: 1863

FOR OFFICIAL USE ONLY

USSR                                                UDC  658.012.011.56

THE BUP-3 PROGRAM CONTROL UNIT

Moscow INSTITUT TEORETICHESKOY I EKSPERIMEN. FIZIKI. MOSCOW. PREPRINT in
Russian No 19, 1978 14 pp

RYSKIN, V. I., SEMENOV, YU. A., SHVACHKIN, V. B. and YUDIN, D. D.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10A475]

[Text]  An instruction unit (the BUP-3) is described which combines the
functions of a branching organization block and programming block.  The maxi-
mum capacity of the program memory is 512 x 34 bit words.
[4-8225]

8225
CSO:  1863

USSR                                                UDC  681.3:002.513.5

STRUCTURE OF THE COPLAN LANGUAGE AND ORGANIZATION OF ITS TRANSLATION FOR
MINICOMPUTERS

Moscow PERVYY VSESOYUZNYY SIMPOZIUM PO MODUL'NYM INFORMATSIONNO-VYCHISLITEL'-
NYM SISTEMAM, MOSKVA, 1977 [First All-Union Symposium on Modular Computer-
Information Systems, Moscow, 1977] in Russian 1978 pp 43-44

BABAYAN, G. YE. and OSOSKOV, G. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B207 (résumé)]

[Text]  It is pointed out that transistors have now been developed for trans-
lation from COPLAN for Elektronika-100 and M-6000 computers working on a
"BESM-6" computer, and also a compiler from COPLAN to the macrolanguage of
a PDP-6 computer working on this computer.  Use of the COPLAN language for
programs that control the NRD automation has shown that it can be used to
abbreviate the controlling programs by a factor of 3.5-4 as compared with

60

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

analogous programs realized in autocode. Use of the COPLAN language introduces reviewability and facilitates modification of the corresponding control programs. References 9.
[15-6610]

6610
CSO: 1863

USSR                                                          UDC  681.3:519.58

ALGORITHMS AND PROGRAMS.  AN ANNOTATED BIBLIOGRAPHY

ALGORITMY I PROGRAMMY. ANNOTIROVANNYY UKAZATEL'LITERATURY in Russian No 1, 1978 102 pp

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, 1978 Abstract No 7B118 by Ye. Ya. Mil'man]

[Text]  This annotated bibliography is intended for providing extensive information to scientific and technical workers on the materials of the State Public Scientific and Technical Library of the USSR. The book has three divisions. The first division brings together papers of a general nature: descriptions of programming systems, textbooks, procedural materials and the like.

The second division contains materials on programming languages ALGOL-60, ALGOL-68, DYNAMO, COBOL, LISP, PASCAL, PL/1, RPG, SIMSCRIPT, SIMULA, SNOBOL, FORTRAN, APL, BASIC, CSMP, GASP and others. The third section gives materials on programs for various computers including M-400, M-4030, M-5000, M-6000, M-7000, BESM-6 YeS EVM, M-20, Minsk-2, Minsk-32, Mir, Nairi, Elektronika, IBM, Odra, CDC, Eclipse, HP, ICL, Motorola 6000, PDP and Univac.
[443-6610]

6610
CSO: 1863

61

FOR OFFICIAL USE ONLY

USSR                                                      UDC  681.3:519.68

FORMING SPECIAL BINARY CODES IN ALGOL PROGRAMS

AVTOMATIZIROVANNAYA TEKHNIKA PODGOTOVKI PROIZVODSTVA [Automated Production
Prepar-tion Technology] in Russian No 4, 1977 pp 158-161

LUK'YANOV, B. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B85 by V. T. Mitroshina]

[Text]  For the purpose of a more economic utilization of a computer memory
during the preparation of information for peripheral gear controlled with
the help of special binary codes, a method of writing codes is proposed that
is based on the enumeration of several alternating sequences of ones and
zeros by a single decimal number.  In this writing method, each decimal
place in the number indicates a quantity of ones and zeros in a routine,
homogeneous sequence.  In the last decimal place of the number used to write
the code, "1" or "0" is written, depending on whether or not it is the first
of the enumerated sequences of ones or zeros.  This method of representing
binary codes was realized in programs for the preparation of five-track
punched tape for the ITYeKAN automatic plotter, which programs were written
in ALGOL-60 for a computer of the M-222 type.  Figures 1; references 2.
[3-11746]


11746
CSO:  1863


USSR                                                      UDC  681.3:519.68

ALGORITHMS AND PROGRAMS.  AN ANNOTATED BIBLIOGRAPHY

ALGORITMY I PROGRAMMY.  'ANNOTIROVANNY UKAZATEL' LITERATURY' in Russian No
2, 1978 111 pp

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B113 by Ye. Ya. Mil'man]

[Text]  This annotated bibliography contains summaries of articles devoted
to algorithms and programs for various computers and programming languages.
The collection has three divisions:  general problems, mathematical languages,
computer programs.  An examination is made of automated systems for data

FOR OFFICIAL USE ONLY

processing, organization of computing centers, programming languages
ALGOL-60, FORTRAN, DYNAMO, COBOL, PASCAL, PL-1, REFAL, APL, BASIC, CSMP.

Summaries are given of papers dealing with programs for various computers,
major emphasis being given to programs for the modular system of computer
facilities, computers type M-20, YeS and Minsk-32. Some papers apply to
Dnepr, Minsk-2, Minsk-22, Mir, Nairi, Razdan, Segun', Elektronika, El'brus,
IBM, Odra, CDC, HP, Honeywell, ICL, Intel, NOVA, PDP and TPA-1 computers.
[443-6610]

6610
CSO: 1863

USSR                                                        UDC 681.3:519.68

DATA ANALYSIS. TRANSLATOR DESIGN. PROBLEMS IN PROGRAMMING

Tallin TRUDY TALLINSKOGO POLITEKHNICHESKOGO INSTITUTA in Russian No 439,
1978

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B63 by M. V. Yevdokimenko]

[Text] The collection includes articles on the following questions of the
analysis of programming data: on nonlinear factor analysis; on additional
equipment for the PL/I DOS/YeS [disk operating system/unified system]; on
the utilization of quality control criteria; on the optimum regeneration
and differentiation of functions. Articles are devoted to questions of
translator design: a BASIC-PL/I translator; a description of a metalanguage
in a system for the design of translators; and the organization of error
processing in a translator design system.
[4-8225]

8225
CSO: 1863

FOR OFFICIAL USE ONLY

USSR                                                          UDC  681.3:519.68

ANALYSIS AND SOFTWARE OF COMPUTERS

Kiev ANALIZ I PROGRAMMNOYE OBESPECHENIYE VYCHISLITEL'NYKH MASHIN in Russian,
Institute of Cybernetics, Ukrainian Academy of Sciences, Preprint No 7,
1978 44 pp

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B97 (résumé)]

[Text]  Various aspects of design and analysis of the effectiveness of prob-
lem-oriented small computer complexes are considered.  The basic principles
are illustrated by the example of development of small computer complexes
intended for express-analysis of random processes and control of an experi-
ment under full-scale conditions.
[15-6610]


6610
CSO:  1863


USSR                                                          UDC  681.51

USE OF LINEAR OPTIMIZATION IN THE GERMAN DEMOCRATIC REPUBLIC

RECHENTECHNIK/DATENVERARBEITUNG [Computer Technology/Data Processing] in
German Vol 15 No 1, 1978 pp 63-64

BÖSELT, MARTIN, BEYER, HORST and BEYER, KLAUS

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract
No 8.81.4 by V. I. Slepov]

[Text]  The state of the art in and the outlook for optimization techniques
in the GDR are assessed, approximately 2300 computer stations including small
and large control computers now being used in that country for this purpose.
Approximately 70,000 persons are employed in maintenance of these machines.
The main areas of application are:  consumer goods and producer goods in-
dustries, agriculture as well as the lumber industry and the food industry,
also scientific research and national defense.  The quality and the useful-
ness of the results of optimization depend on the input information, for

FOR OFFICIAL USE ONLY

the acquisition of which it is worthwhile to organize the gathering of primary data through data generating programs realizable in a semiautomatic mode. Accordingly, there have been developed standard instructions which establish the prerequsities for a unified application of optimization methods. So as to ensure that all input information will be processed to the fullest extent, a model of existing interconnections between various technical and organizational systems intended for long use and targeted for optimization is synthesized. Here problems are discussed which have to do with preparation of input data for optimization. Noteworthy is that 20-25 percent of the total time needed for calculating the optimum parameters is spent on data input to the computer. An optimization system is described which operates in an open cycle. The results of optimization cannot be used for direct control of the computation process, because a delay in their analysis will occur during a day at an industrial computation center and during one or two days at a general computation center. Using computers of the "Ryad" series has made it possible to raise the system documentation to a new higher quality level and to replace the one in use till now. Taking into consideration the growing demand for mathematical methods in all sectors of the national eccnomy, the People's Owned Enterprise "Robotron Combine" (GDR) produces the following system documentations: DOS/ES operating system consisting of Programming Systems VOPS, OPSI, VOPS SIMDIS and others; the OS/ES operating system including the programming system PS OPSI OS/ES, PP DISKO OS/ES and others. Problems solvable with these operating systems are enumerated.
[17-2415]

2415
CSO: 1863

USSR                                                                UDC  681.32.06

THE ASVT-2 DISK OPERATING SYSTEM

UPRAVLYAYUSHCHIYE SISTEMY I MASHINY [Control Systems and Computers] in
Russian No 1, 1978 pp 140-141

BOGUSLAVSKIY, I. V., GLUKHOVA, L. F., ZAKHAROV, V. N., KOZLOVA, L. M.,
KOZMIDIADI, V. A., KOZMIDIADI, N. P., LANDAU, I. YA. and OLEFIR, L. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B121]

[Text]  The basic directions taken in developing the ASVT [modular system
of computer technology] DOS [disk operating system] into the ASVT-2 DOS are
described.  References 3.
[3-11746]


11746
CSO:  1863


USSR                                                                UDC  681.32.06

DEVELOPMENT OF A DIALOG PROGRAMMING SYSTEM (DS SM EVM) FOR OPERATION WITH
CAMAC HARDWARE

Moscow PERVYY VSESOYUZNYY SIMPOZIUM PO MODUL'NYM INFORMATSIONNO-VYCHISLITEL'-
NYM SISTEMAM, MOSKVA, 1977 [First All-Union Symposium on Modular Computer-
Information Systems, Moscow, 1977 Collection of Works] in Russian 1978 p 48

KISELEV, V. A., LOZYUK, V. S. and OSTAPENKO, G. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B191 (résumé)]

[Text]  An operator for coupling with CAMAC hardware is introduced into the
dialog programming system based on the FOCAL interpreter.  The new operator
is designed for using sectional controllers for the M-400, SM-3 and PDP-11
that are logically compatible with the JCC controller and have the form J"
E, SS, P, where J is the designation of the operator; " is a symbol that
indicates the presence of the number of section E; SS represents 1 or 2
symbols that characterize specific commands for the controller; P is a set
of parameters that contains the CAMAC function F, module number N, subad-
dress A, data or a variable, depending on the form of SS.

66

The operator may have an abbreviated notation: J" 2, SS; J, SS, P; J, SS; J. In this case, some parameters may be missing in the set SS. All missing parameters are taken from the previously executed operator. The operator executes three kinds of commands, depending on SS: commands that are common to an entire section; commands on the level of a subaddress of a specific module; commands associated with interruptions. The expanded version of the system occupies less than 4K words of storage. References 3.
[15-6610]


6610
CSO: 1863


USSR                                                                 UDC 681.32.06

PROGRAMS FOR EXCHANGE WITH YeS-5012 TAPE STORES FOR BESM-4 COMPUTERS

Dubna PROGRAMMY OBMENA S NML YeS-5012 DLYA EVM BESM-4 in Russian, Joint Institute of Nuclear Research, Report No P11-11629, 1978 10 pp

SENCHENKO, V. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1979 Abstract No 1B180 (résumé)]

[Text] The paper describes exchange programs for YeS-5012 magnetic tape stores connected to BESM-4 computers and providing control of YeS-5012 devices, as well as "read-write" operations in the ISO international standard with density of [32 bits/mm]. The programs are written in BM-4/220 autocode, formed as standard modules, and incorporated into the program library of the "OS-4/220-Dubna" operating system, which enables simple access to these programs on the FORTRAN level included in the "OS-4/220-Dubna" makeup.
[15-6610]


6610
CSO: 1863

USSR                                                          UDC  681.51:51

'DIANED' SYSTEMS FOR DIALOG ANALYSIS OF EXPERIMENTAL DATA, PART 1:  STRUC-
TURE AND OPERATING PRINCIPLES OF THE SYSTEM

Pushchino 'DIANED' SISTEMY DIALOGOVOGO ANALIZA EKSPERIMENTAL'NYKH DANNYKH
[DIANED Systems for Dialog Analysis of Experimental Data] in Russian 1977
40 pp

GROMOV, G. R. and ROYTBERG, M. A.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract
No 8.81.508 Summary]

[Text]  Considered are problems in dialog organizing of application program
decks for systems which process experimental data with the aid of small
computers.  The results of the DIANED software development are discussed,
this system for dialog analysis of experimental data acting in the capacity
of an operating system with a MIR-2 computer at an upper level relative to
the software already incorporated in the latter.  The purpose of a DIANED
system is to give an experimenter unfamiliar with basic programming tech-
niques an effective tool for conversion and graphic interpretation of ex-
perimental data.  The programs of a DIANED system have a modular structure
and are written in a high-level language, which simplifies transfer of their
individual components or of the entire system to other computers.
[17-2415]

2415
CSO:  1863

FOR OFFICIAL USE ONLY

USSR

UDC 681.51:53

ALGORITHMS OF PROGRAMS FOR USING THE "ELEKTRONIKA-100" COMPUTER IN AN ADVISER MODE DURING THE COMPOSITION OF THE CRITICAL MASS OF A PHYSICAL STAND

Obninsk FIZIKO-ENERGETICHESKIY INSTITUT (PREPRINTY) [Institute of Physics and Power Engineering (Preprints)] in Russian No 830, 1978 13 pp

REGUSHEVSKIY, V. I. and TARASOV, V. A.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 11, 1978 Abstract No 11.81.554]

[Text]  The authors describe the algorithms of operating programs for a measuring and computing complex based on the "Elektronika-100" computer, which complex is used to conduct experiments on physical stands by the inverse counting speed method.  The algorithms are used to compile the critical mass and for series measurements of reactivity by the relative method. The algorithms are presented in the form of individual, functionally complete blocks and can be used to write programs in languages on different levels.
[18-11746]

11746
CSO:  1863

USSR

UDC 681.51:53

THE COMPLEX OF DAM PROGRAMS FOR CALCULATING A MULTIGROUP NEUTRON SPECTRUM, HEAT GENERATION AND THE PROCESSES OF RADIATION DAMAGE IN CONSTRUCTION MATERIALS FOR DIFFERENT TYPES OF REACTORS

Moscow INSTITUT ATOMNOY ENERGII (PREPRINTY) [Institute of Atomic Energy (Preprints)] in Russian No 2935, 1978 16 pp

TIMOFEYEV, I. G.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 11, 1978 Abstract No 11.81.556 by V. V. Manilov]

[Text]  The author gives a general description of the DAM complex of programs, explains the formulation of the problem in detail, and points out the program complex's functional possibilities.  He presents a list of the symbols

used and explanations for them. He also gives the composition of the input and output data. A block diagram of the program complex is presented, along with the names and purposes of the programs that are part of it. The program complex is written in FORTRAN, and it has been translated on a BESM-6 computer, debugged, and put into experimental operation. The individual programs have pased their check tests. The duration of the solution of each specific problem depends on the required accuracy of the calculation of the neutron flows and the computation channel (technique). Calculations can be performed with regeneration of the computation, which makes it possible to solve large problems on stage-by-stage basis. The macroconstants for the neutron-physics calculations are prepared with a complex of ARAMAK-F programs. Programs for constructing isometric images are used for visual presentation of the obtained results. This program complex can function in the "Dubna" and "Dispak" operating systems, and it is possible to combine it with another system of programs in order to carry out broad-scale investigations of nuclear and thermonuclear reactors. Figures 4; references 11. [18-11746]

11746
CSO: 1863

USSR                                                                    UDC  681.51:53

SYNTACTIC ANALYSIS AND TRANSLATION OF COMMANDS IN A TERMINALS CONCENTRATOR

Dubna SOOBSHCHENIYA OB'YEDINENNOGO INSTITUTA YADERNYKH ISSLEDOVANII in Russian No 10-11, 228, 1978 11 pp

GALAKTIONOV, V. V., Joint Institute of Nuclear Research

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract No 8.81.591]

[Text]  The proposed construction of a translator from a command language as well as the method of defining the syntax of commands and the method of translating them are all part of a software development for a terminals concentrator with a BESM-6 high-speed computer based on Unified System YeS-1010 equipment. The language of the INTERCOM system for CDC series 6000 computers serves as the input language (English or Russian) for concentrator commands. The translator operates as a command interpreter and is triggered every time

70

as the system receives consecutive commands from the user. Figures 2;
references 7.
[17-2415]

2415
CSO: 1863

USSR                                                        UDC 681.51:53

TYEKON: A PACKAGE OF PROGRAMS FOR SOLVING THERMAL PROBLEMS

Moscow INSTITUT PRIKLADNOY MATEMATIKI AN SSSR. PREPRINTY [Institute of Ap-
plied Mathematics of the USSR Academy of Sciences (Preprints)] in Russian
No 65, 1978 24 pp

POVESHCHENKO, YU. A.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 11, 1978 Abstract
No 11.81.561]

[Text] The author gives a detailed description of a computation algorithm
for calculating three-dimensional thermal and diffusion processes.
[18-11746]

11746
CSO: 1863

USSR                                                    UDC 681.51:876.3

SOFTWARE FOR A BUFFER PROCESSOR IN THE IAE INFORMATION-COMPUTATION SYSTEM

Moscow INSTITUT ATOMNOY ENERGII. (PREPRINTY) [Institute of Atomic Energy
(Preprints)] in Russian No 2954, 1978 27 pp

MARKOVA, N. A. and MIKHAYLOVA, N. I.

[Text] The authors explain the problems involved in developing software
for a buffer processor in the IAE [Institute of Automation and Electrometry]
information-computation system. They discuss the buffer processor's assigned
functions and substantiate the principles of the design of its software sub-
systems. They also present a brief description of its program realization
on a computer of the NR-2100A type.
[18-11746]


11746
CSO: 1863




USSR                                                    UDC 681.322.01

A HOMOGENEOUS COMPUTING STRUCTURE FOR SOLVING PROBLEMS IN DESIGN OF ELEC-
TRONIC EQUIPMENT

ODNORODYNYYE TSIFROVYYE VYCHISLITEL'NYYE I INTEGRIRUYUSHCHIYE STRUKTURY in
Russian No 8, 1977 pp 169-176

BERSHTEYN, L. S., LISYAK, V. V., RABINOVICH, V. A. and SEMERNEV, V. I.

[Text] An examination is made of the problem of providing software for a
fourth-generation computer. A number of combinatoric procedures of opera-
tions research are analyzed. It is noted that these procedures are proce-
dures of matrix transformation, and as such they can be modeled by means of
a homogeneous structure in which each element reflects a corresponding
element of the matrix. The use of a homogeneous structure reduces the time

FOR OFFICIAL USE ONLY

of execution of the procedures by paralleling the process of matrix reduction. Principles of realization of combinatoric procedures in homogeneous media are formulated as computer circuitry statements. Figures 2; references 7.
[443-6610]


6610
CSO: 1863

OPERATING SYSTEM FOR THE MERA 303-P1 COMPLEX

KOZLOWSKI, WOJCIECH, Industrial Institute of Automation and Measurements, Polish Academy of Sciences

[Text]  An operating system of the PSOT type is described for a system that contains a small computer of the MOMIK 8/100 type and a set of INTELDIGIT-PI devices used for connecting the computer to the controlled object.

The operating system can control the operation of 31 programs by the relative priority principle, and consists of three modules: a coordinator that handles execution of the routine assignment program, operator commands (data input, transfer of control to a special program, start of an arbitrary program) and recognition of interruptions; an interruption monitor (five classes of interruptions are introduced: programmed interruption, three classes of external interruptions and input/output interruption); a time-mark module that generates interruptions every 1 s or 0.1 s.

The available extracodes provide simple communication between the operator and the P1 program packages, conditional addressing and branching, and zeroing of interruptions. Plans have been made to develop the operating system for use with computers that have magnetic disk storage. Figures 5; references 5.
[443-6610]


6610                             73
CSO:  1863               FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                        UDC  681.322.06

PRINCIPLES OF SELECTING A COMMAND SYSTEM FOR A COMPUTER THAT IS DESIGNED
FOR HIGH-LEVEL LANGUAGES

Moscow TRUDY. INSTITUT ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings.
Institute of Control Computers] in Russian No 61, 1977 pp 31-39

RODIONOV, V. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B43 (résumé)]

[Text]  The article deals with questions of formalizing the semantics of pro-
gramming languages, and formulates requirements for the grammar of the in-
ternal language of a computer that is designed for algorithmic programming
languages.  It is shown that the use of attributive grammars and a stack
mechanism enables simple and concise definition of the semantics of the in-
ternal language.

The realization of formalized semantics and a sequence that corresponds to
canonical parsing of the text of the language with respect to defining sym-
bols will realize its semantic content.  An example is given of mechanical
derivation of a system of commands of an attributive grammar of the internal
language.  Figures 1; references 9.
[15-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                         UDC 681.322.06

AUTOMATING THE MEMORY DISTRIBUTION IN THE DISK OPERATING SYSTEM OF THE
MODULAR SYSTEM OF COMPUTER TECHNOLOGY

BUKHGOL'TZ, N. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B225 by M. V. Yevdokimenko]

[Text]  The problem of distributing a main memory (OP) in a program composed
of modules is analyzed, and is solved by program tools by means of overlap-
ping the individual portions (phases) of the program while it is running in
the main memory.  The problem is broken down into three subtasks:  the divi-
sion of the program into phases; the distribution of the memory between the
phases and the loading of the phases into the main memory.  A method is pro-
posed in which all of the subtasks are solved automatically.  The method is
based on the utilization of standard agreements concerning the links inde-
pendently of the program modules being translated, and takes into account
the specific features of the logic structure of the program, in which these
agreements are executed.  The method is an expansion of the semiautomatic
method and uses the tools for its realization in a specific system.  The DOS
ASVT [disk operating system of the modular system of computer technology]
(the circuitry for the implementation of the method is designed on the prin-
ciple of a preprocessor) is analyzed, and the same approach is also possible
in the OS YeS EVM [the operating system of the unified computer system].
References 2.
[4-8225]

8225
CSO:  1863

USSR

UDC 681.322.06

NEW SOFTWARE PACKAGES FOR ROBOTRON 4000 AND ROBOTRON 4200/4201 COMPUTERS

RECHENTECHN./DATENVERARB. in German Vol 15 No 1, 1978 p 31

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, 1978 Abstract No 7B141 by Ye. Ya. Mil'man]

[Text] New software packages are available to users of the Robotron 4000 and Robotron 4200/4201 computers. This software can be used for translat- ing an initial program for MRS K1510 code with subsequent processing under control of the K1510 modeling program. The new software packages include the CRAS 4000-K1510 cross-assembler and the CRST 4000-K1510 cross-modeling and monitoring system.

The CRAS 4000-K1510 cross-assembler is a program for translating the initial program from MARS K1510 programming language into intermediate code. This program is written in FORTRAN 4000 language and can be used on computers of the Robotron 4000 type by means of the EAS 4000 controlling program.

The CRST 4000-1510K system is a command modeling system for microcomputers of the K1510 type. This system is made in three versions that are differen- tiated as to the controlling programs that are used. In addition, the CRAP 4000-K1510 system has been developed, which unites the CRAP 4000-K1510 cross- assembler and the CRST 4000-K1510 system, and can operate under control of the PLOS 4000 program. This system should be available to users beginning with the second quarter of 1978.
[443-6610]

6610
CSO: 1863

FOR OFFICIAL USE ONLY

USSR

UDC 681.322.06

SOME SOFTWARE PACKAGES FOR THE COMPUTATIONAL PROCESS OF A COMPUTING CENTER

Kiev VOPROSY POSTROYENIYA SETEĬ EVM I VYCHISLITEL'NYKH TSENTROV KOLLEKTIV-NOGO POL'ZOVANIYA [Problems of Designing Computer Networks and Collective-User Computing Centers] in Russian 1978 pp 34-45

VOLOSKOV, I. I., GUSEV, V. V. and OZIRNYY, V. L.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1979 Abstract No 1B149 by N. I. Valayev]

[Text] It is noted that the YeS operating system (OS) offers the user a broad range of capabilities. However, in virtue of its universality, many of the capabilities are not readily accessible, require large time inputs for information coding by the programmer, in-depth knowledge of the system and precision in work. In this connection, the personnel who work with the YeS OS are developing special facilities for the programmer and operator to simplify the use of a system that is "tied in" to local conditions.

Some of these facilities are listed: a system for handling files of a soft-ware developers' collection; YeS OS restart; a library package editor. The described system is designed for simplifying the coding of assignments that enable execution of the most necessary jobs (storage and modification of texts, translation, editing of relations, program execution, tracking of volumes on magnetic disks and magnetic tape and the data sets on these volumes).

Operation of the system is supported by a set of catalogued procedures and a set of special service programs. The YeS OS restart program is designed to minimize time expenditures on initializing and restarting uncompleted jobs. The program puts a similitude of a control point on magnetic tape, but for the overall condition of the central processor at a given instant, rather than for the job.

This condition includes the content of the computer memory and the disposi-tion of the ambient environment, i.e., the position of open sets on external media. The sets themselves are not memorized. Before loading the computer with such a copy, all external media must be in the same state as they were before making the copy.

The restart program can be used for automatic initialization of the version of the YeS OS without dialog with the operator, for automatic start of a job sequence from a delayed system queue, for continuation of jobs interrupted at the instant of loading the copy of the condition of the processor under condition that no media of the magnetic tape variety have distributed open sets at this instant.

77

FOR OFFICIAL USE ONLY

The text editor is a facility for correcting textual sets in debugging pro-
grams that are stored as divisions of a library data set on a direct-access
device. It can eliminate, modify and create divisions. The directives of
the editor are divided into controlling and service directives.

The initial division, like the edited division, remains in the library, but
with a modified name. Each recording is first subjected to the action of
service directives. Figures 2; references 2.
[15-6610]


6610
CSO: 1863




USSR                                                    UDC  681.322.06.15

PROGRAMS FOR COLLECTION AND STORAGE OF DATA FROM MULTICRATE CAMAC SYSTEMS
BASED ON M-6000 COMPUTERS

Dubna PROGRAMMY SBORA I NAKOPLENIYA INFORMATSII S MNOGOKREYTOVYKH SISTEM
KAMAK NA BAZE EVM TIPA M-6000 in Russian, Joint Institute of Nuclear Re-
search Report No 10-11525, 1978 20 pp

ANTONICHEV, G. M., BESPALOVA, T. V., GOLUTVIN, I. A., MASLOV, V. V.,
NEVSKAYA, N. A. and SHILKIN, I. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B193 (résumé)]

[Text] The paper describes a complex of programs for collecting and storing
information for servicing complex multicrate CAMAC systems organized by the
parallel method into a branch, and connected to an M-6000 computer through
a branch interface. Functioning of programs for actual modes of operation
of the CAMAC hardware is described. All programs work in the framework of
the real-time disk-operating system.

Also developed and introduced into the makeup of the real-time system are
the following programs: a generator-program of a data collection system
for multicrate CAMAC systems--the DASG7; a program for collecting informa-
tion from multicrate CAMAC systems--the SBOR7. The creation of these sys-
tems has enabled expansion of the framework for using the real-time system
of modular systems of computer facilities of the M-6000 type from the

78

FOR OFFICIAL USE ONLY

standpoint of automating complex physics experiments that include a large volume of CAMAC electronic equipment in their makeup.
[15-6610]

6610
CSO: 1863

PROGRAMS FOR FAST FOURIER, MELLIN AND FOURIER-BESSEL TRANSFORMATIONS

TKHABIOIMOV, D. K., DEBABOV, A. S., KOLOSOV, B. I. and USIKOV, D. A.

[Text]  The article presents a description of program modules that realize one-dimensional and two-dimensional discrete Fourier transforms, Mellin and Iourier-Bessel transforms, and also programs that realize the algebra of fast Fourier transformation on a computer. The programs can be used for numerical harmonic analysis of functions, and for computer synthesis of complex optical filters that simulate holographic methods of image processing.

The programs are written in FORTRAN and are included in the program library of the SOFI video image processing complex of the Institute of Space Research, Academy of Sciences USSR.
[15-6610]

6610
CSO: 1863

79

FOR OFFICIAL USE ONLY

USSR                                          UDC  681.322.06:519.68

SOME PROGRAMMING TECHNIQUES FOR THE BESM-6

Moscow NEKOTORYYE PRIYEMY PROGRAMMIROVANIYA DLYA BESM-6 in Russian, Institute of Atomic Energy, Preprint No 2862 38 pp

KUKUSHKIN, A. S.

[Text]  A system of programs is offered that intensifies the process of program debugging, which appreciably shortens calendar deadlines.  Programs are described for interruption processing that eliminates job removal from a queue due to an error in computation along with the programs associated with the job.  A set of programs is given for introducing control into the user's job stack, thus avoiding errors in translation and loading.

A description is given of programs for time check that can be used to leave a cycled problem, organize counting with continuation and so on.  Examples are given for programs written in FORTRAN.  References 14.
[444-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                              UDC  681.322.06:519.615.7

PROGRAMS FOR SOLVING PROBLEMS IN CONVEX PROGRAMMING

PROGRAMMY DLYA RESEHNIYA ZADACH VYPUKLOGO PROGRAMMIROVANIYA in Russian,
Computing Center of the Siberian Department of the Academy of Sciences USSR,
Preprint No 52, 1977 37 pp

ZABINYAKO, G. I.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B93 by V. A. Garmash]

[Text]  Part 1 presents a system of programs for a BESM-6 computer for solv-
ing convex programming problems.  The system of programs can be used to solve
problems in which only quadratic linear functions are used to assign the cri-
terion functional and constraints.  Part 2 examines a prcoedure in ALGOL for
solving more general problems of convex programming.  The procedures realize
certain variants of the method of feasible directions.  Resultr of numeri-
cal experiments are given.
[444-6610]


6610
CSO:  1863


USSR                                              UDC  681.322.06:519.615.7

ON THE PROBLEM OF DESIGNING PACKAGES OF OPTIMIZATION PROGRAMS

Moscow VOPROSY KIBERNETIKI [Problems in Cybernetics] in Russian No 33, 1978
pp 122-129

GRIGORENKO, V. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B103 by Yu. V. Vyaznikov]

[Text]  The problem of designing packages of applied programs (PPP) for the
solution of optimization problems is investigated.  The basic requirements
are formulated that must be satisfied by modern PPP's and a classification
of the latter is given.  There is a brief description of a PPP of the SAPPOR
(system for automating the process of making optimum decisions) type that

81

FOR OFFICIAL USE ONLY

makes it possible to solve problems of optimizing the designing of elec-
tronic circuits in both the package and dialog modes. A statistical optimi-
zation PPP for problems in the machine designing of semiconducting power
instruments is reported, which PPP was developed on the basis of random
search algorithms. PPP's with automatic generation with program modules
written in MAKFOR have been developed, along with PPP's of the VEKTOR-1 type
for solving a single class of discrete optimization problems. There is a
discussion of the features of the approach and the principles used as the
basis of the development of software for an automatic design system for
electrical engineering equipment; the software was realized in the form of
a PPP and the development work was done at the Scientific Research Institute
of TEZ (? Tol'yattinskiy elektroteknicheskiy Zovod) imeni M. I. Kalinin in
Tallinn. The PRIZ instrument programming system, which is based on the
UTOPIST language, was used in the development of the PPP. Also described
is the DISPOR dialog system for making optimum decisions, which was created
on the basis of this PPP. References 18.
[3-11746]


11746
CSO: 1863


USSR                                                          UDC 681.322.066

THE MS MULTIPLE ACCESS SYSTEM

Novosibirsk TEORIYA I PRAKTIKA SISTEM. PROGRAMMIR. in Russian 1977 pp 32-33

POL'TSE, KH.

[Text] The basic design concepts of an experimental, multiaccess operating
system, MS, for the unified system of electronic computers are described.
The languages ALGOL, FORTRAN and PASCAL are used within the framework of
the MS system. The system operates on the basis of internal processes, a
virtual memory and a system of user files. The smallest central processor
necessary for the operation of the MS is the YeS-1020 with a main memory
of 128 Kbytes. Figures 2.
[4-8225]


8225
CSO: 1863                              82

FOR OFFICIAL USE ONLY

A LIBRARY OF APPLIED PROGRAMS FOR THE SOLUTION OF SCIENTIFIC AND ENGINEERING
PROBLEMS IN THE DISK OPERATING SYSTEM OF THE MODULAR SYSTEM OF COMPUTER
TECHNOLOGY

Moscow FIZ-TEKHN. INSTITUT AN SSSR.  PREPRINT in Russian No 553, 1977 17 pr

AGRANOVSKAYA, I. I., BAKALEYNIKOV, L. A., BELYAYEVA, T. A., VASIL'YEVA, V. N.,
GRIGOR'YEV, V. N., GUMAN, V. N., LAPUK, N. A., POPOVA, N. K., RAMUSHINA, S. O.
and SUDAVTSEV, M. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B99 by Yu. A. Usov]

[Text]  The capabilities and composition of a library of programs are de-
scribed for the solution of problems in physics and scientific and engineer-
ing specialties using FORTRAN IV and ASSEMBLER languages, which are oriented
towards use with the YeS 1030 and M4030 computers.  The library is recorded
on magnetic tape, included in which in addition to the texts of the programs
in original form and translated program modules are the instructions for
their utilization, something which facilitates making changes and additions.
[4-8225]

8225
CSO:  1863

THE REALIZATION OF AN OPERATING SYSTEM USING A HIGH LEVEL LANGUAGE

Novosibirsk TEORIYA PROGRAMMIROVANIYA I METODY TRANSLYATSII in Russian 1977
pp 27-33

TSANG, F. R.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B108]

[Text]  [N/A]

8225
CSO:  1863

83

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

[Text]  A detailed description is given of the operating system of a multi-
processor computing complex of the El'brus-1 type.  The distinguishing fea-
tures of multiprocessor computing complexes are:  matched and interrelated
development of hardware and software, and creation of dynamic architecture
that provides "adjustment" of the system depending on the nature of jobs to
be done.

The multiprocessor computing complex uses circuitry in realizing many func-
tions with respect to controlling the solution of problems, controlling
storage and other resources.  The architecture of the multiprocessor comput-
ing complex provides for handling programs in high-level languages--ALGOL,
FORTRAN, COBOL and so on.  The operating system of the multiprocessor comput-
ing complex is written in a very high-level language (specifically AUTOCODE)
and can handle problems in many modes--package processing, multiprogramming,
remote processing, time-sharing (collective use).

An examination is made of the following aspects of the operating system of
the multiprocessor computing complex:  organization of storage, control of
processes and jobs, synchronization of processes, synchronization of proces-
sors, distribution of processors between processes, communication with the
operator and initialization of the system, file system and so on.
[443-6610]


6610
CSO:  1863


84

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

THE "ASFOR" MONITOR SYSTEM.  USER MANUAL.  PART I

Moscow MONITORNAYA SISTEMA 'ASFOR.'  INSTRUKTSIYA POL'ZOVATELYA.  CHAST' I
in Russian, Institute of Applied Mathematics, Academy of Sciences USSR,
Preprint No 114, 1977 35 pp

VETELIN, V. B. and KUSHNIRENKO, A. G.

[Text]  The paper gives the minimum set of data on the language for con-
trolling assigments and the archives of the "ASFOR" monitor system.
[444-6610]

6610
CSO:  1863

PRINCIPLES OF DESIGN AND REALIZATION OF THE OPERATING SYSTEM OF THE SPECIAL
PROCESSOR OF THE EL'BRUS-1 MULTIPROCESSOR COMPUTING COMPLEX

Moscow PRINTSIPY POSTROYENIYA I REALIZATSII OPERATSIONNOY SISTEMY SPETS-
PROTSESSORA MVK 'EL'BRUS-1' in Russian, Institute of Precision Mechanics and
Computer Technology, Academy of Sciences USSR, Preprint No 22, 1977

TSANG, F. R. and CHININ, G. D.

[Text]  An examination is made of the principles of design and realization
of the operating system of the special processor of the "El'brus-1" multi-
processor computing complex.  The operating system must provide the mode of
multiprogramming and multiprocessor data reduction; control and synchroniza-
tion of processes; unified access to data structures in the external memory
and so on.  The base language of the realization is YARMO, developed in the
direction of the modular principle of program construction and controllable
design of the objective code.

85

FOR OFFICIAL USE ONLY

The language levels in the program system are described.  The software is presented as a hierarchy of classes.  The interface of each class creates a set of concepts that characterize the properties of the class itself, and the properties of the subsequent classes that are necessary for expansion. This implies that each level of the hierarchy is a set of algorithms and special data structures that ensure execution of the instructions of the system of commands of a virtual machine of the upper level.

It is noted that the functional-logic structuring of the system by hierarchical levels, and the modular representation of each level shortens both the design process and the process of debugging the system.  References 5. [15-6610]

6610
CSO:  1863

USSR                                                              UDC  681.322.066

M-6000 SOFTWARE IN A COMPLEX FOR SIMULATION AND MODELING OF FACILITIES IN ROBOTICS

Moscow PROGRAMMNOYE OBESPECHENIYE M-6000 V KOMPLEKSE MODELIROVANIYA I MAKE-TIROVANIYA SREDSTV  ROBOTEKHNIKI in Russian, Institute of Applied Mathematics, Academy of Sciences USSR, Preprint No 131, 1977 56 pp

PAVLOVSKIY, V. YE. and GRIGOR'YEVA, N. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 8, 1978 Abstract No 8B104 by V. A. Garmash]

[Text]  The paper describes an expanded input/output system of absolute programs for M-6000 computers in a complex for simulating and modeling facilities in robotics.  The system enables combined use of standard M-6000 computer terminals with the UVVK-601 device for data input from punched tape, the YeS 7184 alphanumeric printer, and the Videoton-340 alphanumeric display.  There are also programs that enable control of the operation of the system itself from an operator console, and printout or punched tape output of the contents of arbitrary regions of the computer memory. [444-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                    UDC  621.322.066

EVALUATIONS OF VERSIONS OF DIRECT ORGANIZATION OF FILES IN THE YeS DISK
OPERATING SYSTEM

Minsk OTSENKI VARIANTOV PRYAMOY ORGANIZATSII FAYLOV V DOS YeS in Russian,
Institute of Mathematics, Academy of Sciences BSSR, Preprint No 9-41 1978
26 pp

KALININ, V. S.

TEKHNIKA No 1, 1979 Abstract No 1B148 (résumé)]

[Text]  An examination is made of versions of direct organization of files
in a direct-access memory, using the direct-access method of the YeS disk
operating system.  Five of the most effective versions are selected from
among the major ones, and estimates of the time of execution of operations
over the file are given for these, together with estimates of the average
number of accesses to a file for finding a recording and for adding a new
recording.  Tables 8; references 3.
[15-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                         UDC  681.322.066

OPERATING SYSTEM OF THE SPECIAL PROCESSOR OF THE EL'BRUS-1 MULTIPROCESSOR
COMPUTING SYSTEM COMPATIBLE WITH THE DISPAK OPERATING SYSTEM

Moscow OPERATSIONNAYA SISTEMA SPETSPROTSESSORA MVK 'EL'BRUS-1', SOVMESTIMAYA
S OS DISPAK in Russian, Institute of Precision Mechanics and Computer Tech-
nology, Academy of Sciences USSR, Preprint No 20, 1978 12 pp

TSANG, F. R.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B138 (résumé)]

[Text]  The operating system for the special processor (OSSP) of the El'brus-
1 multiprocessor computing complex (MCC) ensures compatibility of the El'brus-
1 MCC with BESM-6 computers when handling user jobs designed for the DISPAK
operating system (OS).  The compatibility of the OSSP with the DISPAK OS is
realized in the extracodes (user directives) and items of certification that
fix a given version of the DISPAK OS.

BESM-6 user programs designed for this version of the DISPAK OS can be han-
dled on the El'brus-1 MCC without any changes either in the programs them-
selves or in data preparation, since compatibility is realized on the punch-
card deck level.  The OSSP handles operation of the following hardware:  two
special processors of the El'brus-1 MCC that operate on a common external
memory field; the standard set of external devices for the El'brus-1 MCC,
and secondary storage through I/O processors.
[15-6610]

6610
CSO:  1863

88

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                        UDC 681.322.066

ORGANIZATION OF MULTIPROGRAMMING JOB EXECUTION ON M-4030 COMPUTERS IN THE
DISK OPERATING SYSTEM OF THE MODULAR SYSTEM OF COMPUTER FACILITIES

GUMAN, V. N. and KUZ'MIN, A. M.

[Text] The paper describes the organization of job execution on M-4030
computers. All users work with a common set of disk packages. Multipro-
gramming operation in the package mode is made possible by limitation of
the number of simultaneously executed jobs, and division into servicing and
background jobs.

The assignment of jobs to one group or the other, and generation of the com-
plete complex of controlling cards is done by a special program incorporated
into the operating system. The conventional set of user's controlling cards
is considerably simplified. Comparatively rapid execution of service jobs
is achieved.
[15-6610]

6610
CSO: 1863

89

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                    UDC 681.322.066

SOFTWARE FOR THE EL'BRUS-1 AND EL'BRUS-2 MULTIPROCESSOR COMPUTING COMPLEXES
AT THE NOVOSIBIRSK AFFILIATE OF THE INSTITUTE OF PRECISION MECHANICS AND
COMPUTER TECHNOLOGY

PROGRAMMNOYE OBESPECHENIYE MVK 'EL'BRUS-1' I 'EL'BRUS-2' V NF ITM i VT in
Russian, Institute of Precision Mechanics and Computer Technology, Academy
of Sciences USSR, Preprint No 25, 1978 14 pp

KATKOV, V. L.

[Text]  Research at the Novosibirsk Affiliate of the Institute of Precision
Mechanics and Computer Technology on developing software for the El'brus-1
and El'brus-2 multiprocessor computing complexes is concentrated around com-
pilers from high-level languages, data bases, the operating system of a
special processor that puts BESM-6 programs through to the multiprocessor
computing complexes, applied program packages and instrumentation.

The software developed at the Affiliate can be divided into three parts:  1)
the Strela instrumentation designed for debugging software components of
multiprocessor computing complexes on BESM-6 computers; 2) first-line soft-
ware:  compilers from ALGOL-60 and FORTRAN; program packages for numerical
analysis; operating system of the special processor that puts BESM-6 pro-
grams through to the multiprocessor computing complex; 3) second-line soft-
ware:  translator construction system; compilers from PL/1, COBOL, ALGOL-68,
SIMULA-67, ALPHA; universal interactive system from BASIC, JOSS, APL; data
base control system; applied program package (numerical analysis, analytical
computations, machine graphics).

By virtue of compatibility (from the bottom upward) of the command system
and operating systems of the El'brus-1 and El'brus-2 multiprocessor comput-
ing complexes, the software is developed for both complexes simultaneously.
[15-6610]

6610
CSO:  1863

90

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

PROBLEMS OF DEVELOPING A FAMILY OF ONE CLASS OF APPLIED PROGRAM PACKAGES
ON YeS EVM COMPUTERS

PARASYUK, I. N. and SERGIYENKO, I. V.

[Text] An examination is made of the major problems of developing a family
of one class of applied program packages for the YeS EVM computers: design
principles, input languages, working conditions, architecture of the packages
and so on. The analysis is based on the example of the SEPAK system that
is under development and consists of a family of initial data bases that
represent different object regions and facilities for automating the solu-
tion of applied problems; a generator of working program packages designed
for solution of applied problems of a given class in a certain mode; facili-
ties for handling data bases, and so on.

By means of the aggegate of these facilities, which are called a $\Sigma$-system,
effective working $\Delta$-systems are generated for a specific object region, pre-
determined computer resources, a predetermined working mode and the desired
form of representation of the results. The paper gives the user language
of a $\Delta$-system designed for statistical data reduction.
[15-6610]


6610
CSO: 1863


91

FOR OFFICIAL USE ONLY

USSR                                                UDC  681.322.066

THE OPERATING SYSTEM OF THE ROBOTRON 4000 AND ROBOTRON 4200/4201 COMPUTERS

RECHENTECHNIK/DATENVERARBEITUNG in German Vol 15 No 3, 1978 p 25

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B102 by V. M. Radunskiy]

[Text]  Some data are given for the OSKO 4200 operating system, which has
combined some of the structural components of the previously developed ESKO
4200 and VE AS 4200 control systems.  The LAD 4200-T and LAD 4200 4200-TA
load programs can be used to load the new operating system.  A table of the
characteristics of the existing and planned components of the VE AS 4200,
ESKO 4200 and OSKO 4200 operating systems is presented.  Tables 2.
[4-8225]

8225
CSO:  1863/4

USSR                                                UDC  681.322.066

EXPANDED J—PACKAGE.  HANDBOOK FOR USERS OF THE HYDRA SYSTEM

Moscow ·RASSHIRENNYY J-PAKET RUKOVODSTVO DLYA POL'ZOVATELEY SISTEMY HYDRA in
Russian, Institute of Theoretical and Experimental Physics, Preprint No 59,
1978 28 pp

APRISHKIN, YU. P., IVANOV, V. A., KIOSA, M. N., KOBZAREV, K. K., MATVEYEV,
A. F. and MIRONOV, S. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B151 (résumé)]

[Text]  The paper gives minimum information necessary to users for organiz-
ing procedures for repeated calling of processors based on BESM-6 computers
by means of subprograms of the expanded J-package of the HYDRA system.
[15-6610]

6610
CSO:  1863

92

FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.322.066

ADAPTATION OF A DISK OPERATING SYSTEM FOR THE M-400 COMPUTER FOR THE CASE
OF ACCESS TO THE DISK THROUGH A COMMUNICATIONS LINE

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY, DUBNA.  SOOBSHCHENIYA
in Russian No  R10-11241, 1978 14 pp

NAMSRAY, YU. and OSTROVNOY, A. I.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B104]

[Text]  An M-400 communications line driver from the PDP-11/20 is described.
The driver was utilized as a system unit driver and inserted in the resident
portion of the monitor, working with the M-400 computer.  The driver meets
the standards for the adapted operating system.  References 3.
[4-8225]

8225
CSO:  1863

USSR                                                    UDC  681.322.066

THE ADAPTATION OF A DISK OPERATING SYSTEM FOR THE M-400 COMPUTER FOR THE
CASE OF ACCESS TO THE DISK THROUGH A COMMUNICATIONS LINE.  4.  THE INTER-
PRETER PROGRAM

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY, DUBNA.  SOOBSHCHENIYA
in Russian No R10-11242, 1978 8 pp

GERGEI, E., MEZEI, I. and SALAMATIN, I. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B109]

[Text]  A program is described which provides computers connected to a type
PDP-11/20 computer with access to its peripherals.  The program was devel-
oped for PDP-11/20 computers for the purpose of using the RT-11 disk operat-
ing system for the M-400 machines which do not have disk stores, but which
are provided with equipment for tying in to type PDP-11/20 computers.
[4-8225]

8225
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                           UDC 681.322.066

USE OF 'CODASYL' FOR DESCRIBING THE STRUCTURE OF AN OPERATING SYSTEM

Moscow INSTITUT PRIKLADNOY MATEMATIKI AKADEMII NAUK SSSR in Russian, Preprint No 6, 1979 54 pp

MAKLASHIN, O. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHNIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, Jul 79 Abstract No 7B162]

[Text]  Considered is the feasibility of a structure which will describe a "point of departure" operating system in the CODASYL data description language.  The need for expanding this language and ways to do it are demonstrated.  The basic mechanisms of such an operating system are also described. [39-2415]

2415
CSO:  1863

USSR                                                           UDC 681.322.068

DATA STRUCTURES OF A REMOTE DISPLAY STATION

Dubna STRUKTURY DANNYKH UDALENNOY DISPLEYNOY STANTSII in Russian, Joint Institute of Nuclear Research, Report Preprint No 10-10946, 18 pp

KARLOV, A. A. and POLYNTSEV, A. D.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 8, 1978 Abstract No 8B137 (résumé)]

[Text]  The paper describes the structures of data used in local software of a remote display station based on a small M-6000 computer connected to a central BESM-8 computer through a communication channel.  A description is given of chains, queues, stacks, and tables, and techniques are presented for information storage as well as methods of access to it.  All the facilities described in the work are realized in the form of a set of individual subprograms that may be of interest to users of the M-6000 computer. [444-6610]

6610
CSO:  1863                              94

USSR                                                          UDC  681.322.068

SOME QUESTIONS IN THE REFINEMENT OF IMITATIVE MODELING METHODS

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN in Russian No 61,
1977 pp 80-82

KAROL', V. L.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B199 by M. V. Yevdokimenko]

[Text]  Questions of expanding the capabilities of modeling languages by
means of tying them to conventional algorithmic languages (using the example
of SIAS-FORTRAN) are treated, as well as questions of increasing the relia-
bility of the modeling results by taking into account the process transient
time in the model.  A method is proposed for determining the moment the
transient process is completed, based on the following presuppositions:  1)
The distribution function of the time of message travel from one fixed point
of the model to another is continuous; 2) When a steady-state mode is estab-
lished in the model, the distribution function of the travel time between
fixed points for a sample of n messages is identical to that of next nonover-
lapping sample also of n messages.  References 3.
[4-8225]

8225
CSO:  1863

USSR                                                          UDC  681.322.068

LANGUAGE ASPECTS OF THE REALIZATION OF LARGE PROGRAMMING SYSTEMS

Novosibirsk TEORIYA PROGRAMMIROVANIYA I METODY TRANSLYATSII in Russian
1977 pp 6-26

CHININ, G. D.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B162]

[Text]  [N/A]

8225
CSO:  1863

95

FOR OFFICIAL USE ONLY

USSR                                                                    UDC 681.322.068

INTERPRETING PROGRAM FOR THE BESM-6

MATEMATICHESKIYE VOPROSY UPRAVLENIYA PROIZVODSTVOM [Mathematical Questions on the Control of Production] in Russian No 7, 1977 pp 110-115

BIRYULIN, P. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 9, 1978 Abstract No 9B138 by S. R. Romanova]

[Text] An interpreter for computers of the BESM-6 type is considered. The interpreter for the BESM-6 can be the programming means for human interaction with the computer in connection with both individual and collective use; the latter applies if the collective is working on the same problem. References 5.
[3-11746]

11746
CSO: 1863

USSR                                                                    UDC 681.322.068

ASTRA. BASIC TYPES OF DATA. PROPERTIES. ADDITIONAL CAPABILITIES

Moscow ASTRA. BAZOVYYE TIPY DANNYKH. SVOYSTVA. DOPOLNITEL'NYYE VOZMOZHNOSTI in Russian, Institute of Applied Mathematics, Academy of Sciences USSR, Preprint No 132, 1977 27 pp

MIKHELEV, V. M. and VERSHCHUBSKIY, V. YU.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 8, 1978 Abstract No 8B201 (résumé)]

[Text] The paper describes additional capabilities of ASTRA language; the introduction of these capabilities involves solution of problems in systems programming and control. Additional data are given on the ASTRA and MACRO-CODE languages that have not been adequately covered in previous works.
[444-6610]

6610
CSO: 1863

96

FOR OFFICIAL USE ONLY

USSR                                                        UDC  681.322.068

WORKING WITH MAGNETIC TAPE.   (MATERIALS ON SOFTWARE)

RABOTA S MAGNITNOY LENTOY.   (MATERIALY PO MATEMATICHESKOMU OBESPECHENIYU)
in Russian, Physicotechnical Institute, Academy of Sciences USSR, Preprint
No 550, 1977 31 pp

GRIGOR'YEV, V. N. and KUZ'MIN, V. N.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B163 by V. T. Mitroshina]

[Text]  Facilities for working with magnetic tape are described for users
of M-4030 computers.  Facilities are described that are offered in FORTRAN
and the DOS-20 system for working with files on tape without tags and with
standard tags.  The paper also describes the specially developed ENDFND,
FYLFND, NUMEND and NUMFIL programs that enable more effective use of tape
with standard tags.
[443-6610]


6610
CSO:  1863


USSR                                                        UDC  681.322.068

ON THE ESSENCE OF TRANSLATION

O SUSHCHNOSTI TRANSLYATSII in Russian, Computing Center, Siberian Department
of the Academy of Sciences USSR, Preprint No 61, 1977 33 pp

YERSHOV, A. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B164 by I. V. Shevchenko]

[Text]  An attempt is made to explain the essence of generation and a con-
siderable part of optimization (as a phase of translation) using the con-
cept of mixed computation introduced as a fundamental concept inherent in
algorithmic languages.

FOR OFFICIAL USE ONLY


An examination is made of questions of deriving an objective code directly
from the interpretational semantics of a language, some important kinds of
directed optimization, and also the systematic derivation of translational
semantics from interpretational semantics.  A survey is given of other re-
search having a bearing on the investigated topic.  References 25.
[443-6610]


6610
CSO:  1863

[Text]  A program is described for constructing tests for synchronous cir-
cuits.  The program realizes a test construction technique for discrete de-
vices that is based on calculating the a-stacks of the system.  An a-stack
that corresponds to input set X is the term used for the vector $C_1$, $C_2$,...,
$C_p$, where p is the number of output circuits of the system.  If $C_i$ = a, then
the input vector X corresponding to the a-stack detects a malfunction of the
fixed-one (or fixed-zero) type in an i-circuit.  If $C_i$ = 0, 1 or X, then the
input vector X does not detect an isolated constant malfunction in the i-
circuit.  A synchronous circuit on K cycles is represented in the form of a
reiterated combination system that has p x K circuits.  The system is as-
signed by using three lists:  a list of description of circuits, a list of
description of logic components and a list of descriptions of branching nodes.
The output information of the test construction program is the aggregate of
sequential input and output signals of the system and the aggregate of lists
of malfunctions detected by each sequence.

The programs are written in PL/1 language of the disk operating system for
YeS EVM computers.  Program volume is about 38 kilobytes.  In the case of a
dynamic memory capacity of 64 kilobytes, tests can be constructed for systems

98

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

that contain 20-34 ICs with small-scale and medium-scale integration. With an increase in dynamic memory capacity to 256 kilobytes, the program can be used to construct tests for systems that contain up to 100 ICs. References 2.
[443-6610]

6610
CSO: 1863

USSR                                                                UDC 681.322.068

COMPLEX OF SERVICE PROGRAMS FOR THE SETUN'-70 COMPUTER

VYCHISLITEL'NAYA TEKHNIKA I VOPROSY KIBERNETIKI in Russian No 14, 1977 pp 18-26

KARTSEVA, N. S. and AL'VARES, KH. RAMIL'

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, 1978 Abstract No 7B173 (résumé)]

[Text] The article describes a package of service programs realized on the Setun'-70 small computer. These programs can be debugged with the use of a magnetic drum, and also permit editing of the debugged program. The structure of the complex is examined, and the possibilities are described for the directives realized in the package. Figure 1; tables 3; references 2.
[443-6610]

6610
CSO: 1863

FOR OFFICIAL USE ONLY

MIR-74 ALGORITHMIC LANGUAGE

GLUSHKOV, V. M., GRINCHENKO, T. A., DORODNITSYNA, A. A., DRAKH, A. M., KAPITONOVA, YU. V., KLIMENKO, V. P., KRES, L. N., LETICHEVSKIY, A. A., POGREBINSKIY, S. B., SAVCHAK, O. N., STOGNIY, A. A., FISHMAN, YU. S. and TSARYUK, N. P.

[Text]  The authors consider algorithmic language MIR-74 oriented for description of algorithms of solution of engineering and research problems as the input language for a MIR-3 computer model 31.  The language is close to the customary language of mathematics for engineers, is simple to learn and to program.  As is the rule in algorithmic languages, the units of action in MIR-74 are operators.

With respect to the nature of actions, the operators are subdivided into operators for calculation, control of algorithmic processes, and output operators with an abundant set of facilities for editing information and so forth.  MIR-74 is an arithmetical subset of ANALITIK-74.  MIR-74 is designed for realization by an interpretive translator.
[443-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                        UDC 681.322.068

FORTRAN PROGRAMMING OF I/O OPERATIONS ON MAGNETIC TAPE

Moscow PROGRAMMIROVANIYE NA FORTRANE OPERATSIY VVODA-VYVODA NA ML in Russian, Institute of Space, Research, Academy of Sciences USSR, Preprint No 362, 1977 9 pp

GOROKHOV, V. N.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 8,  1978 Abstract No 8B211 (résumé)]

[Text]  A manual is presented on using the MTCFF subprogram designed for executing I/O operations in FORTRAN on magnetic tape in the YeS EVM disk operating system.

This program can be used to execute any I/O operations that are of interest to the problem programmer--recording, readout in the forward and reverse directions, various control operations, whereas the facilities of the FORTRAN language itself for these purposes are limited.  The subprogram can also be used in programs that are transcribed in other programming languages.
[444-6610]

6610
CSO:  1863

USSR                                                        UDC 681.322.068

LEXICAL ANALYSIS OF PROGRAMMING LANGUAGES

VYCHISLITEL'NAYA TEKHNIKA I VOPROSY KIBERNETIKI in Russian No 14, 1977 pp 47-53

ALEKSANDROV, A. L. and ALEKSANDROVA, O. K.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 8, 1978 Abstract No 8B218 by S. G. Romanova]

[Text]  An examination is made of the problem of lexical analysis as applied to SIMPR programming languages.  The METALEKS language is proposed, which is an expansion of METASINT, and enables assignment of information that controls the operation of the lexical analyzer.  The METALEKS language facilitates writing and debugging of blocks of the lexical analyzer of

FOR OFFICIAL USE ONLY

translators, and can be used to create documentation on this block of trans-
lators. The language is intended for use in translators from SIMPR program-
ming languages. The syntax, semantics and pragmatics of individual compo-
nents of the language are described. An example of use of the METALEKS
language is given. References 4.
[444-6610]

6610
CSO: 1863

USSR                                                              UDC 681.322.068

SINGENT METASYNTACTIC LANGUAGE

VYCHISLITEL'NAYA TEKHNIKA I VOPROSY KIBERNETIKI in Russian No 14, 1977 pp
38-47

KAUFMAN, V. SH. and SIDOROVA, T. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B219 by S. G. Romanova]

[Text] The paper describes the SINGENT language which is a development of
the descriptive capabilities of the Beckus-Naur form (BNF) and is a lan-
guage for describing the syntax of programming languages. It is designed
for documenting the syntax of programming languages, and ensures conveni-
ence in writing and debugging the working syntax of a translator.

The SINGENT language uses the descriptive capabilities of BNF and METASINT.
It incorporates new descriptive capabilities that are designed for conveni-
ence for people in writing and perception of the text in SINGENT, and more
complete reflection of the properties of the described language.

SINGENT enables: 1) Compact representation of sets of input symbols,
samples, iterations and permutations; 2) More exact reflection of the pe-
culiarities of the described language by finite and limited iteration and
explicit introduction of semantics; and 3) Access to syntactic elements
by identification, using selectors. It is noted that an advantage of the
language is uniformity of the entire aggregate of descriptive capabilities,
both borrowed and newly introduced. References 1.
[444-6610]

6610
CSO: 1863                                   102

USSR                                                    UDC 681.322.068

A COMPILER FROM COBOL LANGUAGE FOR THE EL'BRUS-1 MULTIPROCESSOR COMPUTING
SYSTEM

Moscow KOMPILYATOR S YAZYKA KOBOL DLYA MVK 'EL'BRUS-1' in Russian, Insti-
tute of Precision Mechanics and Computer Technology, USSR Academy of Sci-
ences, Preprint No 23, 1978 20 pp

PERVIN, YU. A. and KHOPERSKOV, A. YE.

[Text]  The compiler of COBOL-VK language is only one of the modules of a
programming system that provides for both an increase in the modules of
the compiler and an expansion of the system through pre- and post-proces-
sors.  There are language facilities for input from COBOL language to any
language defined by the realization.  References 5.
[15-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY


USSR                                                          UDC 681.322.068

EMULATION OF PDP-6 MINICOMPUTER PROGRAMS ON YeS COMPUTERS, HANDBOOK FOR
USERS

EMULYATSIYA PROGRAM MINI-EVM TIPA PDP-6 NA YeS EVM.  RUKOVODSTVO DLYA POL'-
ZOVATELEY in Russian, Physics Institute, Academy of Sciences USSR, Preprint
No 75, 1978 14 pp

STUPIN, YU. V.

[Text]  A method is proposed for emulating PDP-8 [sic] minicomputer pro-
grams on YeS EVM computers.  A brief description is given of the working
principle of the system of program emulation.  It is stated that at the
present time four modes have been created for user operation with the pro-
gram emulation system.  A description of the order of work in these modes
is given.  Examples are given of program operation on YeS EVM computers.
Figures 7.
[15-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                        UDC 681.322.068

REALIZATION OF ALGOL-60 AND FORTRAN ON THE "EL'BRUS-1" MULTIPROCESSOR
COMPUTING SYSTEM

Moscow REALIZATSIYA YAZYKOV ALGOL-60 I FORTRAN NA MVK 'EL'BRUS-1' in Rus-
sian, Institute of Precision Mechanics and Computer Technology, Academy of
Sciences USSR, Preprint No 21, 1978 16 pp

DYATLOVA, L. G., KOZHUKHINA, S. K., LESOVAYA, I. F., PEN'KOVA, L. N.,
PETRASHKOVA, N. YU., ROMANISHINA, N. M., SIDOROVA, N. A. and SHISHOVA, N. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B171 (résumé)]

[Text]  The basic principle in development of compilers from ALGOL-60 and
FORTRAN for the "El'brus-1" multiprocessor computer complex is the princi-
ple of simple and rapid compilation.  In this connection, a single-pass
compilation scheme is selected for FORTRAN, and a two-pass scheme is select-
ed for ALGOL with one-pass compilation capabilities.  Although the compilers
are non-optimizing, they can produce local optimization that utilizes the
peculiarities of the command system (for example programming cycle headings,
decision boxes, conditional operators).

The compilers are written in autccode for the "El'brus-1" multiprocessor
computing complex, and are built up from recursive procedures that are
called up on the basis of descending analysis of the initial text.  The
compilers are designed for operation in a package mode, but fast compila-
tion can give the user the illusion of a dialog in the time-sharing mode,
although his program will be newly compiled each time.  Figures 3.
[15-6610]


6610
CSO:  1863


105

FOR OFFICIAL USE ONLY

USSR                                                          UDC 681.322.068

ADAPTATION OF A FORTRAN PROGRAM LIBRARY FOR M-4030 COMPUTERS

Kresty ADAPTATSIYA BIBLIOTEKI PROGRAMM NA FORTRANE DLYA EVM M-4030 in Russian,
Institute of Nuclear Research, Academy of Sciences USSR, Preprint No 0089,
1978 23 pp

SKASYRSKAYA, A. YE., PETRAKOV, S. A. and TSYBRENKO, G. N.

[Text]  The characteristics of the CERN library of standard subprograms are
briefly presented.  The particulars of formulation of this library on the
M-4030 computer are described.  An examination is made of the interaction
of the library with the disk operating system of the Modular System of Com-
puter Facilities.  The library adapted in this way can be used on the YeS
EVM computers.
[15-6610]


6610
CSO:  1863




USSR                                                          UDC 681.322.068

THE "ASFOR" MONITOR SYSTEM.  COMMAND LANGUAGE, COMMAND SYSTEM

Moscow MONITORNAYA SISTEMA 'ASFOR.'  KOMANDNYY YAZYK.  KOMANDNAYA SISTEMA
in Russian, Institute of Applied Mathematics, Academy of Sciences USSR,
Preprint No 49, 1978 51 pp

BETELIN, V. B.

[Text]  A survey is given of a number of existing command languages and com-
mand systems.  Principles of organization are described for the command sys-
tem and command language of the ASFOR system developed for use in a universi-
ty computing center.  Figures 1.
[15-6610]

6610                                      106
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                              UDC 681.322.068

THE M-220 INTERPRETER BASED ON THE BESM-6

Moscow INTERPRETATOR M-220 NA BESM-6 in Russian, Institute of Atomic Energy,
Preprint No 2952, 1978 16 pp

BATRAKOV, S. V., VLADIMIROV, V. V., KHAYRUTDINOV, A. KH. and SHALENINOV,
A. A.

[Text] A means is described for controlling an interpreter of programs
operating in the "DUBNA" monitor system on BESM-6 computers. Brief charac-
teristics are given, and also information required for users on interpret-
ing operation with external memories of M-220 computers.
[15-6610]


6610
CSO: 1863


USSR                                                              UDC 681.322.068

REPRESENTATION OF OBJECTS IN COPROGRAM-WRITING LANGUAGE

Moscow PREDSTAVLENIYE OB'YEKTOV V YAZYKE NAPISANIYA KOPROGRAMM in Russian,
Moscow Aviation Institute, 1978 46 pp (manuscript deposited in VINITI No
2718-78 Dep., 14 Aug 78)

YUDIN, S. M.

[Text] Coprograms realize the actions of the period of generation for
MAKFOR IV, which is a macro-expansion of FORTRAN IV and a development of
the MAKFOR language (see Ref. zh. Matematika, 1975, Abst. No 5V959). The
macrodefinitions of MAKFOR IV are first converted to internal representa-
tion in which the macroprocessing is done.


107

FOR OFFICIAL USE ONLY

The coprograms perform the transformations of the internal representation stipulated by the programmer.  The coprogram-writing language defines operators of exchange between the internal representation of the macrodefinition and FORTRAN storage, and also defines the system of representation of objects of the macrodefinition in the FORTRAN memory.  Various groups of objects are distinguished such as formal parameters and micro-objects, constants, expressions and so on.

The properties of objects are classified.  An economic representation is worked out for each group of objects, which is based on prefix notation. The system of representation of objects simplifies analysis of the macrodefinition and construction of new objects in execution of macroprocessing in MAKFOR IV.  References 2.
[15-6610]

6610
CSO:  1863

USSR                                                                        UDC  681.322.068

BASIC CAPABILITIES OF MAKFOR IV LANGUAGE

Moscow OSNOVNYYE VOZMOZHNOSTI YAZYKA MAKFOR IV in Russian, Moscow Aviation Institute, 1978 24 pp (manuscript deposited in VNITI No 2717-78, 14 Aug 78)

GAYSARYAN, S. S. and YUDIN, S. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1979 Abstract No 1B267DEP by the authors]

[Text]  MAKFOR IV is a macro-expansion of FORTRAN IV, and a development of MAKFOR (Ref. zh. Matematika, 1975, Abst. No 5V959).  Four macro-operators are introduced:  an INSERT macrocall operator; a DEFINE macrovariable operator; an APPLY operator for execution of actions of the period of generation; a DELETE operator for deletion.  MAKFOR IV does not impose constraints on the FORTRAN IV base language.

The rules of formation of the macrodefinition of MAKFOR IV are an expansion of the rules of formation of a program unit of FORTRAN IV.  The macrodefinition of MAKFOR IV, like the program unit of FORTRAN IV, may have several inputs.  Different descriptions are permitted for formal procedures and

macrovariables in the different inputs, from which the one corresponding to
a selected input is selected when the macrodefinition is called for.

The actions of the period of generation are realized by means of coprogram
that can modify the description of the macrodefinition in an arbitrary way.
MAKFOR IV is designed for users that are acquainted with FORTRAN, and can
be used to write macrodefinitions in developing applied program packages,
and also in developing software for nonprocedural languages of communication
with the computer.
[15-6610]

6610
CSO: 1863

USSR                                                             UDC 681.322.068

DESCRIPTION OF SUBPROGRAMS IN THE EXPANDED J-DECK OF THE 'HYDRA' SYSTEM

Moscow INSTITUT TEORETICHESKOY I EKSPEERIMENTAL'NOY FIZIKI in Russian,
Preprint No 167, 1978 33 pp

ARPISHKIN, YU. P., IVANOV, V. A., KIOSA, M. N., KOBZAREV, K. K., MATVEYEV,
A. F. and MIRONOV, S. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract No 7B171]

[Text] A description is given of subprograms in the expanded J-deck of the
HYDRA system. An example is shown of using these subprograms for segmentiza-
tion, and a variant of the CRADLE deck for assembling subprograms of the J-
deck on a BESM-6 high-speed computer. The reader is assumed to be familiar
with principles of the HYDRA system and the PATCHY system, also with pro-
gramming in FORTRAN.
[39-2415]

2415
CSO: 1863

USSR                                                          UDC  681.322.068

AUXILIARY SOFTWARE SYSTEM FOR THE PDP-8 BASED ON THE ICL-1900 (COCODU)

Serpukhov VSPOMOGATEL'NAYA SISTEMA MATEMATICHESKOGO OBESPECHENIYA DLYA PDP-
8 NA ICL-1900 (COCODU), in Russian, Institute of High-Energy Physics, Pre-
print No OMVT and OEA-63, 1978 15 pp

ABRAMOV, A. G., VOLCHKOV, V. M., SOLOV'YEV, V. YE. and SUKHOV, YE. G.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B187]

[Text]  The architecture of the COCODU system is described; its character-
istics are given.  The system is designed for compiling texts of programs
written in accelerated assembler.
[15-6610]

6610
CSO:  1863

USSR                                                          UDC  681.322.068

APAS AUTOCODE

Moscow AVTOKOD APAS in Russian, Institute of Applied Mathematics, Academy
of Sciences USSR, 1978 61 pp

MIKHALEV, V. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B216 by I. V. Shevchenko]

[Text]  The book describes the language called APAS [Avtokod Protsessora
Apparatury Sopryazheniya; connecting system processor autocode] for record-
ing commands of a computer that has the following peculiarities:  dynamic
loading of modules; several register memories with varying data structure;
the possibility of addressing with accuracy to a word, semiword, byte and
digit; large variety of the lengths of addressable objects in the dynamic
memory; complex structure of commands, and presence of commands with long
and short addresses.
[443-6610]

6610
CSO:  1863

USSR                                                          UDC 681.322.068

DESCRIPTION OF POPLAN LANGUAGE. PART I

Moscow OPISANIYE YAZYKA POPLAN. CHAST' I in Russian, Institute of Applied
Mathematics, Academy of Sciences USSR, Preprint No 12, 1978 45 pp

BAYAKOVSKIY, YU. M., V'YUKOVA, N. I., GALATENKO, V. A. and KHODULEV, A. B.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B194 (annotation)]

[Text] A formal description is given of POPLAN programming language. The
grammatical constructions are described with the use of syntactic graphs.
Semantics is illustrated by examples in many cases. The syntax and semantics
of declarations are described, and also functions and basic controlling struc-
tures. Data structures, macro-facilities and input/output capabilities are
described.
[444-6610]

6610
CSO: 1863

USSR                                                          UDC 681.322.068

EDITING AND DEBUGGING OPERATORS FOR THE NAIRI FAMILY OF DIGITAL COMPUTERS

TRUDY NII RADIO in Russian No 1, 1978 pp 98-104

FADEYEV, O. F.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B202]

[Text] The algorithms of two supplemental operators are described, which
represent the components of systemic processing programs for the "Nairi"
computer family. The Operator OTLADKA... [DEBUGGING...] is used in three
modes, and facilitates and simplifies the work of the programmer in debug-
ging programs, composed in the AP language. The REDAKTOR... [EDITOR...]
operator permits reviewing the working text of the operator program and
making the requisite changes, producing a higher quality program from the
text proposed for editing. Figures 2; references 4.
[4-8225]

8225
CSO: 1863                        FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                        UDC  681.322.068

A DESCRIPTION OF THE POPLAN LANGUAGE.   PART 2

Moscow INSTITUT PRIKLADNOY MATEMATIKI AN SSSR. PREPRINT in Russian No 38,
1978 53 pp

BAYAKOVSKIY, YU. M., V'YUKOVA, N. I., GALATENKO, V. A. and KHODULEV, A. B.

[Text]  A formal description is given for the POPLAN programming language.
The structural grammatical features are described by means of syntactical
graphs.  The semantics in many cases is illustrated simply with the appro-
priate examples.  The first part of the description was devoted primarily
to those features of the POPLAN language which determine its similarity to
such languages as ALGOL or FORTRAN (the syntax and semantics of statements,
functions and basic controlling structures).  The second part is devoted to
the specific features which distinguish the POPLAN language from traditional
languages:  the data structures, macropackages and input/output capabilities.
Reference materials are included in the appendix.
[4-8225]


8225
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                        UDC 681.322.068

A COMPILER FROM PL/1 LANGUAGE FOR THE EL'BRUS-1 MULTIPROCESSOR COMPUTING
SYSTEM

BEZHANOVA, M. M.

[Text] An examination is made of a compiler from PL/1 language for the
El-brus-1 multiprocessor computing complex. An analysis is made of the
major purposes of developing the PL/1 compiler, including convenience of
using the system, which leads to an increase in the rate of debugging of
programs, and also convenience in constructing and modernizing the system.
An examination is made of the principal parts of the system, the compilation
circuit, problems of internal representation of the program to be processed.
Modes of operation of the compiler and methods of assigning them are de-
scribed.

It is noted that for the sake of convenience in using the system and in-
creasing the rate of debugging of programs, particular attention is given
to the detection of errors in the program being processed, correction of
these errors and output of messages concerning these errors in a form that
is convenient and understandable for the user. It is pointed out that at
the present time a larger number of algorithm of the compiler have been
formally described. The description is given in PL language of systems pro-
gramming--a compact and effective subset of PL/1. Such a description enables
realization of construction and debugging of the compiler by the method of
unwinding. References 8.
[15-6610]

6610
CSO: 1863

113

FOR OFFICIAL USE ONLY

USSR                                                          UDC  681.322.068

EDITING LOADING MODULES IN THE MINSK-32 PROGRAMMING SYSTEM

Serpukhov REDAKTIROVANIYE ZAGRUZOCHNYKH MODULEY V SISTEME PROGRAMMIROVANIYA
MINSK-32 in Russian, Institute of High-Energy Physics, Preprint No OMVT-93,
1978 11 pp

ABDULLIN, I. Z., GADETSKIY, O. G. and NIKITIN, S. G.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B158 (résumé)]

[Text]  The paper discusses the feasibility of improving the efficiency of
a programming system by editing loading modules.  A description is presented
of the corresponding program for Minsk-32 computers.  References 6.
[15-6610]


6610
CSO:  1863




USSR                                                          UDC  681.322.068

PROBLEMS OF USING THE FOR32 TRANSLATOR TO TRANSLATE PROGRAMS INTO FORTRAN

GODISHN. SOFIYSK. UN-T. FAK. MAT. I MEKH., 1973-1974 in Bulgarian No 68,
1977 pp 273-282

BURNEVA, MARGARITA

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B156]

No text
[15-6610]


6610
CSO:  1863

USSR                                                    UDC 681.322.068

A MONITOR SYSTEM

MONTIRONAYA SISTEMA in Russian, Physics Institute, Academy of Sciences USSR,
Preprint No 57, 1977 61 pp

YURCHENKO, V. V.

[Text]  A brief description is given of algorithms, memory distribution,
identifiers and working tables of ASSEMBLER and CORRECTOR programs of a
programming monitoring system for the "Dnepr-21" computer.
[444-6610]


6610
CSO:  1863




USSR                                                    UDC 681.322.068

ON THE PROBLEM OF EVALUATING THE EFFECTIVENESS OF USING MICROPROGRAMMING
IN UNIVERSAL COMPUTERS

Minsk AVTOMATIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, 1977 pp 134-138

ASTSATURVO, R. M., NEMYTOV, B. V., VIRT, V. A. and LOZOVIK, M. S.

[Text]  The paper presents the results of an analysis of the possibilities
of microprogramming for computers with structure of microcommands oriented
toward support of dynamic microprogramming based on a dynamic microprogram
memory.  The studies were done to determine the feasibility of micropro-
gramming for the YeS-1035 computer with the distinguishing feature that the
same fields in different microcommands perform different functions that are
provided with absence of attachment of the fields to equipment.  The absence
of attachment of fields to equipment reduces the length of the microcommand.


115

One of the objects of the research was to calculate a polynomial by Horner's method that allows fairly complete evaluation of the possibility of micro-programming. The given algorithm requires the use of arithmetic operations (multiplication, addition, subtraction and so on), as well as organization of programs with repeated sections, with conditional and unconditional branchings. The effectiveness of microprogramming was evaluated by compara-tive analysis of programs written in ASSEMBLER and in the microprogramming language. Figures 2; tables 1; references 2.
[444-6610]

6610
CSO: 1863

KUTSENKO, A. V. and KUTSENKO, V. A.

[Text]  The subprogram is written for operation with a specialized control-ler crate 9030 made by Nuclear Enterprises, the 3992/3994 sequential main-line driver made by Kinetic Systems, type L1/9080/ controller crates and the DEC RT-II Fortran operating system. The subprogram transmits control commands and data to modules situated in any of the crates of the sequential mainline.

The state of lines Q and X in the addressable crate is monitored and veri-fied in values of special arguments. The CAMAC subprogram call format is described, and the characteristics of the arguments are briefly stated.
In addition to the possibility of operation with any module, the subprogram can perform any standard operations defined for a type L1 controller. A block diagram is given for the configuration of the system including the described equipment, together with an example of utilization of the sub-program. Figures 2.
[444-6610]

6610
CSO: 1863

USSR                                                    UDC  681.322.068

EDITOR OF TEXTS ON A SMALL COMPUTER

VYCHISLITEL'NAYA TEKHNIKA I VOPROSY KIBERNETIKI in Russian No 14, 1977
pp 26-28

AL'VARES, RAMIL' KH.

[Text]  An examination is made of a text editor for a type Setun'-70 compu-
ter.  The system is designed for preparing and editing texts.  The direc-
tives of the editor and their program realization are described.  A flow-
chart is given of the editor program.  Figures 3; tables 1; references 7.
[444-6610]


6610
CSO:  1863




USSR                                                    UDC  681.322.068

LOCAL SOFTWARE FOR A REMOTE DISPLAY STATION

Dubna LOKAL'NOYE MATEMATICHESKOYE OBESPECHENIYE UDALENNOY DISPLEYNOY STANT-
SII in Russian, Joint Institute of Nuclear Research, Report Preprint No
11-10967, 1977 31 pp

KARLOV, A. A. and POLYNTSEV, A. D.

[Text]  The paper describes local software of a display station based on a
small M-6000 computer connected to a central BESM-6 computer through a com-
munication channel.  A description is given of special software designed
for organizing control of the display station in accordance with commands
coming from the central computer and from the human operator.

A method is proposed for realizing asynchronous control for the display
system, which may find application in development of software for data
transmission systems.
[444-6610]

6610
CSO:  1863                   FOR OFFICIAL USE ONLY

USSR                                                    UDC 681.322.068

BASIC PRINCIPLES OF SOFTWARE FOR THE EL'BRUS MULTIPROCESSOR COMPUTING
COMPLEXES

Moscow OSNOVNYYE PRINTSIPY PROGRAMMNOGO OBESPECHENIYA MVK 'EL'BRUS' in
Russian, Institute of Precision Mechanics and Computer Technology, Academy
of Sciences USSR, Preprint No 5, 1977 11 pp

BABAYAN, B. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7 Abstract No 7B134 (résumé)]

[Text] Materials of a report delivered at the conference-seminar on soft-
ware for El'brus multiprocessor complexes held in Novosibirsk, 28-31 January
1976.
[443-6610]


6610
CSO: 1863



USSR                                                    UDC 681.322.068

REPRESENTATION OF A FORTRAN PROGRAM UNIT IN PL/1 LANGUAGE

Sverdlovsk PREDSTAVLENIYE PROGRAMMNOY YEDINITSY FORTRANA NA YAZYKE PL/1 in
Russian, Ural University, Sverdlovsk, 1977 20 pp (manuscript deposited in
VINITI No 681-78 Dep., 28 Feb 78)

ORLOVA, N. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B19DEP by the author]

[Text] The paper describes mapping of a program unit meeting the require-
ments of the FORTRAN standard into PL/1 language. Definition of arithmetic
and logic constructions that are equivalent in value in the FORTRAN and PL/1
languages is introduced. Images of performable operators of FORTRAN are
described together with methods of PL/1 representation of data contained in
nonperformable FORTRAN operators. The mapping may serve as a basis for

FOR OFFICIAL USE ONLY

realization of a processor that automatically translates a program from
FORTRAN to PL/1. References 7.
[444-6610]

6610
CSO: 1863

USSR                                                    UDC 681.323.06:621.317.018.4

EXPERIENCE IN OPERATIONAL DEVELOPMENT OF SOFTWARE FOR A SYSTEM OF AUTOMATION
BASED ON THE SM-3 AND CAMAC HARDWARE

Moscow PERVYY VSESOYUZNYY SIMPOZIUM PO MODUL'NYM INFORMATSIONNO-VYCHISLITEL'-
NYM SISTEMAM, MOSKVA, 1977 [First All-Union Symposium on Modular Computer-
Information Systems, Moscow 1977] in Russian 1978 p 51

LOZYUK, V. S. and PANKRATS, YE. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1A575 (résumé)]

[Text] The system consists of a submillimeter Fourier spectrometer, an SM-3
minicomputer with operational memory of 28K-word capacity, special peripheral
equipment--digital voltmeter, oscilloscope for real-time display of the spec-
trum, two-coordinate chart recorder, hardware in the CAMAC standard for con-
trolling the spectrometer and auxiliary equipment, and a sectional voltmeter
of the JCC type.

Software jobs include: checking and adjustment of equipment; information
input and recoding; real-time inverse Fourier transformation with display
of the resultant signal on the oscilloscope screen; output of the spectrum
and interference pattern to a graph plotter. The software has a two-level
structure. References 2.
[15-6610]

6610
CSO: 1863

119

FOR OFFICIAL USE ONLY

AN ALGORITHM FOR CONSTRUCTION OF A DIGITAL COMPUTING COMPLEX OF INTEGRATING
TYPE FOR REAL-TIME SEQUENTIAL ESTIMATION OF THE COORDINATES OF AN OBJECT

ODNORODNYYE TSIFROVYYE VYCHISLITEL'NYYE I INTEGRIRUYUSHCHIYE STRUKTURY in
Russian No 8, 1977 pp 61-67

P'YAVCHENKO, T. A., FLEKSER, Z. M. and KOZUPEYEVA, I. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B132 by Yu. G. Yerokhin]

[Text]  The authors consider an algorithm of a specialized digital computing
device of integrating type based on devices of series K-502, and the prin-
ciples of organizing computations in this device to maximize the accuracy
of real-time estimates of the coordinates of a moving object.  Results of
modeling of one of the tracking modes are given.  Figures 3; references 3.
[443-6610]

6610
CSO: 1863

PROGRAM FACILITIES OF A LOCAL COMPUTER NETWORK

Moscow PROGRAMMNYYE SREDSTVA LOKAL'NOY SETI EVM in Russian, 1977 8 pp
(manuscript deposited in VINITI No 672-78 Dep., 28 Feb 78)

LOPATKO, V. B.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B81DEP (résumé)]

[Text]  The paper describes a system for controlling parallel computation
on several BESM-6 computers realized over a DISPAK operating system for
series connection of BESM-6 computers through common magnetic disks.  The
system includes an interpreter of the language for control of network jobs,
a multiprocessor program dispatcher and mediator programs for transmissions

of synchronizing data and for controlling programs that are being simul-
taneously read on the network.  References 6.
[443-6610]

6610
CSO:  1863

USSR                                                UDC  681.326.3.06

SOFTWARE OF THE JCC SECTIONAL CONTROLLER FOR PDP-11 COMPUTERS

Moscow PERVYY VSESOYUZNYY SIMPOZIUM PO MODUL'NYM INFORMATSIONNO-VYCHISLITEL'-
NYM SISTEMAM, MOSKVA, 1977 [First All-Union Symposium on Modular Computer-
Information Systems, Moscow 1977] in Russian 1978 pp 49-50

LOZYUK, V. S.

[Text]  To automate spectral studies on the basis of the SM-3 computer and
CAMAC hardware, software has been developed for the JCC sectional control-
ler.  This software includes an expansion of the BASIC interpreter, and also
a set of assembler subprograms that are called up by FORTRAN working in the
RT-11 operating system.  The developed software provides the capability for
rapid verification of CAMAC hardware, facilitates the process of compiling
and debugging programs for slow processes in the BASIC interpreter language,
and also includes a set of subprograms in assembler for servicing fast pro-
cesses by programs in FORTRAN.  Reference 1.
[15-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                              UDC 681.326.7

QUESTIONS ON THE DESIGN OF A DIAGNOSTIC AND MONITORING SYSTEM IN THE "ON-LINE" MODE

Moscow TRUDY MOSKOVSKOGO FIZIKO-TEKHNICHESKOGO INSTITUTE [Works of the Moscow Physicotechnical Institute] in Russian

TARASOV, S. A. and FETISOV, N. S.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 9, 1978 Abstract No 9B330 by A. D. Plitman]

[Text] Questions are discussed relating to the design of a system for the multilevel modeling (SMM) of large digital device and the organization of a language for test programs. The SMM makes it possible to synthesize tests for detecting and localizing malfunctions and to obtain the temporal characteristics of the devices so that dynamic monitoring can be carried out. The SMM is based on the coupling principle, which makes it possible to combine various levels of detailing--from the level of individual logic gates to the functional level--within the framework of a single model of a device. As the test programs are generated, a compact description of them is also compiled, in the monitoring and diagnostic equipment's input language. Three cyclic structures that are inserted in this language make it possible to reduce the volume of test programs by a factor of 2-3. References 1. [3-11746]

11746
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                    UDC  681.327.2.06

AN ADAPTIVE STRUCTURE FOR THE MULTICHANNEL INPUT OF MONITORED PARAMETERS

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN in Russian No 61,
1977 pp 69-72

DUBOVIK, YE. A., KESHEK, E. V. and KRAVCHENKO, V. S.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1979 Abstract No 10B32 by M. V. Yevdokimenko]

[Text]  The questions of the organization of the optimal gathering (or input)
of information on the state of technological processes in centralized moni-
toring computer systems are treated.  An algorithm is given for an adaptive
multichannel interrogation program, the merits of which include simplicity
in the realization and an absence of TIME field overflow.  The relative com-
putational complexity which leads to significant time delays proves to be
minor because of the advantage gained as a result of boosting the carrying
capacity of the information and measurement system.  The procedure described
for the input of the incoming parameters of the technological processes is
realized in the form of a program for a series of centralized monitoring
machines of the MTsKM-40 type.  References 3.
[4-8225]


8225
CSO:  1863

123

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                UDC  681.327.68'22

SOFTWARE FOR THE DATA INPUT/OUTPUT MODE VIA THE VT-340 DISPLAY FOR THE
BESM-4M

KIBERNETIKA I AVTOMATIKA in Russian No 6, 1977 pp 102-105

AYTKHOZHAYEVA, YE. ZH. and RAKHIMBERGENOV, S. R.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B605 (résumé)]

[Text]  An examination is made of problems of software for the data input/
output modes via the VT-340 display for the BESM-4M in operation with ALGOL
programs.  The paper gives a list of procedures that have been developed
and introduced into the makeup of the BSP translator, their basic character-
istics and purpose.  References 1.
[444-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

E.  Automated Design and Engineering

USSR                                                        UDC  539.1.073

THE POISK SEMIAUTOMATIC INSTRUMENT FOR MEASURING STEREO COORDINATES

Moscow POLUAVTOMATICHESKIY IZMERITEL' STEREOKOORDINAT 'POISK' in Russian,
Institute of Theoretical and Experimental Physics, Preprint No 148, 1977

NEUSTROYEV, V. D.

[Text]  The paper describes a semiautomatic instrument for measuring the
angular and linear coordinates of three-dimensional track images.  The setup
includes a measurement table equipped with Grey-code sensors, an electronic
bay and a PL-80 keypunch machine.

The measured coordinates are transmitted to a channel communicating with a
BESM-4 computer by a series-parallel method.  One byte is taken as the unit
batch format.  An asynchronous principle is used in data transmission.  A
lighted panel is used for feedback between the computer and operator.  Punched
tape data output is taken as the minor mode.

The instrument can be used to automate the process of measurement on any
stereoprojector with vertically moving optical system and a working volume
no greater than 400x400x1000 mm.  After simple circuit modifications, the
electronic bay of the instrument can provide data output simultaneously
from two "flat" measurement tables equipped with Gray-code sensors.
[444-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                          UDC 658.012.011:56

AUTOMATING THE DESIGN OF AN INTERFERENCE-IMMUNE TOPOLOGY OF ELECTRONIC
CIRCUITS FOR CONTROL SYSTEMS

Leningrad TRUDY LENINGRADSKOGO INSTITUTA AVIATSIONNOGO PRIBOROSTROYENIYA
in Russian No 129, 1978 pp 34-37

KHMEL'NITSKIY, S. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract No 7A428]

[Text]  Discussed are the problems in designing, with the aid of a computer,
a topology of electronic circuits which will be immune to internal inter-
ference.  References 4.
[39-2415]



2415
CSO:  1863



USSR                                          UDC 658.012.011.56

THE USE OF INTERACTIVE OPERATING MODES IN THE KASPI-EVM SYSTEM

ISPOL'ZOVANIYE INTERAKTIVNYKH REZHIMOV RABOTY V KASPI-EVM [title as above]
in Russian, Institute of Precision Mechanics and Computer Engineering of
the USSR Academy of Sciences, Preprint No 9, 1978 9 pp

GUSHCHIN, O. K., GNESINA, L. R., LAZAREV, V. G. and SHEBANOV, V. F.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9A292]

[Text]  A coupling device and a system of programs that realizes the di-
rect man-computer dialog mode through an alphanumeric graphic display of
the YeS-7064 type have been developed in a complex automated management
system (ASU) for designing and manufacturing computers (KASPI-EVM).  The
presence of the dialog mode, which makes it possible to correct electrical
circuits and the multilayered printed-circuit cards from the display's con-
trol panel, significantly shortens the amount of time needed to implement
a design and improves its quality.  In order to couple the YeS-7064 display
to a computer, a specialized device of the ShS-R type, which insures the

126
FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

functioning of any YeS [Unified System] series peripheral gear with the basic KASPI-EVM, has been developed on the basis of a standard interface. [3-11746]

11746
CSO: 1863

USSR                                                         UDC 681.326.34.001.2

SUBSYSTEM FOR CORRECTING THE RESULTS OF OPERATION OF A SYSTEM FOR AUTOMATED DESIGN OF PRINTED CIRCUIT BOARDS USING THE "VIDEOTON-340" DISPLAY

Zaporozh'ye AVTOMATIZATSIYA PROYEKTIROVANIYA RADIOELEKTRONNOY APPARATURY NA PROMYSHLENNYKH PREDPRIYATIYAH [Automating Design of Electronic Equipment in Industrial Enterprises] in Russian 1977 pp 6-7

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, 1978 Abstract No 7B307 by A. D. Plitman]

[Text] In the process of automated design of printed circuit boards, it often becomes necessary to correct them. For effective solution of this problem, a system has been developed for semiautomatic correction of printed circuit drawings using the Videoton-340 alphanumeric display.

This system has a number of advantages over correction from punched cards: clarity of the correction process, an interactive mode against the background of a job stack, self-contained editing of output data, syntactic checking of input data and so forth.
[443-6610]

6610
CSO: 1863

127
FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                        UDC  519.1

A METHOD OF RANKING COMBINATION CIRCUITS BY PARTS

ODNORODNYYE TSIFROVYYE VYCHISLITEL'NYYE I INTEGRIRUYUSHCHIYE STRUKTURY in
Russian No 8, 1977 pp 113-118

BERSHTEYN, L. S. and TOPOL'SKAYA, L. G.

[Text]  In machine modeling of large circuits, the limited dynamic memory
of the computer makes it necessary to process the circuits by parts.  The
authors consider the problem of putting the elements of combination circuits
in order by levels of operation (ranking).  These circuits do not have feed-
back, and they are handled by parts in the algorithms for solution of the
problem.  Figures 2,
[443-6610]


6610
CSO:  1863

128

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

## II. ECONOMIC APPLICATIONS

### A. General Treatment

USSR                                                                UDC  658.012.011.56

STATISTICAL MODELING OF THE OPERATIONAL PROCESS OF AN ADAPTIVE AUTOMATED
MANAGEMENT SYSTEM

KIBERNETIKA I AVTOMATIKA in Russian No 6, 1977 pp 116-123

DZHARBOLOV, SH. I. and BURANBAYEV, B. ZH.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8A46] (résumé)]

[Text]  An examination is made of the problem of evaluating the algorithmic
structure of an adaptive automated management system.  The method of sta-
tistical modeling is used to evaluate the system.  In order to realize the
modeling, a computer model is developed for an adaptive automated management
system, along with the corresponding modeling algorithm in ALGOL-60.  An
example is given.  Figures 3.
[444-6610]

6610
CSO:  1863

USSR                                                                UDC  658.012.011.56

MODELING MANAGEMENT SYSTEMS WITH AID OF COMPUTER SYSTEMS

Kiev VESTNIK KIYEVSKOGO POLITEKHNICHESKOGO INSTITUTA.  TEKHNICHESKAYA KI-
BERNETIKA [Bulletin of Kiev Polytechnical Institute.  Technical Cybernetics]
in Russian No 2, 1978 pp 3-7

KOSTYUK, V. I., KRASKEVICH, V. YE. and BONDARENKO, V. YE.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8A492 by O. G. Meylakh]

[Text]  The article gives the basic principles of a modeling system de-
veloped for the Minsk-32 computer based on a subset of the YAMLODIS lan-
guage.  The system is a homogeneous translator of a YAMLODIS program to a
FORTRAN program that is subsequently processed by standard computer soft-
ware facilities.  The translator is compiled in FORTRAN algorithmic

FOR OFFICIAL USE ONLY

language and is realized on the Minsk-32 computer. A flowchart of the translator is given. Figures 1; references 2.
[444-6610]

6610
CSO: 1863

USSR                                                        UDC  658.012.011.56

'IK-572' CONTROL COMMUTATOR

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANII in Russian, communication No 10-12107, 1979 8 pp

NEMESH, T.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, Jul 79 Abstract No 7A435]

[Text] The IK-572 auxiliary device for an independent system based on an Intel 8080 microprocessor is described. This device is coupled to the crate-controller through an Intel 8080 trunk. It serves for debugging the system software and adjusting the system modules. The structure of a module is set up according to the CAMAC standard.
[39-2415]

2415
CSO: 1863

130
FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                              UDC  681.327.44.06:5/6.001.5

METHODS FOR PROCESSING EXPERIMENTAL DATA ON PUNCHED TAPE FOR M-4030 COMPU-
TERS IN THE DOS ASVT SYSTEM

METODIKA OBRABOTKI EKSPERIMENTAL'NYKH DANNYKH NA PERFOLENTE DLYA EVM M-4030
V SISTEME DOS ASVT in Russian, Physicotechnical Institute, Academy of Sci-
ences USSR, Preprint No 569, 1978 31 pp

AGRANOVSKAYA, I. I. and GRIGOR'YEV, V. N.

[Text]  The paper is addressed to users of the M-4030 computer who program
in FORTRAN.  Methods are described for processing experimental data on
punched tape in the DOS ASVT system [disk operating system of the modular
system of computer facilities].  The peculiarities of using magnetic tape
are examined.
[444-6610]

6610
CSO:  1863

USSR                                              UDC  681.327.021.1:658.52.011.56

PERIPHERAL DEVICES FOR COMMUNICATION WITH THE PROCESS AND WITH THE OPERATOR
FOR THE PZ URSATRON 4000 CENTRAL SYSTEM

IMPULS (EAST GERMANY) in German Vol 17 No 3, pp 111-118

BORMANN, JÖRG and BUCHHEIM, HELMUT, Kombinat VEB Elektro-Apparate-Werke, DDR

[Text]  For collecting and preprocessing primary data and transferring them
to the central system, the Ursadat 4010 subsystem is provided, which con-
tains a card module for receiving and transmitting data, a universal block
for coordinating the operation of card modules and coupling to the inter-
face, and a special block for input, primary processing and output of ana-
log data to the interface.

131
FOR OFFICIAL USE ONLY

The peripheral devices described can operate jointly with the universal programmable central system Ursatron 4000 designed for automated management of production and testing processes, for automating laboratory and experimental jobs and so on. Among these peripheral devices are the T51 teletype, the Daro Soemtron 1132 tape printer, and the TAE keyboard input with visual 8-place digital output.

In addition, there are analog-digital converters, modules for input and output of analog and digital data, a universal pulse counter, a module for controlling electric actuating motors including synchronous motors and so on. Technical data are given for all peripheral devices.
[444-6610]


6610
CSO: 1863

B. Bloc Cooperation


USSR                                                        UDC  681.327.21

'ARITMA' PUNCHCARD PREPARATION DEVICE

MECH. AUTOMAT. ADMIN. in Czech Vol 19 No 2, 1979 pp 74-75

LIBENSKY, JAN

[Text]  At the ARITMA plant in Czechoslovakia there have been produced for the Soviet Union a thousand units of a device for punchcard preparation in the ARITMA 2030--Unified System YeS 9080 system.  The device replaces others previously manufactured at that plant.  In 1978 the quota at the Soviet plant was met 104 percent.  In 1979 the quota in the Soviet Union is increasing by more than 14 percent.  In 1976 the Unified System YeS 9089 device was awarded the Golden Medal at the International Exposition in Brno.  Figures 2.
[39-2415]


2415
CSO:  1863

FOR OFFICIAL USE ONLY

C.  Extractive Industries, Fishing


USSR                                                                    UDC  622.27

MODELING OF AN ERROR SOURCE IN A DATA TRANSMISSION SYSTEM IN STRIP MINES

IZVESTIYA VUZOV.  GORNYY ZHURNAL in Russian No 3, 1978 pp 142-145

ARAKELOV, V. N. and ORALBEKOV, K. I.

[Text]  The algorithm developed for simulating an error source in data trans-
mission channels is realized as a program package in FORTRAN algorithmic lan-
guage for the MINSK-32 computer.  Basic parameters are defined for the investi-
gated channel and model.

With a model of an error source available, one can calculate the major char-
acteristics of the system for transmitting data through the given channel,
and evaluate the effectiveness of different methods of improving data reli-
ability.  Figures 2; references 2.
[444-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

D. Construction

USSR                                                    UDC  666.982.059:681.3

OPTIMIZING THE LOAD OF THE SERVICING UNIT OF A REAL-TIME COMPLEX OF AN AUTO-
MATED DISPATCHER CONTROL SYSTEM IN A HOUSING CONSTRUCTION COMBINE

Kiev OPTIMIZATSIYA ZAGRUZKI OBSLUZHIVAYUSHCHEGO USTROYSTVA KOMPLEKSA REAL'-
NOGO VREMENI AVTOMATIZIROVANNOY SISTEMY DISPETCHERNOGO UPRAVLENIYA DOMOSTROI-
TEL'NOGO KOMBINATA in Russian, Scientific Research Institute of Construction
Management, 1978 11 pp (manuscript deposited in UkrNIINTI No 1167 Dep., 21
Sep 78)

BENDITOVICH, R. F.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1A563DEP by the author]

[Text]  An examination is made of the servicing unit of a real-time complex
of an automated dispatcher control system in a housing construction combine.
This unit keeps track of the state of the inventory of the finished product
of the combine and includes a service component (computing module, proces-
sor) and data transmission equipment coincident with message generation
points (production departments, division for storage of finished goods, cen-
tral dispatcher point).

This structure is a single-line queueing system with waiting and two sequences
of requests for service--a sequence of higher-priority requests from opera-
tors, and a sequence of lower-priority information messages from the ware-
house and departments.

Based on relations that are derived, the author determines the intensity of
arrival of requests from operators that is optimum with respect to an expo-
nential criterion, and that minimizes the losses per unit of time, and a
specific realization of the system is described that is based on a second-
generation computer.
[15-6610]

6610
CSO:  1863

III. SOCIOLOGICAL AND PSYCHOLOGICAL PROBLEMS

A. Planning, Management and Automation of Scientific Research

USSR                                                    UDC 681.326.34

INTERFACING THE "ELEKTRONIKA-70" AND THE "ELEKTRONIKA TZ-16" MINIATURE
COMPUTERS WITH PERIPHERALS

Moscow SOPRYAZHENIYE MALOGABARITNYKH VYCHISLITEL'NYKH MASHIN "ELEKTRONIKA-
70" I "ELEKTRONIKA TZ-16" S VNESHNIMI USTROYSTVAMI in Russian VINITI Manu-
scrpt No 912-78, 1978

CHAPLYGIN, A. B., VEDERNIKOV, M. V. and BURKOV, A. T., Editorial Staff of
PRIBORY I TEKHNIKA EKSPERIMENTA, USSR Academy of Sciences

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B813DEP by the authors]

[Text]  The possibility and expediency of automating physical experiments
by means of desk top miniature computers with microprogram control is dis-
cussed, where no special knowledge of programming languages is required.
An interface for the miniature "Elektronika-70" and "Elektronika-TZ-16" com-
puters to peripherals for information input and output (a punched tape read-
er, a tape perforator, an electric typewriter and a digital meter).  The
interface likewise provides for the processing of the control instructions
and the operation of the miniature computer on line with a large computer.
[4-8225]

8225
CSO:  1863

USSR                                                UDC  681.51:519.876.3

A HIGH-LEVEL LANGUAGE FOR CONTROLLING A MEASUREMENT COMPLEX BASED ON A COM-
PUTER OF THE E-100I TYPE

Moscow INSTITUT KOSMICHESKOGO ISSLEDOVANIYA AN SSSR.  PREPRINTY [Institute
of Space Research of the USSR Academy of Sciences (Preprints)] in Russian
No 404, 1978 32 pp

ZUBKOV, B. V.

[Text]  The author describes a high-level language that is intended to con-
trol the process of conducting an experiment when a computer of the "Elek-
tronika-100I" type is used.  He presents examples of programs for contiol-
ling measuring devices and actuating units, and describes the procedure for
including these programs in the proposed high-level language.
[18-11746]


11746
CSO:  1863




USSR                                                UDC  681.518:519.878

USING THE "OZHUR" REFERENCE-INFORMATION SYSTEM FOR THE AUTOMATED PROCESSING
OF DATA FROM SATELLITES IN THE "KOSMOS" SERIES

Moscow PRIMENENIYE INFORMATSIONNO-SPRAVOCHNOY SISTEMY "OZHUR" DLYA AVTOMATI-
ZIROVANNOY OBRABOTKI DANNYKH SPUTNIKOV SERII "KOSMOS" [title as above] in
Russian, Institute of Space Research of the USSR Academy of Sciences, Pre-
print No 392, 1978 20 pp

POKRAS, V. M., YEVDOKIMOV, V. P. and MASLOV, V. D.

[Text]  The authors discuss the structure and capabilities of the "OZhUR"
reference-information system, which is intended for automated systems for
processing data from scientific spacecraft.  The "OZhUR" system provides

for the monitoring of the passage of processing phases for a specific space-
craft and the exchange of data between phases. The practical use of the
"OZhUR" system is illustrated in the example of the construction of a data
processing system for satellites in the "Kosmos" series. As a result of the
automation of the exchange and monitoring operations, there is a significant
reduction in the amount of manual data preparation and the need for keeping
separate journals to record the state of the data processing is eliminated
As part of the "NAUKA" automated data processing system, the "OZhUR" system
is realized in the AL-1 language in the Unified System of Computers' disk
operating system.
[18-11746]


11746
CSO: 1863

FOR OFFICIAL USE ONLY

IV. NATURAL SCIENCE RESEARCH

A. Biology and Medicine

USSR UDC 681.51.61

COMPUTER-AIDED ANALYSIS OF TELEVISION IMAGES OF BIOLOGICAL OBJECTS

YAKUBAITIS, E. A., GROMOV, G. G., PODVYSOTSKAYA, N. A., VANSON, V. A. and ALIYEN, I. K.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract No 8.81.394 by V. Z. Kucher]

[Text] It is demonstrated that the use of high-speed digital and analog computers in clinical laboratories facilitates a quantitative processing of images. The parameters used in a quantitative description of optical images pertain to the geometry of observed objects or to their optical properties (such as density and reflectivity). A system for automatic quantitative analysis of bioimages is described which has been developed at the Institute of Electronics and Computer Engineering (Academy of Sciences of the Latvian SSR). A simplified structural schematic diagram of this system is shown with its main components: a stand for the test object, a television camera, a television monitor, an oscillograph, and image preprocessor and an interface with a computer. The analog output terminals of the television camera connect to a mixer where the signal amplitude is added to the bias voltage, which ensures normal operation of the video converter. The latter with an 8-digit encoder converts an analog video signal to a digital one. A comparator determines the ratio of signal to "black" level and to "white" level, these levels corresponding to the respective extreme optical densities of the test object. Provisions have been made for discrete or continuous examination of an object. The equipment is used for solving various problems in microbiology and cytology. Algorithms have been proposed which prove out the effectiveness of this method in medicine, in early cancer detection. Figures 1.
[17-2415]

2415
CSO: 1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

B.  Physico-Chemical and Earth Sciences


USSR                                                      UDC  658.012.011.56

AUTOMATION OF A SPECTROMETRIC EXPERIMENT WITH THE AID OF AN M-6000 ON-LINE
COMPUTER

Minsk VYCHISLITEL'NAYA TEKHNIKA I MASHINOSTROYENIYE in Russian No 4, 1978
pp 41-43

PODPALOV, YU. L., TOKAR', YU. A. and FENSTER, M. YA.

[Text]  A system for automating a spectrometric experiment is considered
which ensures real-time operation of the physical apparatus.  The apparatus
components and the software are described.  Figures 1; references 2.
[39-2415]

2415
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

C. Other

USSR                                                              UDC 681.34.01

USE OF DIGITAL-ANALOG COMPUTERS FOR THE SOLUTION OF CERTAIN MATHEMATICAL
PROBLEMS

Kiev INSTITUT ELEKTRODINAMIKI AKADEMII NAUK UKRAINSKOY SSR in Russian,
Preprint No 183, 1978 62 pp

YEVDOKIMOV, V. F.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract No 7B775]

[Text] Discussed is the use of digital-analog computers for solving systems
of linear and nonlinear algebraic equations, as well as systems of ordinary
differential equations, according to the principle of digital analogies.
This is done by deparallelization of the computation process to degrees ap-
propriate for the solution of respective problems. Figures 10; tables 1;
references 9.
[39-2415]

2415
CSO: 1863

USSR                                                              UDC 681.51:51

A DIALOG APPROACH TO UNCONDITIONAL MINIMIZATION: THE "DISOPT" PACKAGE OF
APPLIED PROGRAMS

Vladivostok DIALOGOVYY PODKHOD K BEZUSLOVNOY MINIMIZATSII. PRIKLADNYY
PAKET PROGRAMM "DISOPT" [title as above] in Russian, Preprint 1978 23 pp

BLONROZ, V. K. and KAZANSKIY, A. V.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 10, 1978 Abstract
No 10.81.430K]

[Text] The authors work out a methodology for searching for the extreme
of functions of many variables in a dialog mode with a computer and describe
the realization of the "DISOPT" package of programs for the unconditional
minimization of such functions on the basis of a graphic dialog with a com-
puter through a YeS-7064 display within the framework of the Unified System

141

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

of Computers' operating system. Six search methods with proven effective-
ness at different stages of minimization are realized in the package. The
authors demonstrate the possibility of using the package in systems for in-
terpreting gravitational and magnetic anomalies on the basis of analytical
approximation and pattern recognition. They discuss the possibilities for
increasing the computation process's efficiency in the graphic dialog mode.
Figures 11; references 7.
[18-11746]

11746
CSO: 1863

FOR OFFICIAL USE ONLY

V.  INFORMATION SCIENCE

A.  Information Services

USSR                                                    UDC 658.012.011.56

A CAMAC STANDARD AUTONOMOUS PROGRAMMABLE SYSTEM DESIGNED AROUND A MICRO-
PROCESSOR

Dubna OB'YEDINENYY INSTITUT YADERNYKH ISSLEDOVANIY.  DUBNA. SOOBSHCHENIYA
in Russian No 10-11232, 1978 14 pp

NEMESH, T.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10A480]

[Text]  An autonomous system for data gathering and measurement is described,
which contains an independent controller, memory modules and user modules.
The independent controller is designed around and INTEL 8080 microprocessor
and is used to control the measurement system and memory modules, the informa-
tion gathering, its preliminary processing and transmission on line with a
computer.  All of the modules comprising the system have an output to the
CAMAC/8080 trunk, which is designed to CAMAC standards.  Figures 3.
[4-8225]


8225
CSO:  1863


USSR                                                    UDC 658.012.011.56

PROBLEMS IN THE DESIGN OF SPECIAL-PURPOSE ANALOG DATA SYSTEMS

Kiev INSTITUT KIBERNETIKI AKADEMII NAUK UKRAINSKOY SSR in Russian, Preprint
No 82, 1978 pp 3-40

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract 7A438]

[Text]  General problems in the design of software and the organization of
data in information retrieval systems are discussed.  The results are pre-
sented of studies concerning the development of an experimental dialog sys-
tem for analysis of chess situations.  The methodology of semiautomatic

compilation of thesauri in the dialog mode using elements of relatemnaya
algebra is also described.
[39-2415]

2415
CSO: 1863

USSR                                                                UDC  681.3.008

INCREASING THE PRODUCTIVITY OF SPECIALIZED PROCESSORS FOR DATA FILE
PROCESSING

KONTROL'NO-IZMERITEL'NAYA TEKHNIKA.  RESPUB. MEZHVED. NAUCH.-TEKHN. SB.
in Russian No 23, 1978 pp 113-117

ANTONOV, R. O.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B56]

[Text]  Questions of the selection of a buffer memory and the determination
of the operational speed of the arithmetic units of special processors are
treated from the viewpoint of obtaining the maximum processing performance.
An analysis is made of the increase in the information processing productivi-
ty for the case of interchange with a computer memory using compacted words,
as well as for the case of combining the computational time of the special
processor with the interchange time.  Figures 3.
[4-8225]

8225
CSO: 1863

USSR                                                    UDC  681.51:621.391.883.2

ALGORITHMS OF UNAMBIGUOUS MEASUREMENT OF ANGULAR COORDINATES FROM PHASE DATA

Kiev INSTITUT KIBERNETIKI AKADEMII NAUK UKRAINSKOY SSR in Russian, Preprint
No 72, 1977 pp 3-16

ZIMOVIN, A. YA. and PONOMAREV, V. I., Institute of Cybernetics, Academy of
Sciences of the Ukrainian SSR

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract
No 8.81.220 by A. L. Ryzhak]

[Text]  Methods of measuring angular coordinates are considered.  A multi-
scale procedure for unambiguous measurement of the homing angle with a
multibase radar is shown.  However, it is also noted, this method is not
very reliable.  References 8.
[17-2415]

2415
CSO:  1863

USSR                                                           UDC  681.324

ON ORGANIZING DATA COMMUNICATIONS IN COMPUTER NETWORKS.  PROTOCOLS 4 Co
1,0,4 Cc 2,0

OB ORGANIZATSII INFORMATSIONNOY SVYAZI V SETYAKH EVM. PROTOKOLY 4 Co 1,0,4
Co 2,0 in Russian, Computing Center, Siberian Department, Academy of Sciences
USSR, Preprint No 100, 1978 36 pp

BREYEV, V. P., LASKIN, L. F., TRESKOVA, S. P. and EFROS, L. B.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B71 (résumé)]

[Text]  The authors discuss the concept of protocol of communication in
computer networks.  The hierarchy of communication levels is defined.  A
system for identifying protocols is proposed and discussed.  Specific com-
munication protocols are proposed and discussed that are realized within
the framework of a project for setting up a territorially distributed

145

collective-user computing complex (center) in the Siberian Department of
the Academy of Sciences USSR.
[15-6610]

6610
CSO:  1863

USSR                                                              UDC  681.325.2

A GENERAL-PURPOSE ANALOG-TO-DIGITAL CONVERTER IN THE CAMAC STANDARD

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY. DUBNA. SOOBSHCHENIYA
[Joint Institute of Nuclear Research, Dubna:  Reports] in Russian No R13-
11201, 1978 16 pp

GABRIEL', F., KALININ, A. I., MERZLYAKOV, S. I., RIKHTER, E., TISSOL'D, YE.
and FROMM, V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B431 by Yu. G. Yerokhin]

[Text]  A general-purpose ATsP [analog-to-digital converter] with from 256
to 8,192 channels is described that is capable of measuring pulsed ("Peak"
mode) and slowly changing or constant voltages ("Strobe" mode).  The range
of input signal amplitudes is 0.01-5 v; the frequency of the series genera-
tor is 100 Mc; the differential nonlinearity is $\pm 0.4$ percent; the integral
nonlinearity is no more than 0.1 percent.  The ATsP is realized in a double-
width module in the CAMAC standard.
[3-11746]

11746
CSO:  1863

146

USSR                                                                    UDC  681.326.34

CONNECTION OF THE HP2100A COMPUTER TO THE CAMAC/SUMMA SYSTEM

Serpukhov SOPRYAZHĚNIYE EVM HP2100A S SISTEMOY KAMAK/SUMMA in Russian, Insti-
tute of High-Energy Physics, Preprint No 43, 1977 20 pp

KLIMENKO, S. V., LEBEDEV, A. A. and MIKHAYLOV, YU. V.

[Text]  The article describes hardware and software for connecting the
HP2100A computer to the CAMAC/SUMMA data collection system.  The coupling
device is a specialized computer that includes four processors (interruption,
control, address and exchange) and a dynamic memory based on high-speed com-
ponents.

The software consists of interrupt and CAMAC/SUMMA system drivers, transla-
tor subprograms for the commands of the control processor of the computing
system, and an interpreter program for a specialized language designed for
engineering check and adjustment of the computing system and CAMAC/SUMMA
modules.  The described hardware and software has been used in experiments
on the Sigma facility since January 1975.  Practice has demonstrated the
correctness of the basic concepts and methods used.
[444-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY


USSR                                                              UDC  681.326.34

A MULTICHANNEL DEVICE FOR CONNECTING A COMPUTER TO TELEGRAPH COMMUNICATION
CHANNELS

USSR AUTHOR'S CERTIFICATE NO 556426 filed 6 Jan 75, published 31 May 77

VILENCHIK, I. Z., GRIBOV, L. V., SEMEYKO, V. A., SKLYAROV, V. A. and
FEL'DMAN, A. I.

[Text]  The invention can be used in devices for coupling computers to a
telegraph communication channel to set up direct communication between the
computer and subscribers.  A disadvantage of the conventional device is low
reliability of the information introduced into the computer due to a lack
of checking for false starts, which considerably reduces the reliability of
the device.  The purpose of the invention is to increase the reliability of
the device in operation.

To do this, each connection unit of the device contains two delay components,
two comparison circuits and a NOT gate.  The output of the interlock circuit
is connected through the first delay component and the NOT gate to the in-
puts of the first comparison circuit, and is also connected directly and
through the second delay component to the inputs of the second comparison
circuit.  The outputs of the comparison circuit are connected to the inputs
of the control circuit.  Figures 1.
[443-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                        UDC 681.326.34

DEVICES FOR INPUT AND TRANSMISSION OF INFORMATION IN CRYOGENIC CIRCUITS

Kiev KRIOELEKTRONNYYE KOMPONENTY EVM [Cryoelectronic Computer Components]
in Russian 1977 pp 27-37

MIGUNOV, L. V.

[Text]  Coaxial and strip transmission lines are used in various cryogenic
devices.  Superconductive strip lines have been used as a basis in design-
ing cryogenic switching devices, microwave circuits, Josephson junctions
and so on.  In this connection the author considers transient processes in
cryogenic transmission lines.  Figures 6; references 8.
[444-6610]


6610
CSO:  1863


USSR                                                        UDC 681.326.34

ADAPTATION OF A DISK OPERATING SYSTEM TO THE M-400 COMPUTER, WITH ACCESS TO
THE DISK THROUGH A COMMUNICATION LINK; ORGANIZATION OF COMMUNICATIONS BETWEEN
THE M-400 COMPUTER AND THE RDR-11/20

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY.  DUBNA.  SOOBSHCHENIYA
[Joint Institute of Nuclear Research, Dubna:  Reports] in Russian No 10-11235,
1978 10 pp

GUBAREV, YE. YU., YELIZAROV, O. I., ZHUKOV, G. P., NAMSRAY, YU. and SALAMA-
TIN, I. M.

[Text]  The equipment and software are described that has been developed in
order to organization communications between the M-400 computer and the RDR-
11/20.  This work was done for the purpose of using a disk operating system

149

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

for the M-400. Access to the memory on the disk, which is connected to the RDR-11/20, is provided by a communication line.
[3-11746]

11746
CSO: 1863

USSR                                                          UDC 681.326.34

THE ADAPTATION OF A DISK OPERATING SYSTEM FOR THE M-400 COMPUTER WITH ACCESS
TO THE DISK THROUGH A COMMUNICATIONS LINE. 2. THE INITIAL MONITOR LOADER

Dubna OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY. DUBNA. SOOBSHCHENIYA
in Russian No R10-11239, 1978 10 pp

NAMSRAY, YU., SALAMATIN, I. M. and KHRYKIN, A. S.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B820]

[Text] The initial loader for the monitor of the RT-11 disk operating system
into the main memory of the M-400 computer is described. The loading of the
monitor is accomplished from a disk coupled to the PDP-11/20 computer via a
communications line which joins the M-400 computer and the PDP-11/20. The
M-400 computer does not have a disk memory. The RT-11 disk operating system
is also described. References 5.
[4-8225]

8225
CSO: 1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                          UDC  681.326.34

ON ORGANIZING FORMAT INPUT-OUTPUT IN DATA PROCESSING SYSTEMS

UPRAVLYAYUSHCHIYE SISTEMY I MASHINY [Control Systems and Computers] in
Russian No 2, 1978 pp 134-135

VOZNYUK, M. V. and KHOTINOK-KHOTENKO, V. I.

[Text]  The programs described have been debugged and tested in several de-
veloped systems.  Their experimental use showed that access to them is more
convenient than to FORMATTER, their operating speed is higher, there is a
possibility of working with a decimal point fixed after the sign bit, and
accuracy is increased because of the use of double-length numbers.  The use
of the OUTL program in the system for processing experimental data made it
possible to increase the information input rate.  Further development work
on the format output program, with inquiry buffering in the free memory when
working with the OUS ASVT [modular system of computer technology] M-6000
punched-tape operating system is also stipulated.  Figures 2.
[3-11746]


11746
CSO:  1863


151

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                    UDC  681.327.2:621.391.63

A UNIVERSAL OPTICAL SYSTEM FOR COMMUNICATION BETWEEN COMPUTERS BASED ON THE
CAMAC SYSTEM

BULATOV, YE. D., KALMYKOV, I. V., LOMANOV, V. G., OTLIVANCHIK, YE. A.,
PROKHOROV, A. M. and SISAKYAN, I. N.

[Text]  Justification is given for the necessity, and the feasibility is
demonstrated for developing a universal system of communication between com-
puters based on fiber-optics lines using the CAMAC system.  The paper de-
scribes development of a communication system with data transmission rate
of up to 8 Mbits/s based on industrially produced components, and also the
CAMAC transmitter and receiver modules developed for this purpose.  An ex-
amination is made of the possibilities for increasing transmission speed
and range.
[444-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                        UDC 681.327.8.01

A DISPLAY SYSTEM BASED ON THE MULTIPLEXING OF DATA

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Works of the Insti-
tute of Electronic Control Machines] in Russian No 61, 1977 pp 66-68

TSIVLIN, P. I.

[Text]  The author discusses the basic principles of the design of a multi-
plex data display system.  He mentions that the use of the method of data
multiplexing is most feasible in units where it is necessary to display a
rather large amount of information.  He emphasizes that the basic advantage
of the described method is the substantial reduction in the number of elec-
trical connections between the object of the display and the display equip-
ment, which makes it possible to save on contacts of printed-circuit card
connectors and simplify their separation, and also makes it possible to in-
dicate on the console (at minimal cost) the state of the registers located
in different parts of the unit; in the end, this simplifies their debugging.
Figures 1.
[18-11746]


11746
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                            UDC 681.327.21.01

A DEVICE FOR DATA INPUT TO THE 'ISKRA-1122' KEYBOARD COMPUTER

Moscow USTROYSTVO VVODA INFORMATSII V KLAVISHNUYU EVM 'ISKAR-1122' in Russian,
1978 19 pp (manuscript deposited in VINITI, No 911-78 Dep., 16 Mar 78)

FILIN, N. A. and TROFIMOV, A. V., Editorial Board of Journal "Pribory i
tekhni eksperimenta" USSR Academy of Sciences

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B534DEP by the authors]

[Text]  The paper describes a device for automatic data input to the Iskra-
1122 desktop computer and for controlling the process of input data reduc-
tion.  The device is designed around series K 172 integrated circuits.  De-
pending on the complexity of the processing algorithm, the number of informa-
tion measurement channels and the number of decimal digits in the signal,
the authors determine the required number of ICs, and evaluate the input
and processing time for the entire volume of information.
[444-6610]


6610
CSO:  1863


USSR                                                            UDC 681.327.21.01

A TECHNIQUE FOR CONVERTING QUANTIZED INFORMATION FOR ENTRY IN A COMPUTER

Odessa METODIKA PREOBRAZOVANIYA KVANTOVANNOY INFORMATSII DLYA VVODA V EVM
[title as above] in Russian Odessa Polytechnic Institute 1978, 7 pp Ukraini-
an Scientific Research Institute of Scientific and Technical Information
manuscript No 1014, received 11 May 78

PICHUGIN, YE. D., TIKHONOV, V. I. and ANAN'YEV, S. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B459DYeP]

[Text]  The authors discuss questions relating to the formation of the struc-
ture of recorded quantized information about high-speed processes for record-
ing on an "Elektronika 502-Video" magnetic recorder.  They describe a tech-
nique for converting the information so that the videotape recorder can be

154

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

coupled with general-purpose computers of the "Minsk" and Unified System types. References 3.
[3-11746]

11746
CSO: 1863

USSR                                                    UDC 681.327.67'22:003.54

MICROELECTRONIC DEVICES FOR THERMAL PRINTING

MIKROELEKTRONIKA I POLUPROVODNIKOVYYE PRIBORY in Russian No 3, 1978 pp 242-249

MOSKOVSKIY, YU. V. and POLIKANOV, YU. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA in Russian No 10, 1978 Abstract No 10B752]

[Text] Data are reported on a new promising method of information retrieval by means of printout on thermal sensitive paper. Information is provided on the types of thermal sensitive materials, and on thermal printing microcircuits being produced by industry. The results of measurements of transient thermal processes provide an idea of the nature of the heating and cooling of the thermal printing elements needed for the design of thermal printing devices. Figures 5; tables 2; references 7.
[4-8225]

8225
CSO: 1863

155

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                    UDC 681.335.2

A FAST ANALOG-DIGITAL CONVERTER

ANALOGO-DISKRETNOYE PREOBRAZOVANIYE SIGNALOV in Russian No 3, 1977 pp 69-74

GOTLIB, G. I., ZAGURSKIY, V. YA. and NIVIKOV, V. P.

[Text]  A byte-mode digital-analog converter is described that is designed
for converting parallel positional binary code to voltage and solves the
problem of construction of a comparatively fast device that is at the same
time accurate.  It is designed around ICs or a minimum amount of discrete
components, and is suitable for microminiaturization without any alterations.

The digital-analog converter has the following components:  a register for
storing the word to be converted, reference current sources; a reference cur-
rent stabilization circuit; reference current switches that are controlled
by code from the register; an output amplifier with booster output stage for
converting the sum of the switched reference currents to voltage of the ap-
propriate magnitude.  The operation of these components is briefly described.

It is noted that the chosen structural and schematic arrangements of the
digital-analog converter enable an increase in the number of places of the
converted code to 10-12 without any changes in the circuit by adding the
corresponding number of reference current sources and switches connected in
an analogous arrangement.  Figures 1; references 2.
[444-6610]

6610
CSO:  1863

156

FOR OFFICIAL USE ONLY

USSR                                                          UDC 681.335.2

A BIPOLAR TEN-PLACE DIGITAL-ANALOG CONVERTER

BIPOLYARNYY DESYATIRAZRYADNYY TSIFRO-ANALOGOVYY PREOBRAZOVATEL' in Russian,
Physics Institute, Academy of Sciences USSR, Preprint No 66, 1977 6 pp

GUSEV, V. A. and SHIROCHENKOV, V. A.

[Text] A digital-analog converter is proposed for receiving code informa-
tion from a computing complex and converting it to code in control systems
designed around ASVT-M facilities. The converter consists of the following
basic units: input register, register control circuit, voltage converter,
ten-place decoding converter, current adder and inverter, reference voltage
source, commutator with sign-shaping circuit, scale amplifier, and a circuit
for controlling a graph-plotter and display (readiness signal). Schematic
and block diagrams of the digital-analog converter are given. Its operation
and some technical characteristics are described. The range of output volt-
age variation is 0-5.511 V with discreteness of 5 mV. Maximum conversion
time is 30 µs. Temperature instability at maximum output is 0.2 mV/deg.
Temperature drift of zero at the output of the digital-analog converter is
13 µV/deg, output impedance is 200 Ω. Figures 2; references 6.
[444-6610]

6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                        UDC 681.335.2

AN ANGLE-TO-CODE CONVERTER

USSR AUTHOR'S CERTIFICATE NO 580573 filed 7 Jul 76, published 28 Oct 77

NOSOV, YU. P. and NAUMOV, O. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B515P]

[Text] A device is known that contains interrogating and readout components
in fixed relative locations with a code disk between them that has tracks.
This device has high sensitivity, and is characterized by a low ratio of "1"
and "0" output signals.

The low ratio of output signals is due to the fact that on the one hand in
order to increase the output signals corresponding to "1" it is necessary to
reduce the reluctance in the gap of the cores of the interrogation and read-
out components, i.e., one core must be brought close to the other and the
thickness of the coding disk must be reduced, and on the other hand the re-
duction in thickness of the coding disk is detrimental to its shielding
properties, which leads to an increase in the signal corresponding to "0"
and the disk itself becomes less rigid.

The purpose of the invention is to increase sensitivity. To do this, the
code disk in the device is made of an electrical insulation material with
bilateral metallized coating, and the tracks of the code disk are filled
with a magnetically conductive material. Figures 1; references 2.
[443-6610]

6610
CSO: 1863

158

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                    UDC  681.335.2

A TIME INTERVAL TO DIGITAL CODE CONVERTER USING TTL INTEGRATED CIRCUITS

Yerevan YEREVAN FIZICHESKIY INSTITUT, PREPRINT in Russian No 277(2), 1978
14 pp

KURGIN, YE. I., BELYAKOV, E. S. and KHARITONOV, V. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B689 by M. V. Yevdokimenko]

[Text] The circuitry and operating logic are described of a designed and
tested digital converter that uses integrated circuits of the 155 and 131
general applications series and has the following characteristics: the
frequency of the clock generator is 16 MHz; the capacity of the intermediate
memory is 16 13-bit words; the capability of forwarding data to the computer
during the forward trace of the beam, immediately after the writing of the
first coordinate--line by line mode; operation in a line by line and inter-
lace modes with the transmission of no less than 16 and 12 coordinates re-
spectively. The converter contains an event simulator for debugging communi-
cations and logic  for interchange with a computer as well as a visual in-
dication for monitoring system operation. Figures 5.
[4-8225]


8225
CSO:  1863

FOR OFFICIAL USE ONLY

VI. THEORETICAL FOUNDATIONS

A. General Problems

USSR                                                      UDC 62-507:681.31

GENERAL PRINCIPLES OF DESIGN OF HIERARCHICAL MULTIMODULAR STRUCTURES

Moscow KIBERNETIKA in Russian No 6, 1977 pp 78-86

GLUSHKOV, V. M., IVAS'KIV, YU. L. and BELYAVSKIY, V. L.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B45 by Yu. G. Yerokhin]

[Text] An investigation is made of a class of computing devices that pro-
vide capabilities for combining maximum parallelizing of the computing
process with adaptation of the structure of the devices to the structure of
the input actions. General principles are formulated for design of a high-
productivity computing system with hierarchical organization of the structure.
Mathematical models are proposed for description of structures of this type
and the conditions are obtained that ensure their potentially attainable
productivity. Tables 2; references 17.
[443-6610]

6610
CSO: 1863

USSR                                                      UDC 681.3.008

ELEMENT-BY-ELEMENT MODELING OF COMPUTER SYSTEMS

Moscow POELEMENTNOYE MODELIROVANIYE VYCHISLITEL'NYKH SISTEM in Russian,
Institute of Precision Mechanics and Computer Technology, Academy of Sciences
USSR, Preprint No 18, 1978 91 pp

RYABOV, G. G. and LAKSHIN, G. L.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B86]

No text
[15-6610]

6610
CSO: 1863

FOR OFFICIAL USE ONLY

A SUBSTANTIATION OF AN ANALYTICAL METHOD OF DETERMINING THE TESTING POWER
OF A TEST

BASOK, B. M.

[Text]  Two methods of determining test completeness are known.  The first
method, a method of modeling circuits with malfunctions is based on the simu-
lation of good and defective circuits, and requires repeated modeling.  In
the second method, which is termed analytical or deductive, test completeness
is determined in the process of one-time modeling of a good circuit.  When
modeling the operation of the good circuit using iterations, a set or list
of malfunctions is matched to each component of the circuit in each itera-
tion, where these malfunctions are detected at its output.  The generation
of the lists of defects at the outputs of any circuit component during the
modeling of its operation with simple iterations is accomplished in accord-
ance with the set theory formulas given in the article.  A substantiation
of the analytical method for determining the completeness of a specified
test is given.  The application of this method should yield a significant
improvement in the monitoring of digital units designed around components
of an increased level of integration, in particular, the assemblies of small
computer systems.  Figures 6.
[4-8225]

8225
CSO:  1863

161

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

B. Automatic Control and Control Systems

USSR                                                                    UDC 519.713

ANALYSIS OF MULTISTROKE RELAYS AND SOLUTION OF CERTAIN PROBLEMS IN FORMALIZA-
TION OF THEIR OPERATING PROCESS ON A DIGITAL COMPUTER

Kiev INSTITUT KIBERNETIKI AKADEMII NAUK UKRAINSKOY SSR in Russian, Preprint
No 89, 1977 pp 3-28

MARCHENKO, D. I., MARCHUK, A. V. and ONOPCHUK, YU. N., Institute of Cyber-
netics, Academy of Sciences of the Ukrainian SSR

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 8, Aug 79 Abstract
No 8.81.121]

[Text] The object of this study is construction of a mathematical model of
relay systems and a formal description of processes occurring in them by the
theory of graphs.
[17-2415]


2415
CSO: 1863


USSR                                                      UDC 658.52.011.56:681.32-181.48

NEW DEVELOPMENTS IN THE FIELD OF CONTROL AND PRODUCTION AUTOMATION

AVTOMATIZ. PROIZ-VOTO I UPR. in Bulgarian Vol 8 No 3, 1978 p 33

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10A437 by S. I. Volchek]

[Text] New products designed around microprocessors are reported: the type
K 1510 microcomputer, being produced by the Robotron Enterprise (GDR), and a
"home use" microcomputer being produced in the U.S. The K 1510 computer has
an instruction execution speed of 12.5 - 46.5 microseconds, a 16 Kbyte memo-
ry and an interface for the connection of a keyboard control board, a dis-
play, a punched tape reader, a perforator or a higher level computer. Some
25,000 private (home) use computers were sold in the U.S. from 1975 through
1976. Several types of such microcomputers of differing complexity and
price are on the market, where the number of computers being sold for this
purpose is continually increasing. One of these microcomputers with a memo-
ry on eight-track flexible magnetic disks and a matrix printer which runs at

162

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

a speed of 150 characters per second cost 200 dollars in 1976. The majority
of the buyers of such computers are students, engineers and programmers.
[4-8225]

8225
CSO: 1863

USSR                                                    UDC  658.012.011.56

AN AUTOMATED CONTROL SYSTEM FOR VIBRATION TESTING ON A SINGLE-COMPONENT
VIBRATION TABLE

CHEGOLIN, P. M., KUNTSEVICH, V. M., TUNIK, A. A., KONCHAK, V. S., POYDA,
V. N. and BORISOV, I. F.

[Text] The authors describe an automated control system (ASU) for vibration
tests on a single-component vibration table, as well as the algorithms on
which the functioning of the system is based. They present a block diagram
and technical data, plus the results of tests. The system was developed on
the basis of an M-6000 control computer and has been used in practice. Fig-
ures 5; references 6.
[3-11746]

11746
CSO: 1863

163

FOR OFFICIAL USE ONLY

USSR                                          UDC  681.5.01

MULTIMODE AND NONSTATIONARY AUTOMATIC CONTROL SYSTEMS

Moscow MNOGOREZHIMNYYE I NESTATSIONARNYYE SISTEMY AVTOMATICHESKOGO UPRAV-
LENIYA [title as above] in Russian Izdatel'stvo Mashinostroyeniye 1978 240 pp

PETROV, B. N., ALEKSANDROV, A. D., ANDREYEV, V. P., BULEKOV, V. P., VIKTOROV,
B. V., IZVOL'SKIY, YE. G., KUDRYAVTSEV, P. S., KUZIN, V. P., MAKHAN'KO, A. V.,
MIKHAYLOV, F. A., MURAVLEVA, G. A., NIKOLAYEV, YU. P., POBEDONOSTSEV, G. V.,
POKHVALENSKIY, V. L., SADYKOV, F. R., SERPIONOV, G. V., SALIKOVA, I. M.,
UL'YASHCHENKO, A. YE., FROLOV, P. A., CHERVYAKOV, V. P. and TSATURYAN, K. T.

[From REFERATIVNYY ZHURNAL, TEKHNICHESKAYA KIBERNETIKA No 11, 1978 Abstract
No 11.81.21]

[Text]  The authors discuss questions in the theory of multimode and non-
stationary automatic control systems for (primarily) moving objects.  The
theory of multimode systems is developed in the direction of selecting a
rational structure for the control system, forming the basic circuit of an
adaptive automatic control system, and improving the methods for calculating
the adjustable parameters.  The theory of nonstationary automatic control
systems is supplemented by new methods for analyzing systems of that class.
[18-11746]


11746
CSO:  1863

USSR
UDC 681.5.015.2

## USING A COMPUTER IN THE PROCESSING OF THE START CURVES OF CONTROLLED SYSTEMS

Khar'kov ISPOL'ZOVANIYE EVM PRI OBRABOTKE KRIVYKH RAZGONA OB'YEKTOV REGUL-
IROVANIYA [title as above] in Russian State Scientific Research and Planning
Institute of Basic Chemistry 1978 10 pp manuscript received at ONIITEKhIM,
Cherkassy, 24 Jul 78, No 1938/78

DUDCHENKO, YE. I., SEMKE, A. V., KOTSARENKO, V. A. and RUDAY, V. I.

[Text]  The authors discuss a technique for determining the dynamic charac-
teristics of a system having self-equalization without a transportation lag.
The method of "areas," which is based on the assumption of a system's line-
arity, is used to process the start curves of controlled systems.  The au-
thors propose an algorithm for processing the start curves of industrial
systems that includes:  determin..tion of the constant factor of the system's
differential equation; solution of the derived differential equation with
the use of Laplace transforms; determination of the approximation error.
Operation of the program, which was developed for the "Nairi-2" computer on
the basis of the described algorithm, confirmed the feasibility of using a
computer to determine the dynamic characteristics of industrial systems ac-
cording to the start curve.  The use of a computer significantly reduces the
amount of time expended to process experimental data and increases the ac-
curacy of the computations.  References 5.
[18-11746]

11746
CSO:  1863

USSR                                                          UDC 681.322.01

THE UVK SM-3 CONTROL COMPUTER COMPLEX

NAUMOV, B. N., BOYARCHENKOB, M. A., KABALEVSKIY, A. N., FEL'DMAN, B. YA.,
PANFEROV, B. I., GROMOV, V. S., CHERNINA, T. D., TURKOVSKAYA, T. A.,
VINOGRADOV, YU. N. and FEDOROV, A. S.

[Text] The general characteristics of a system of small computers (SM EVM)
are given. Various types of complexes are considered: standard and special
purpose. A control computer complex (UVK) is described; the UVK SM-3 is the
first standard complex of the system of small computers based on the SM-3P
processor. The following devices are included in the UVK SM-3 complement:
a processor, an immediate access memory with a capacity of 32 K words, a dis-
play for the input and display of symbolic information (this unit is a con-
sole), a series printer, a punched tape input-output unit and a cassette
type peripheral magnetic disk memory. The characteristics of the devices
included in the UVK SM-3 are given, as well as those of the software for
the complex. The possibilities of expanding the complex are set forth.
[4-8225]

8225
CSO: 1863

USSR                                                        UDC  681.513.5

ON A DISCRETE MAXIMUM PRINCIPLE

Moscow PROBLEMY KIBERNETIKI [Problems in Cybernetics] in Russian No 34,
1978 pp 247-258

YAKOVLEV, V. M.

[Text]  The author investigates the problem of the necessary optimality con-
ditions for discrete controlled systems.  He proposes a modification of the
Hamiltonian function and proves that for some choice of parameter this modi-
fied function reaches a maximum in optimum control.  The effectiveness of
this approach is illustrated in examples that demonstrate the universality
of the proposed form of the necessary optimality conditions for discrete
systems.  References 18.
[18-11746]


11746
CSO:  1863

FOR OFFICIAL USE ONLY

C. Theory of Mathematical Machines

USSR                                                                    UDC  681.51:51

AN ALGORITHM FOR SOLVING A LINEAR EQUATION WITH A (FREDGOL'M) OPERATOR BY
THE METHOD OF SUCCESSIVE REFINEMENTS (IN ALGOL-60)

Khar'kov INSTITUT RADIOFIZIKI I ELEKTRONIKI AN USSR.  PREPRINTY [Institute
of Radiophysics and Electronics of the Ukrainian SSR Academy of Sciences
(Preprints)] in Russian No 104, 1978 18 pp

LITVINENKO, L. N., PROSVIRNIN, S. L. and REZNIK, I. I.

[Text]  The authors describe an algorithm that is used to solve systems of
linear algebraic equations of the Class 2 Fredgol'm type with a complex
matrix and integral Class 2 Fredgol'm equations with a complex root by the
method of successive refinements.  This method makes it possible to deline-
ate the basic part in the matrix of a system of equations or the root of an
equation's integral operator, while the information contained in the rest of
the operator is accounted for in the form of a convergent series of correc-
tions.  The program is in the form of a procedure in ALGOL-60 that is adjust-
ed for a computer of the M-222 type with the help of a TA-IM translator.
[18-11746]

11746
CSO:  1863

168

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                    UDC  681.513:519.713

USING AN EXPANDED LR(K)-GRAMMAR METHOD IN THE DESIGNING OF PROCESSORS ORI-
ENTED TOWARD THE ANALYSIS OF SYMBOL TEXTS

ZONIS, V. A. and SHUMEY, A. S.

[Text]  The use is suggested of a method of (K)-grammars that is an expansion
of the method of (K)-grammars for the syntactical analysis of symbol texts.
In order to increase the operating speed and reduce the volume of the ana-
lyzer, the list of processor commands is supplemented with special commands
that are oriented on the analyzer's operation algorithm.
[18-11746]


11746
CSO:  1863

FOR OFFICIAL USE ONLY

VII.  GENERAL INFORMATION

A.  Publications

USSR                                                             UDC  658.5...011.56

AUTOMATING INFORMATION PROCESSING AND CONTROL PROCESSES

Leningrad SBORNIK NAUCHNYKH TRUDOV VNII ELEKTROMASHINOSTR. in Russian 1977
198 pp

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10A429K by V. T. Mitroshina]

[Text] The materials of the collection encompass a wide range of questions
which arise in the analysis and synthesis of control systems for precision
instruments and mechanisms.  The dynamics of combined structures with a
digital control computer in the control loop and indirect measurement of the
controlling action are analyzed, as well as those with a conventional struc-
ture, which assure good dynamic parameters.  Principles are proposed for the
automated design of such systems.  Questions of the analysis of errors and
the construction of precision information converters, and the components and
assemblies of control systems are treated.  Control algorithms are developed
and experimentally checked using a digital-analog complex based on the YeS-
1020 computer.  The design of electrical drive systems and photoelectric
tracking systems is described.
[4-8225]

8225
CSO:  1863

USSR                                                         UDC 658.012.011.56

CLASSIFICATION ALGORITHMS OPERATING ON INCOMPLETE INITIAL INFORMATION

Moscow ALGORITMY KLASSIFIKATSII, RABOTAYUSHCHIYE PO CHASTICHNOY ISKHODNOY
INFORMATSII [title as above] in Russian Computer Center of the USSR Academy
of Sciences 1978 16 pp

BADALYAN, L. G.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9A281K]

[Text]  The possibility is considered of selecting an optimum set of char-
acteristics for an arbitrary pattern recognition algorithm.  A family of
algorithms is proposed that make such a selection possible, and proves a
theorem on the existence and uniqueness of an optimum set of characteristics.
References 5.
[3-11746]

11746
CSO:  1863

USSR                                                         UDC 681.322.068

COBOL FOR YeS COMPUTERS

Moscow KOBOL YeS EVM in Russian, Statistika 1978 280 pp

BYKOVA, V. P., ZAGUZOVA, L. K., ROMANOVSKAYA, L. M., SEVASTYUK, A. A. and
KHODOSH, M. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B265K by S. G. Romanova]

[Text]  The book describes a programming system based on standardized COBOL
language and incorporated into YeS EVM software.  It is pointed out that
the standardized COBOL language is modular in structure.  The aggregate of
language elements supporting execution of defined processing procedures
forms the functional module of the language.  The standardized COBOL lan-
guage contains eight functional modules that have the following designations:

core, sequential access, random access, table processing, sorting, report generator, segmentation, library.

An examination is made of the facilities of the language and its capabilities as applied to the presently existing OS YeS and DOS YeS operating systems. [15-6610]

6610
CSO: 1863

USSR                                                          UDC  681.322.01

COMPUTERS.  A HANDBOOK.  SECOND REVISED AND ENLARGED EDITION

Moscow VYCHISLITEL'NYYE MASHINY.  IZDANIYE VTOROYE, PERERAB. I DOP. in Russian, Energiya 1978 224 pp

SHELIKHOV, A. A. and SELIVANOV, YU. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCH'.SLITEL'NAYA TEKHNIKA No 7, 1978 Abstract No 7B242K (annotation)]

[Text] This handbook is a reference publication on present-day computer hardware. Basic systematized data are given on both analog and digital computers, and on the separate devices that are components of these machines, technical specifications, block diagrams and plans for computer arrangement, brief descriptions of functional devices, and recommendations on using computers. As compared with the first edition (1973), the handbook has been augmented with data on new computers and software.

The book is intended for a broad range of specialists in the field of computer technology, and also for college and university students. [443-6610]

6610
CSO: 1863

FOR OFFICIAL USE ONLY


USSR                                                              UDC  681.3:061.1

COMPUTER TECHNOLOGY IN THE SOCIALIST COUNTRIES

VYCHISLITEL'NAYA TEKHNIKA SOTSIALISTICHESKIKH STRAN [title as above] in
Russian No 1, 1977 136 pp

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B3 by V. V. Manilov]

[Text]  The expansion of collaboration by the socialist countries in the
field of computer technology has made necessary the extensive dissemination
of information among specialists involved in the development and utilization
of computer technology in our countries.  In connection with this, publica-
tion of the international magazine VYCHISLITEL'NAYA TEKHNIKA SOTSIALISTI-
CHESKIKH STRAN has begun.  In this magazine, special attention will be given
to articles concerning the use of computers in the national economies of the
socialist countries.  The subject matter in this magazine is concentrated in
several areas:  computer hardware, software, problems of integrated mainte-
nance and the training of personnel, automated management systems (ASU).
Articles on the problems of collaboration by socialist countries in the
areas of computer technology development and use have a definite place in
this magazine.  The publishers also propose to have, in each issue, brief
descriptions of new hardware and software that have passed joint testing and
are being prepared for series production and introduction.  The articles in
the magazine are grouped as follows:  International Collaboration Among the
Socialist Countries in the Area of Computer Technology; Computer Hardware;
Computer Software; Use of Computer Technology; New Hardware for the Unified
System of Computers.
[3-11746]


11746
CSO:  1863

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                            UDC 681.3:061.1

COMPUTER TECHNOLOGY IN THE SOCIALIST COUNTRIES

VYCHISLITEL'NAYA TEKHNIKA SOTSIALISTICHESKIKH STRAN [title as above] in
Russian No 2, 1977 176 pp

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 9, 1978 Abstract No 9B4 by V. V. Manilov]

[Text] It has been noted that the results of joint developments of computer
hardware and software conducted within the framework of the Intergovernmental
Commission on Collaboration Among the Socialist Countries in the Field of
Computer Technology have been introduced on a broad scale and are having a
huge economic effect. There has been a significant increase in the flow of
information related to contemporary work and in the circle of specialists
interested in receiving this information. The "Computer Hardware" section
contains articles on the following subjects:  development of a basic memory
for the YeS EVM [Unified System of Computers]; the network architecture of
data teleprocessing—the basis of the organization of the computer networks
of the socialist countries; the present state and prospective problems in the
diagnostics of digital circuits; the organization of control for the YeS-7187
sequential printing mechanism; solution of compatibility problems when using
the YeS-A527 and YeS-A528 monitoring packages; the use of logic modules of
increased complexity in the development of digital devices; an analytical
method for optimizing the discipline of command processing by a YeS EVM pro-
cessor, with combining of commands; a technique for simulating digital cir-
cuits on a computer; a 29-Mbyte disk subsystem.  The "Computer Software" sec-
tion covers the following subjects:  the state and prospects for the develop-
ment of the OS YeS [Unified System operating system]; the state and prospects
for the development of software for collective-use computer centers; a system
for forming and maintaining libraries; the SYSTRAN language for systems pro-
gramming.  Questions discussed in the "Use of Computer Technology" section
include:  use and development of small computers in the Polish People's Re-
public; designing collective-use computer centers; an automated management
system (ASU) for commercial objects that is based on electronic recording
cassettes and small computers; programmed tests for the functional checking
of YeS-5501 subscriber points; automating the planning and evaluation of the
configuration of teleprocessing facilities.  "Questions on Computer Operation"
is devoted to an informational approach to the creation of a modern system of
automatic computer diagnostics.  Attention is also given to questions on per-
sonnel training.  In the section "New Hardware for the YeS EVM," there are
reports on the YeS-1060 computer, the YeS-5025 magnetic tape storage unit,
the YeS-5525 control device for magnetic tape storage units, the YeS-5066
replaceable magnetic disk storage unit, the YeS-5019 unit for input from
punched cards, and the YeS-7037 alphanumeric printing unit.
[3-11746]

11746
CSO: 18uj                              174

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY


USSR                                                        UDC  681.322.068

CROSS-ASSEMBLER FOR THE M-400 COMPUTER IN THE YeS OPERATING SYSTEM

Vladivostok KROSS-ASSEMBLER DLYA EVM M400 V OS YeS in Russian, Preprint,
1978 18 pp

SEMENOV, S. M.

[Text]  The structure of the A400-YeS.1 cross assembler is presented.  Spe-
cial translation algorithms are presented:  determination of the type of
commands; analysis of types of addressing; processing of arithmetic expres-
sions.  The algorithms are designed for the specifics of the command system
of M400 computers.  The proposed method of creating a microprocessor is
based on using a data set produced by the assembler of the YeS operating
system.

The rules of macrogeneration are the same as for the assembler language of
YeS EVM computers.  The proposed technique for programming in PL/1 includes:
organization of input/output in the Assembler language, and assumes limited
use of built-in functions; use of the apparatus of based variables; use of
data conversion facilities.  Figures 7; references 4.
[15-6610]


6610
CSO:  1863

FOR OFFICIAL USE ONLY

USSR                                                                    UDC   681.322

DESIGNING THE FUNCTIONAL ASSEMBLIES OF COMPUTERS AROUND INTEGRATED CIRCUITS

YERMOLAYEV, B. I., VARTANYAN, V. I., VUDOROV, I. V., KARAPETYAN, A. M.,
KVASNITSKIY, V. N., LEONT'YEV, O. D., MIKITIN, V. M., MOKEYEV, O. K.,
NAGOLKIN, A. N., NORENKOV, I. P. and FAYZULAYEV, B. N.

[Text]  The specific features of the design of the functional assemblies of
computers are treated, the influence of IC structures on the circuit design
solution is studied and questions of the structural design and fabrication
methods for IC's are analyzed.  Methods of designing the main functional
assembly of a computer are given, where this unit is a standard replaceable
module, incorporating the radioelectronic components, the IC's, the printed
circuit boards and the plug connectors.  The questions of IC standardization
and the standard replaceable modular components are discussed, as well as
the monitoring and testing of them for reliability, and the automated design
feasibility.
[4-8225]

8225
CSO:  1863

USSR                                                          UDC  681.321

THE ELEKTRONIKA EPOS KEYBOARD COMPUTER

Moscow ELEKTRONIKA EPOS in Russian 1978 Statistika Publishers 96 pp

BARABOSHKIN, A. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B836K by V. T. Mitroshina]

[Text]  The book is a practical handbook on the "Elektronika EPOS" electronic
keyboard computer (EKVM).  The necessary data are given for the class of very
simple keyboard computers, including the specific data for the "Elektronika
EPOS" EKVM.  The component base of the machine is treated in detail, including
the components for matching the LSI circuit inputs and outputs.  The device
and the operation of the functional assemblies of the EKVM and the algorithms
for the operations are presented.  The book contains the necessary data on
the structural design and technical servicing of the machine.
[4-8225]


8225
CSO:  1863


USSR                                                          UDC  681.322.01

FUNDAMENTALS OF COMPUTER SYSTEMS THEORY.  TEXTBOOK FOR STUDENTS OF THE
HIGHER EDUCATIONAL INSTITUTES STUDYING THE SPECIALTIES "ELECTRONIC COMPU-
TERS," "AUTOMATED MANAGEMENT SYSTEMS" AND "APPLIED MATHEMATICS"

Moscow OSNOVY TEORII VYCHISLITEL'NYKH SISTEM.  UCHEBNOYE POSOBIYE DLYA
STUDENTOV VUZOV, OBUCH. PO SPETS. "ELEKTRON. VYCHISL. MASHINY," "AVTOMATI-
ZIR. SISTEMY UPR." I "PRIKL. MAT." in Russian 1978 408 pp

MAYOROV, S. A., Editor

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B231K]

[Text]  [N/A]

8225
CSO:  1863
                                  177

FOR OFFICIAL USE ONLY

USSR                                                            UDC  658.012.011.56

HARDWARE AND SOFTWARE OF AUTOMATIC MANAGEMENT SYSTEMS

Kiev TEKHNICHESKOYE AND PROGRAMMNOYE OBESPECHENIYE AVTOMATICHESKIKH SISTEM
UPRAVLENIYA, Hardware and Software of Automatic Management Systems in Rus-
sian 1978 139 pp

MOROZOV, A. A. (editor), Institute of Cybernetics

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, Jul 79 Abstract No 7A390 K]

[Text]  Discussed are the problems in design and installation of devices for
engineering complexes of diverse-purpose automatic management systems (ASU)
operating in real time, also problems of general-purpose and special-purpose
software for such systems.  The contents of this collection or articles
should be useful to both designers and users of automatic management systems.
[39-2415]

2415
CSO:  1863

USSR                                                            UDC  681.322.066

HOW OPERATING SYSTEMS WORK

Moscow KAK RABOTAYUT OPERATSIONNYYE SISTEMY in Russian, Nauka, 1978 192 pp

TRAKHTENGERTS, E. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 1, 1979 Abstract No 1B142K by S. G. Romanova]

[Text]  It is noted that a major feature of third generation computer soft-
ware is well-developed operating systems.  Operating systems are complex
program packages that control the computing process.  The book gives the
classification and principles of design of operating systems, describes the
principal functions, makeup, and peculiarities of their operation in real
time.

178

FOR OFFICIAL USE ONLY

An examination is made of problems of organizing exchange with external memories, preparing the user program for execution, assembly of modules and organization of the relations among them, program loading. A description is given of the job and preparation for execution. Examples are given of the algorithm for selecting a job for solution by a scalar criterion and for solution by a vector criterion. An analysis is made of problems of controlling the computing process: organization of responses to interruption, the system of interruptions, dialog with the operator and so on.
[15-6610]

6610
CSO: 1863

USSR                                                           UDC  681.3(07)

INTRODUCTION TO THE SYSTEM OF PROGRAMMING FOR THE YeS OPERATING SYSTEM

Moscow VVEDENIYE V SISTEMU PROGRAMMIROVANIYA OS YeS in Russian, Statistika 1978 144 pp

LEBEDEV, V. N. and SOKOLOV, A. P.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 7, 1978 Abstract No 7B14K (annotation)]

[Text]  The book gives the principles of operation of the system of programming for the YeS operating system, describes the language of assignment control, data sets, the controlling statements of the systems processing programs in volume sufficient for using the programming system in typical practical cases of translation, editing, loading and executing applied programs. The book is written for users of the YeS operating system who are acquainted with programming in one of the input languages of this system.
[443-6610]

6610
CSO: 1863

USSR                                                              UDC  681.322.068

THE LYAPAS-M PROGRAMMING SYSTEM

Minsk SISTEMA PROGRAMMIROVANIYA LYAPAS-M in Russian, Nauki i tekhnika, 1978
239 pp

ZAKREVSKIY, A. D. and TOROPOV, N. R.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B215K by I. V. Il'chenko]

[Text]  The book describes the new LYAPAS-M algorithmic language and a pro-
gramming system that is oriented toward logical-combinatoric problems and
is realized on computers of the Minsk-32, BESM-6 and YeS types.  The language
capabilities for operation with symbols and logic vectors enable creation of
programs at least as fast as those written in autocodes.  The language can
be used in developing programming and operating systems including interactive
systems.  Figures 8; tables 3; references 12.
[443-6610]


6610
CSO:  1863


USSR                                                              UDC  681.322.01

MULTIFUNCTIONAL REGULAR COMPUTING STRUCTURES

Moscow MNOGOFUNKTSIONAL'NYYE REGULYARNYYE VYCHISLITEL'NYYE STRUKTURY in
Russian, Sov. radio, 1978 288 pp

BALASHOV, YE. P., SMOLOV, V. B., PETROV, G. A. and PUZANKOV, D. M.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7B57K by V. T. Mitroshina]

[Text]  An examination is made of a new class of devices for data processing
and storage--multifunctional regular computing structures.  Regular struc-
tures have been developed with minimum functional and hardware complexity.
The proposed structures are based on the principle of data processing in
memories that are an inseparable part of every computing system.

The monograph contains an analysis and synthesis of multifunctional memory devices, methods of hardware realization based on magnetic and semiconductor memory devices. Considerable attention has been given to the problem of using multifunctional memories as a basis for organizing algorithmically universal structures--processors--with an increased degree of uniformity. Of considerable interest is the authors' research on organizing combined operation of processors and homogeneous computing systems.

A separate division is devoted to organization of algorithmically universal structures, and in particular to problems of designing processors for realization of branching logic algorithms. Homogeneous computing systems that consist of elementary processors provide resultant productivity of the order of hundreds of millions of operations per second. Software has been developed for homogeneous systems.

Multifunctional regular computing structures of the multifunctional memory type may find extensive application in development of both universal and specialized systems. Figures 119; tables 73; references 35.
[443-6610]

6610
CSO: 1863

USSR                                                    UDC 681.327.67

MEMORY COMPONENTS DESIGNED AROUND MOS STRUCTURES

Moscow ELEMENTY ZU NA MDP STRUKTURAKH in Russian 1978 Energiya Publishers 176 pp

PRANGISHVILI, I. V., LEMENTUYEV, V. A. and SONIN, M. S.

[Text] The book is devoted to one of the promising trends in microelectronics: semiconductor integrated circuit memories using MOS structures. The general principles for the organization of semiconductor integrated circuit memories and the major characteristics of memory elements based on MOS structures, the various types of memory elements used in the construction of static and dynamic random access memories, series access dynamic memories as well as read only memories are treated. Considerable attention is

181

devoted to the questions of constructing memory elements with associative
information processing principles. The book is intended for engineering
and technical personnel and scientific workers engaged in the field of micro-
electronics and digital computer engineering, as well as for students in the
upper division courses of the corresponding specialties.
[4-8225]


8225
CSO: 1863


USSR                                           UDC  656.6.011.56:681.32(02)

THE MORFLOT AUTOMATED MANAGEMENT SYSTEM

Moscow ASU 'MORFLOT' in Russian, Znaniye, 1978 64 pp

BONDAREKO, V. S.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 6, 1978 Abstract No 7A570K (annotation)]

[Text] Problems of improving control of shipping are discussed. The prin-
ciples of development of the Morflot automated management system (ASU) are
presented, and a description is given of its hardware, software, informa-
tional facilities and organizational-legal support. Ways to optimize the
work in the sector are characterized, as well as new management facilities.
[443-6610]


6610
CSO: 1863

USSR                                                    UDC  658.012.011.56

PROGRAMMING ON THE "ELEKTRONIKA-100" FOR JOBS IN AN AUTOMATED MANAGEMENT
SYSTEM FOR TECHNOLOGICAL PROCESSES

Moscow PROGRAMMIROVANIYE NA 'ELEKTRONIKE-100' DLYA ZADACH ASU TP in Russian,
Sov. radio, 1978 295 pp

AKUSHSKIY, I. YA. and TROYANOVSKIY, V. M.

[Text]  The book is devoted to description of a minicomputer that has high
speed (300,000 additions per second in the integrated modifications), a
flexible interrupt system and a well developed system of peripheral devices.
Programming is illustrated by examples taken from practice of development of
software for automated control systems in industry.

An examination is made of problems of constructing algorithmic software and
development of programs for a system for automated management of technologi-
cal processes using the "Elektronika-100" computer, where machine and pro-
gramming play the part of a reliable tool for achieving the formulated goals.
A dispatcher program is presented that is used to organize real-time control
programs.  Figures 107; tables 35; references 43.
[444-6610]


6610
CSO:  1863

USSR                                                        UDC 681.322.06

PROGRAMMING THEORY AND TRANSLATION METHODS. PROCEEDINGS OF THE SOVIET AND
FRENCH SYMPOSIUM, NOVOSIBIRSK, 10-15 MAY 1976

Novosibirsk TEORIYA PROGRAMMIROVANIYA I METODY TRANSLYATSII. TRUDY SOV.-
FRANTS. SIMPOZ. NOVISIBIRSK, 10-15 MAYA 1976 in Russian 1977 156 pp

POTTOSIN, I. V., Editor and KOTOV, V. YE.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B180K]

[Text] [N/A]


8225
CSO: 1863


USSR                                                        UDC 681.322.01

QUESTIONS IN COMPUTER ENGINEERING. COLLECTION OF SCIENTIFIC PROCEEDINGS OF
THE COMPUTER CENTER OF THE SIBERIAN BRANCH OF THE USSR ACADEMY OF SCIENCES

Novosibirsk VOPROSY VYCHISLITEL'NOY TEKHNIKI. SBORNIK NAUCHNYKH TRUDOV
VYCHISLITEL'NOGO TSENTRA SIBIRSKOGO OTDELENIYA AN SSSR in Russian 1977 91 pp

KUL'KOV, N. V., Editor

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B14K by V. A. Garmash]

[Text] The collection contains the following papers: a CAMAC terminal set
for interfacing remote users with a computer, program controlled modules for
the design of data transmission systems, the organization of information in-
put/output in a multimachine computer complex, an interface for an M-6000
computer to a BESM-6 computing complex, software for the interface system
of the HP2000F and BESM-6, and a control processor for the CAMAC system.
[4-8225]


8225
CSO: 1863

FOR OFFICIAL USE ONLY


USSR                                                        UDC   658.6.011.56

SOFTWARE FOR YeS COMPUTERS AND AUTOMATED MANAGEMENT SYSTEMS

Tallin MATEMATICHESKOYE OBESPECHENIYE YeS EVM I ASU in Russian, Valgus, 1978
190 pp

ALAD'YEV, V. Z., editor

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 7, 1978 Abstract No 7A556K]

[Text]  The following problems are discussed in the process of developing
software for automated amangement systems (ASU):  1) Selection of the most
suitable base software for YeS computers; 2) Training the necessary number
of programmers in a short period; 3) Developing a software flowchart for the
automated management system that corresponds most closely to the specific
conditions; 4) Adaptation of the base software to the specific conditions
of its utilization; and 5) Organizational chart of development of software
for an automated business management system.
[443-6610]


6610
CSO:  1863


USSR                                                        UDC   681.322.01

STRUCTURES OF COMPUTING SYSTEMS AND THEIR EFFECTIVENESS IN SOLVING VARIOUS
CLASSES OF PROBLEMS.  REPORT TO THE SCIENTIFIC AND TECHNICAL SEMINAR ON
MULTIPROCESSOR COMPUTING COMPLEXES, MOSCOW, 21-22 Sep 77

Moscow STRUKTURY VYCHISLITEL'NYKH SISTEM I IKH EFFEKTIVNOST' PRI RESHENII
RAZNYKH KLASSOV ZADACH. DOKLAD NA NAUCHNO-TEKHNICHESKOM SEMINARE 'MNOGOPROT-
SESSORNYYE VYCHISLITEL'NYYE KOMPLEKSY', MOSKVA, 21-22 NOYAB. 1977 G., in
Russian, Preprint No 11 for 1977 15 pp

KARTSEV, M. A.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA No 8, 1978 Abstract No 8B21K]

No text
[444-6610]

6610                                          185
CSO:  1863                          FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

USSR                                                          UDC 681.322.068

THE THEORY AND PRACTICE OF SYSTEM PROGRAMMING

Novosibirsk TEORIYA I PRAKTIKA SISTEMNOGO PROGRAMMIROVANIYA in Russian 1977
133 pp

KOTOV, V. YE. and POTTOSIN, I. V.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA
TEKHNIKA in Russian No 10, 1978 Abstract No 10B169K by V. A. Garmash]

[Text]  The collection contains the following papers:  the architecture of
universal systems of analytical transforms (the applicability to a class of
problems and tying into programming system); KANVA (comprehensive analytical
computer);  a general purpose operating system for the BESM-6 computer; the
MS multiple access system; the possibilities for the realization of micro-
packages with the interpretation and compilation of programming languages;
a roundabout approach to the synthesis of a translator using the example of
LITTL language.  The design of a multilanguage processor for dynamic debug-
ging is described; TELESETL:  a dialog system for starting and debugging
SETL programs; a check of program correctness; on two methods of deparallel-
ing programs; the LL (k) -- grammar association, oriented towards efficient
syntactical analysis; memory savings with dynamic deparalleling.
[4-8225]

8225
CSO:  1863

- END -

186