USSR   UDC 681.332.05

VOSTOKIN, Ye. A., YERSHOV, L. I., ZHURAVLEV, P. A., LEBEDEV, M. P., NOVIKOV, A. I., and TSYBIN, Yu. B.

"Device for Linking a Computer With a Communication Channel"

USSR Authors' Certificate No 341054, Cl. G 06j 3/00, filed 4 May 70, published 5 Jun 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 18, 5 Jun 72, p 186)

Abstract: The device contains an electronic telegraph receiver and transmitter, a block of keys, and delay circuit flip-flops. For simplification the outputs of the computer are connected to the inputs of the block of keys, whose outputs are connected to the inputs of the electronic transmitter; and the inputs of the control circuits of the block of keys are connected to the outputs of a flip-flop, one input of which is connected to the "trigger" output of the computer; the other, to the transmitter output; the outputs of the electronic receiver are connected to the inputs of the flip-flops, whose outputs are connected to the inputs of the computer, and the "trigger" output of the electronic receiver is connected through the delay circuit to the "clear" inputs of the flip-flops.
1/1

- 13 -

UDC 539.3

USSR

BRUSILOVSKAYA, G. A. and YERSHOV, L. V. (Moscow)

"The Stress-Deformed State of a Finite Cylinder That Is Being Subjected to the Action of Dynamic Loads"

Moscow, Prikladnaya Matematika i Mekhanika, No 4, 1973, pp 724-730

Abstract: A solution is presented for a dynamic axisymmetric problem of the theory of elasticity for a cylinder of arbitrary length with given displacements on its curvilinear and plane surfaces. By means of the introduction of some auxiliary functions, the initial nonself-conjugate equations are transformed into equivalent first-order equations for an expanded eigenvector. By means of these eigenvectors, the arbitrary displacements given on the flat end of the cylinder are expanded into series in accordance with the eigensolutions of the problem. Finite formulas are obtained for the coefficients of this expansion. As a particular case, the solution of the statics of the cylinder proceeds from $\omega \rightarrow 0$. 5 references.

1/1

UDC 539.3

USSR

YERSHOV, N. F.

"Limits of Applicability of the Karman Equations for the Bending of Plates"

Tr. Gor'kov. in-ta inzh. vod. transp. (Works of the Gor'kiy Institute of Water Transportation Engineers), 1972, No. 125, pp 198-204 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V164)

Translation: Approximate expressions for the relative deformations ε_x, ε_y and the angle of shift ε_{xy} of the median surface of a plate are discussed for nonlinear values of the displacements of this surface u, v, w along the orthogonal linear axes x, y and z respectively. Exact expressions and also approximate canonical expressions

$$\varepsilon_x = \frac{\partial u}{\partial x} + \frac{1}{2}\left(\frac{\partial w}{\partial x}\right)^2, \quad \varepsilon_y = \frac{\partial v}{\partial y} + \left(\frac{\partial w}{\partial y}\right)^2$$

$$\varepsilon_{xy} = \frac{\partial u}{\partial y} + \frac{\partial v}{\partial x} + \frac{\partial w}{\partial x}\frac{\partial w}{\partial y}$$

are given in sections 1-2 of the Kirchhoff lecture on mathematical physics

1/2

USSR

YERSHOV, N. F., Tr. Gor'kov. in-ta inzh. vod. transp., 1972, No. 125, pp 198-204

(Kirchhoff, G., Vorlesungen uber mathematische Physik. mekhanik. Leipzig, V. G. Teubner, 1876, pp 450-457). The article discusses other essentially more complicated relationships obtained by retaining a larger number of terms of the series of the exact Kirchhoff formulas, and also representa- tions given earlier (Kolesnikov, L. A., V sb. Raschet prostranstvennykh konstruktsiy, No. 7, Moscow, Gostroyizdat, 1961, pp 205-214 -- RZhMekh, 1963, 9V96). E. I. Grigolyuk.

2/2

1/2   011   UNCLASSIFIED   PROCESSING D   )2OCT70
TITLE--THE LIMITING STATE AND RELIABILITY OF CONSTRUCTIONS OF RIVER
   VESSELS -U-
AUTHOR-(02)-YERSHOV, N.F., CVECHNIKOV, O.I.

COUNTRY OF INFO--USSR

SOURCE--THE LIMITING STATE AND RELIABILITY OF CONSTRUCTIONS OF RIVER
   VESSELS (PREDEL'NUYE SOSTOYANIYE I NADEZHNOST' KNOSTRJCTSIY ROCHNYKH
DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--RIVER, SHIPBUILDING ENGINEERING, SHIP HULL, INLAND WATERWAY
   TRANSPORTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0584   STEP NO--UR/0000/70/000/000/0001/0151

CIRC ACCESSION NO--AM0110373
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--02OCT70

2/2   011
CIRC ACCESSION NO--AM0110373
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTRODUCTION 3.   CHAPTER I THE
DURABILITY AT THE BORDER OF INSTABILITY 5.   II RESILIENT PLASTIC
DEFORMATIONS 41.   III CALCULATION OF VESSEL DESIGNS IN THE
SUPERCRITICAL REGION INCLUDING PLASTIC DEFORMATIONS 68.   IV TECHNICAL
CAUSES AND THE CHARACTER OF BREAKS IN THE HULL OF RIVER VESSELS 95.   V
EXPERIMENTAL INVESTIGATIONS OF THE INFLUENCE OF TECHNOLOGICAL AND
DESIGN FACTORS ON THE LIMITING DURABILITY OF HULL CONSTRUCTIONS 132.
LITERATURE 146.   GIVEN IS THE METHOD OF CALCULATING THE DURABILITY,
RIGIDITY AND STABILITY OF CONSTRUCTION ELEMENTS OF THE HULL OF A VESSEL
TAKING INTO ACCOUNT THE PLASTIC DEFORMATIONS ARISING IN THE MATERIAL;
THE DURABILITY AT THE BORDER OF INSTABILITY; RESILIENT PLASTIC
DEFORMATIONS. ON THE BASIS OF ANALYSIS OF ACCIDENTS AND DAMAGES OF
HULLS RECOMMENDATIONS ARE GIVEN ON THE EVALUATION OF THE LIMITING
DURABILITY AND RELIABILITY OF RIVER VESSELS.

UNCLASSIFIED

USSR

UDC 681.332.05

VOSTOKIN, Ye. A., YERSHOV, L. I., ZHURAVLEV, P. A., LEBEDEV, M. P., NOVIKOV, A. I., and TSYBIN, Yu. B.

"Device for Linking a Computer With a Communication Channel"

Abstract: The device contains an electronic telegraph receiver and transmitter, a block of keys, and delay circuit flip-flops. For simplification the outputs of the computer are connected to the inputs of the block of keys, whose outputs are connected to the inputs of the electronic transmitter; and the inputs of the control circuits of the block of keys are connected to the outputs of a flip-flop, one input of which is connected to the "trigger" output of the computer; the other, to the transmitter output; the outputs of the electronic receiver are connected to the inputs of the flip-flops, whose outputs are connected to the inputs of the computer, and the "trigger" output of the electronic receiver is connected through the delay circuit to the "clear" inputs of the flip-flops.
1/1

- 13 -

USSR   UDC 539.3

YERSHOV, N. F.

"Limits of Applicability of the Karman Equations for the Bending of Plates"

Tr. Gor'kov. in-ta inzh. vod. transp. (Works of the Gor'kiy Institute of
Water Transportation Engineers), 1972, No. 125, pp 198-204 (from RZh-
Mekhanika, No 3, Mar 73, Abstract No 3V164)

Translation: Approximate expressions for the relative deformations ε_x, ε_y
and the angle of shift ε_{xy} of the median surface of a plate are discussed for
nonlinear values of the displacements of this surface u, v, w along the ortho-
gonal linear axes x, y and z respectively. Exact expressions and also
approximate canonical expressions

$$\varepsilon_x = \frac{\partial u}{\partial x} + \frac{1}{2}\left(\frac{\partial w}{\partial x}\right)^2, \quad \varepsilon_y = \frac{\partial v}{\partial y} + \left(\frac{\partial w}{\partial y}\right)^2$$

$$\varepsilon_{xy} = \frac{\partial u}{\partial y} + \frac{\partial v}{\partial x} + \frac{\partial w}{\partial x}\cdot\frac{\partial w}{\partial y}$$

are given in sections 1-2 of the Kirchhoff lecture on mathematical physics
1/2

USSR

YERSHOV, N. F., Tr. Gor'kov. in-ta inzh. vod. transp., 1972, No. 125,
pp 198-204

(Kirchhoff, G., Vorlesungen uber mathematische Physik. mekhanik. Leipzig,
V. G. Teubner, 1876, pp 450-457). The article discusses other essentially
more complicated relationships obtained by retaining a larger number of
terms of the series of the exact Kirchhoff formulas, and also representa-
tions given earlier (Kolesnikov, L. A., V sb. Raschet prostranstvennykh
konstruktsiy, No. 7, Moscow, Gostroyizdat, 1961, pp 205-214 -- RZhMekh,
1963, 9V96). E. I. Grigolyuk.

2/2

1/2   011   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--THE LIMITING STATE AND RELIABILITY OF CONSTRUCTIONS OF RIVER
VESSELS -U-
AUTHOR-(02)-YERSHOV, N.F., CVECHNIKOV, O.I.

COUNTRY OF INFO--USSR

SOURCE--THE LIMITING STATE AND RELIABILITY OF CONSTRUCTIONS OF RIVER
VESSELS (PREDEL'NUYE SOSTOYANIYE I NADEZHNOST' KNOSTRJCTSIY ROCHNYKH
DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--RIVER, SHIPBUILDING ENGINEERING, SHIP HULL, INLAND WATERWAY
TRANSPORTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0584   STEP NO--UR/0000/70/000/000/0001/0151

CIRC ACCESSION NO--AM0110373
                    UNCLASSIFIED

CIRC ACCESSION NO--AM0110373
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTRODUCTION 3.   CHAPTER I THE
DURABILITY AT THE BORDER OF INSTABILITY 5.   II RESILIENT PLASTIC
DEFORMATIONS 41.   III CALCULATION OF VESSEL DESIGNS IN THE
SUPERCRITICAL REGION INCLUDING PLASTIC DEFORMATIONS 68.   IV TECHNICAL
CAUSES AND THE CHARACTER OF BREAKS IN THE HULL OF RIVER VESSELS 95.   V
EXPERIMENTAL INVESTIGATIONS OF THE INFLUENCE OF TECHNOLOGICAL AND
DESIGN FACTORS ON THE LIMITING DURABILITY OF HULL CONSTRUCTIONS 132.
LITERATURE 146.   GIVEN IS THE METHOD OF CALCULATING THE DURABILITY,
RIGIDITY AND STABILITY OF CONSTRUCTION ELEMENTS OF THE HULL OF A VESSEL
TAKING INTO ACCOUNT THE PLASTIC DEFORMATIONS ARISING IN THE MATERIAL;
THE DURABILITY AT THE BORDER OF INSTABILITY; RESILIENT PLASTIC
DEFORMATIONS. ON THE BASIS OF ANALYSIS OF ACCIDENTS AND DAMAGES OF
HULLS RECOMMENDATIONS ARE GIVEN ON THE EVALUATION OF THE LIMITING
DURABILITY AND RELIABILITY OF RIVER VESSELS.

USSR   UDC 532.528

YERSHOV, N. S., OVSYANNIKOV, B. V., and RAMODINA, V. V.

"Investigation of Cavitation Development in Axial Screw Forepumps by Means
of High-Speed Photography"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 2,
1972, pp 173-175

Abstract: Results are presented of high-speed photography of the cavitation
zones in an axial screw forepump with change of the backwater at the intake.
The experiments were conducted with ordinary tap water and with deaerated
water at two flow rates. Analysis of the obtained photos shows that cavi-
tation with liberation of air differs greatly from cavitation caused purely
by water vapor. The experimental results make it possible to obtain the
development pattern of cavitation zones that form in axial forepumps. 2
figures.

1/1

- 74 -

Abstract: A description of a laser anemometer is presented, together with
some results of measurements of mean and fluctuating velocities in a free
turbulent jet. It is shown that the experimental data are in good agreement
with theory and with results obtained by other methods. This testifies to the
effectiveness of the proposed system of a laser anemometer, and to the possi-
bility of its use for measuring the characteristics of turbulent streams. 2
figures. 5 references.

1/1

105527s **Ultraviolet absorption spectra of some hydroacridines.** Ershova, T. I.; Ershov, O. A.; Vysotskii, V. I.; Stonik, V. A. (USSR). *Opt. Spektrosk.* 1970, 28(1), 47–50 (Russ). Absorption spectra of acridine (I), 1,2-dihydroacridine (II), 1,2,3,4-tetrahydroacridine (III), 1,2,7,8-tetrahydroacridine (IV), 1,2,5,6,7,8-hexahydroacridine (V), and 1,2,3,4,5,6,7,8-octahydroacridine (VI) were scanned in the range 210–400 mμ in 10^{-3}–10^{-5} M EtOH, or hexane solns. The effect of the symmetry and size of the π-electron system on the spectral properties of I analogs was thus investigated. The absorption corresponds to $\pi \rightarrow \pi^+$ transitions in I–V; a weak $n \rightarrow \pi^*$ band was obsd. in the spectrum of VI at 235 mμ. The conclusion was made on basis of the changes between the spectra in solvents of different polarity. Redn. of the conjugate system led to hypsochromic shifts in the series I–VI. The form of the conjugated system obviously affected the size of shift. (The longwave absorption was the same in I and II; significant shifts occurred between I, and III, or IV and V.) Analogy between the spectra of I analogs and the corresponding compds. of the anthracene series was obsd. The effect of the heterocyclic N atom on the electron satn. in the π-electron system is discussed.   H. Parizkova

REEL/FRAME
19801900

7 N

Instrumentation and Equipment

USSR   UDC 620.179.14

YERSHOV, R. Ye., and LIVSHITS, V. L., Institute of Physics of the Siberian
Department of the Academy of Sciences USSR

"Device for the Homogeneity Control of the Saturation Flux in Thin
Cylindrical Magnetic Films"

Abstract: A device for the control of thin cylindrical magnetic films by only
one parameter, the saturation flux, is described by reference to its principal
diagram. The block diagram consists of the sinusoidal voltage exciter,
resonance power amplifier, tuned power amplifier, and recording unit. The
characteristics of the control device are presented. The device can also be
used for controls of production processes of thin cylindrical magnetic films.
One figure, one bibliographic reference.

1/1

1/2   039   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--INDUCED ANISOTROPY OF CHEMICALLY PRECIPITATED IRON NICKEL
  PHOSPHORUS FILMS -U-
AUTHOR-(04)-YERSHOV, R.YE., RYABININ, V.P., BATENKOVA, A.YA., LAZAREVA,
  L.V.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(3), 136-8

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ANISOTROPY, IRON ALLOY, NICKEL ALLOY, PHOSPHORUS ALLOY, METAL
  FILM, SURFACE FILM, MAGNETIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/1030   STEP NO--UR/0139/70/013/003/0136/0138

CIRC ACCESSION NO--AT0121626
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0121626
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   INDUCED ANISOTROPY IN FILMS OF FE
14 PLUS NI 74 PLUS P 12PERCENT, 1 MU THICK, OBTAINED BY CHEM. PPTN. ON
BRASS DISKS, 12 MM IN DIAM., WAS STUDIED IN MAGNETIC FIELDS OF 50-500 OE
PARALLEL TO THE SURFACE.   THE COERCIVE FORCE, H SUBC, INDUCED BY H IN
FILMS ON ELECTROPOLISHED BRASS, AS A FUNCTION OF THE ANGLE, ALPHA,
BETWEEN THE DIRECTION OF H DURING PPTN. AND THE DIRECTION DURING
MAGNETIZATION, PASSED THROUGH A MAX. AT ALPHA EQUALS 90DEGREES.   BUT IN
FILMS PPTD. ON DISKS POLISHED SO THE SCRATCHES WERE PARALLEL TO EACH
OTHER, THE H SUBC PASSED THROUGH A MIN. AT 90DEGREES; I.E., DIRECTED
POLISHING OF THE SUBSTRATE INDUCED A HIGHER ANISOTROPY THAN A MAGNETIC
FIELD.   FACILITY: INST. FIZ., KRASNOYARSK, USSR.

UNCLASSIFIED

USSR   UDC: 51

DEDIKOV, E. A., YERSHOV, S. G., CHERNINA, L. P.

"On One Method of Distributing a Production Plan Over Planned Periods"

Pribory i sistemy avtomatiki. Resp. mezhved. temat. nauch.--tekhn. sb. (Instruments and Systems of Automation. Republic Interdepartmental Thematic Scientific and Technical Collection), 1972, vyp. 21, pp 16-27 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V582)

Translation: Justification is given for distribution of an annual production plan into quarters. The problem of providing discrete articles for the quarterly plans, and optimum utilization of the resultant reserves in production capacity is considered. A mathematical model and algorithms for solution of the formulated problem are presented. A flow-chart is worked out. Authors' abstract.

1/1

USSR   UDC 621.373.544(088.8)

YERSHOV, S. M.

"Trigger with Emitter Coupling"

USSR Author's Certificate No 250990, Filed 20 Mar 68, Published 30 Jan 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G269P)

Translation: This author's certificate introduces a trigger with an emitter
coupling executed by the Schmidt schematic in which the collector and base
circuits of the output transistor comprise two series-connected resistors.
In order to decrease hysteresis and increase the speed, a circuit of series
included reference semiconductor diodes is included between the series-
connected collector resistors of the output transistor and the positive
terminal of the bias source. A regulated resistor is included between the
semiconductor diode and the series connected resistors of the base circuit
of the output transistor.

1/1

USSR   UDC   621.317.7:621.3.029.4

CHAPTSOV, R. P., YERSHOV, S. S.

"A Complex System for Statistical Analysis of Electric Signals"

Translation: The authors consider the general structure of a universal digital-analog system for calculating a set of estimates of the statistical characteristics of electric signals in the audio frequency range. The system contains a number of devices which can be divided into three groups: devices for analyzing the distributions of amplitudes of a random signal, devices for computing the estimate of the mathematical expectation and two-dimensional initial moment function of second order, and devices for calculating the coefficient of the amplitude spectrum. All devices are based on standard transistors. Seven illustrations, bibliography of 1 title. N. S.

1/1

USSR

UDC: 621.373.531(088.8)

CHERKASOV, L. A., TARNOPOL'SKIY, V. L., YERSHOV, S. V.

"A Device for Shaping Low-Frequency Oscillations"

USSR Author's Certificate No 262188, filed 25 Dec 67, published 2 Jun 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11G180 P)

Translation: This Author's Certificate introduces a device for shaping low-
-frequency oscillations. The unit contains two high-frequency oscillators,
which are based on transistors with a delay line in the feedback circuits
used as the frequency-determining element. The device also contains a beat
detector and a low-frequency filter. In order to produce stable low-
-frequency oscillations when there are variations in temperature, the delay
line is connected through decoupling capacitors between the collectors of
the transistors, and the beat detectors is connected to the centertap of the
delay line which is loaded by a resistor.

1/1

USSR

UDC 8.74

ARKHIPOV, I. M., YERSHOV, V. A., YERSHOVA, E. B.

"Problem of Algorithms for Selecting Connecting Paths in Four-Cascade Commutation Systems"

V sb. Sist. raspredeleniya inform. (Information Distribution Systems -- collection of works), Moscow, Nauka Press, 1972, pp 136-145 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V571)

Translation: On the basis of analyzing the macrostates of a four-cascade commutation circuit, the algorithms for setting up the circuit diagram are formulated and described. The probability of the occurrence of internal blockings for the formulas and algorithms is calculated. The formulation of the algorithm for multicascade commutation systems witharbitrary structural parameters is presented.

1/1

1/2   024   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--DEFLUORINATION OF PHOSPHATES IN A LOW TEMPERATURE PLASMA JET -U-

AUTHOR-(05)-PECHKOVSKIY, V.V., MOSSE, A.L., TETEREVKOV, A.I., YERSHOV,
V.A., CHELNOKOV, A.A.
COUNTRY OF INFO--USSR

SOURCE--KHIM. VYS. ENERG. 1970, 4(2), 114-18

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHATE, PHASE ANALYSIS, LOW TEMPERATURE PLASMA, PLASMA JET,
DEHALOGENATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0971   STEP NO--UR/0456/70/004/002/0114/0118

CIRC ACCESSION NO--AP0131556
                         UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--04DEC70

2/2   024
CIRC ACCESSION NO--AP0131556
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY OF THE PREPN. OF
DEFLUORINATED PHOSPHATES BY MEANS OF A STREAM OF LOW TEMP. PLASMA IS
STUDIED. A DEFLUORINATED PHOSPHATE CONTG. PRACTICALLY ALL OF THE P_2
O_5 IN ASSIMILABLE FORM IS OBTAINED. THE PHASE COMPN. OF THE PRODUCT
IS STUDIED.   FACILITY: INST. TEPLO-MASSOOBMENA, MINSK, USSR.

UNCLASSIFIED

TITLE--FORMAZANS CONTAINING AN S-TETRAZINE RING -U-

AUTHOR-(03)-PUSTOVSKIY, I.YA., NOVIKOVA, A.P., YERSHOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6 (5), 1104-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CONDENSATION REACTION, ORGANIC AZINE COMPOUND, OPTIC PROPERTY,
    BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1352   STEP NO--UR/0366/70/006/005/1104/1107

CIRC ACCESSION NO--AP0135026
UNCLASSIFIED

CIRC ACCESSION NO--AP0135026
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   CONDENSATION OF N SUB2 H SUB4 .H
SUB2 O WITH 3,AMINO,6, METHYL,S,TETRAZINE GAVE THE 3,HYDRAZINO ANALOG
(I), WHICH WAS HEATED WITH BZH TO GIVE THE N-BENZYLIDENE DERIV. (II).
DIAZO COUPLING OF II WITH PHN SUB2 CL
GAVE,1,(6,METHYL,S,TETRAZIN,3,YL),3,5, DIPHENYLFORMAZAN (III). A
SIMILAR METHOD WAS USED IN THE SYNTHESIS OF
1,(6,PHENYL,S,TETRAZIN,3,YL),3,5,DIPHENYLFORMAZAN (IV).   III AND IV
HAVE CONSIDERABLY DEEPER COLORATION THAN P-MEC SUB6 H SUB4 NHN:CPHN:NPH
OR P-PHC SUB6 H SUB4 NHN:CPHN:NPH.   FACILITY: URAL. POLITEKH.
INST. IM. KIROVA, SVERDLOVSK, USSR.

UNCLASSIFIED

Acc. Nr: Abstracting Service: Ref. Code:
    AP0048378   INTERNAT. AEROSPACE ABST 5-70 $URO293$

YERSHOV V.G.

A70-24302 #   Optimization of a trajectory measurement
program (Ob optimizatsii programmy traektornykh izmerenii). V. G.
Ershov. Kosmicheskie Issledovaniia, vol. 8, Jan.-Feb. 1970, p. 8-12.
In Russian.

- Consideration of the problem of the selection of an optimal
trajectory measurement program which ensures a given accuracy in
the determination of orbit parameters. It is assumed that the
measurement errors are random and independent and that the
processing of the measurements is carried out by the method of least
squares. It is shown that, given random independent trajectory
measurement errors and a nondegenerate weighting matrix of a
system of normal equations, the absolute minimum total number of
measurements can always be attained with the aid of an optimal
program using no more than a fixed number of measurement subsets.

A.B.K.

REEL/FRAME
19800086

1/2   022   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--STABILIZATION OF AUSTENITE -U-

AUTHOR-(03)-BERDOVA, V.S., YERSHOV, V.M., OSLON, N.L.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1), 209-12

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--AUSTENITE, CRYSTAL LATTICE, MARTENSITE, HYDROGEN, NITROGEN,
   THERMAL STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0187   STEP NO--UR/0126/70/029/001/0209/0212

CIRC ACCESSION NO--AP0054983
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0054983
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STABILIZATION OF AUSTENITE IS
GOVERNED BY ITS INITIAL STATE. IN THE 1ST STAGE OF MARTENSITE
CONVERSION WHEN, OWING TO COHERENCE BETWEEN THE GAMMA PHASE AND
MARTENSITE PHASES, THE AUSTENITE LATTICE IS ELASTICALLY STRETCHED, AND
POSSESSES PARAMETERS ABOVE THE ANTICIPATED, AS DETD. BY GRAPHIC
EXTRAPOLATION, THERMAL STABILIZATION OF THE AUSTENITE IS GOVERNED BY THE
INTRODUCTION OF C ATOMS IN ADDN. POSSIBLY TO H AND N IN THE GAMMA PHASE
LATTICE, I. E. A LOWERING OF THE MARTENSITE POINT. IN THE FINAL STAGE
OF MARTENSITE CONVERSION, WHEN THE AUSTENITE IS COMPRESSED BY THE
SKELETON OF MARTENSITE CRYSTALS FORMING, STABILIZATION OF THE AUSTENITE
IS GOVERNED BY MECH. HARDENING AND ELASTIC RELAXATION STRESSES.

UNCLASSIFIED

USSR

UDC 621.396.677

YERSHOV, V. M.

"Electromagnetic Field of a Submerged Vertical Electric Dipole"

Prikl. geofizika (Applied Geophysics), vyp. 159, Moscow, Nedra Press, 1970,
pp 68-77 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8B10)

Translation: This article contains a discussion of an approximate analysis of
the electromagnetic field of a vertical electric dipole submerged in a conduct-
ing halfspace. The nature of propagation of the electromagnetic wave is investi-
gated. Some advantages of this source for exploration of deposits are noted.
The bibliography has five entries.

1/1

TITLE--PEAK STRUCTURE OF LASER PULSE AND PHOTON ECHO -U-

AUTHOR-(04)-KOPVILLEM, U.H., YERSHOV, G.M., NAGIBAROV, V.R., SAMARTSEV, V.V.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETTERS, NETHERLANDS, VOL. 31A, NO. 2, P. 87-8, 26 JAN. 1970

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PULSE LENGTH, PHOTON EMISSION, LASER EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0501   STEP NO--NE/0000/70/031/002/0087/0088

CIRC ACCESSION NO--AP0111694
                         UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0111694   PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS GIANT PULSES CONSIST OF MANY
ULTRASHORT PEAKS (SIMILAR TO 10 NEGATIVE PRIME13 SEC) THERE IS A
POSSIBILITY OF USING THEM FOR THE EXCITING OF PHOTON ECHO IN MEDIA WITH
INTENSIVE INNER MOTION (LIQUIDS, GASES, GLASSES AND CRYSTALS AT A
TEMPERATURE HIGHER THAN THAT OF LIQUID HELIUM). THE CONDITIONS OF THIS
EXCITEMENT ARE DISCUSSED.   FACILITY: KAZAN PHYSICAL TECHNICAL
INST. ACAD. SCI., USSR.

UNCLASSIFIED

USSR

UDC: 621.372.853.09

AL'TSHULER, Yu. G., YERSHOV, V. V., and KATS, L. I.

"Electromagnetic Wave Propagation in Channelized Systems Partially Filled With a Solid-State Magnetoactive Plasma"

Tomsk, Izvestiya VUZ -- Fizika, No 9, 1973, pp 7-13

Abstract: This paper solves the problem of computing the dispersion of partially filled waveguides for the following configurations of channelized systems: a cylindrical waveguide with a concentrically placed solid-state plasma rod in a longitudinal magnetic field, and a waveguide of rectangular cross section with a solid-state plasma plate, extending longitudinally, in a transverse magnetic field. The relationships obtained in the theoretical portion of the paper were experimentally tested by a measuring device based on a balanced bridge circuit for determining the complex transfer factor of a measured four-terminal network, the plasma-filled waveguide. The dispersion characteristics are plotted, and a curve is obtained for the experimental propagation constants as functions of the frequency for a rectangular waveguide. It is concluded that these configurations are practical for at least 1/2

USSR

UDC: 621.372.853.09

AL'TSHULER, Yu. G., _Izvestiya VUZ -- Fizika_, No 9, 1973, pp 7-13

such devices as attenuators and phase shifters.

2/2

USSR

Yershov, V. V., Seyfer, D. V.

"Determination of Natural Oscillating Frequencies of Cylindrical Shells of Variable Thickness"

Abstract: This article states the problem of determination of the natural oscillating frequencies of cylindrical shells, the thickness of which changes along the generatrix according to linear, parabolic and hyperbolic rules. The problem is solved by an energetic method. Only axisymmetrical oscillations are studied. With these oscillations, it is sufficiently accurate to consider only radial displacement. Axial displacement is absent, and longitudinal displacement is slight in comparison to radial displacement, and therefore can be ignored.

1/1

USSR

BRAZHNIKOV, Ye. B., YERSHOV, V. V.

"Strength of a Cylindrical Envelope of Variable Thickness with Applied Heat"

Stroit. Mekh. Gasoaerodinamika i Proiz-vo Letatel'n. Apparatov. Vyp. 1
[Structural Mechanics, Gas and Aerodynamics and Production of Flight Vehicles,
No 1 -- Collection of Works], Voronezh, 1970, pp 7-12, (Translated from
Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V189 by the
author's).

Translation: The strength of an envelope of variable thickness loaded with
even pressure and located in an axisymmetrical temperature field of variable
length (x axis) is estimated. The rule of change of thickness of the envelope
$\delta(x) = \delta_0 (1 + ax)^n$. The method of asymptotic integration is used to solve
the basic equation. Where n = 2, the basic equation is a Euler-type equation
and can be solved in closed form.

1/1

USSR

UDC: 621.372.853.09

AL'TSHULER, Yu. G., YERSHOV, V. V., and KATS, L. I.

"Experimental Investigation of Electromagnetic Wave Propagation in the Transverse Magnetic Field in a Rectangular Waveguide Partially Filled With n-InSb in the Transverse Magnetic Field"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1737-1739

Abstract: A description is given of experiments conducted on a waveguide of rectangular cross section, partially filled with n-type InSb, for the purpose of finding a practical application. The InSb specimen, in the form of a plate, was placed inside a waveguide section measuring 10X23 mm^2 in cross section, the whole kept at the temperature of liquid nitrogen. The shape and position of the plate and the direction of the magnetic field, the latter varying from 0-8 kilogauss, are shown in the diagram of the apparatus, together with curves of the complex transfer coefficient of the waveguide as a function of the magnitude and direction of the magnetic field. The results of the experiment, put in the form of curves for the phase and attenuation of the transmitted wave, showed that the effect of the n-InSb plate on

1/2

USSR

UDC: 621.372.853.09

AL'TSHULER, Yu. G., et al, Radiotekhnika i elektronika, No 8, 1972, pp 1737-1739

the propagation process can be quantitatively represented, and that the mutuality effect can be estimated. It is also found that the phase of the transmitted wave can be varied in phase up to 750° for various changes in the magnetic field.

2/2

1/2   011   UNCLASSIFIED   PROCESSING DATE---30OCT70

TITLE--REACTION OF A GRIGNARD REAGENT WITH
  4,HYDROXY,3,5,DITERT,BUTYLPHENYLETHYLENE BROMOHYDRIN -U-

AUTHOR-(03)-YERSHOV, V.V., VOLODKIN, A.A., VOLODKINA, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 724-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GRIGNARD REAGENT, HYDROXYL RADICAL, BENZENE DERIVATIVE,
  ETHYLENE, BROMINATED ORGANIC COMPOUND, OXIDATION, COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0047   STEP NO--UR/0062/70/000/003/0724/0725

CIRC ACCESSION NO--AP0125882
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0125882

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION OF RMGX WITH 4,3,5,HO(ME SUB3 C) SUB2 C SUB6 H SUB2 CH. (OH)CH SUB2 BR PROCEEDS WITH MIGRATION OF THE HO GROUP TO THE OTHER C ATOM OF THE CHAIN. MEMGBR GAVE 64PERCENT 4,3,5,HO(ME SUB3 C) SUB2 C SUB6, H SUB2 CH SUB2 CHMEOH, M. 56-8DEGREES, ALSO PREPD. FROM HYDROLYTIC TREATMENT OF 1,METHYL,2,6,DI,TERT,BUTYLSPIRO(2.5),3,6,OCTADIEN,5,ONE IN THE PRESENCE OF MINERAL ACIDS IN 90-5PERCENT YIELDS. OXIDN. OF THE ISOMERIZED ALC. WITH PBO SUB2 RESULTED IN A FREE RADICAL, DETECTED BY ITS EPR SPECTRUM, PROVING THE PRESENCE OF 2 H ATOMS AT THE 1ST C ATOM OF THE SIDE CHAIN. REACTION OF THE BROMIDE WITH RMGX PROCEEDS PROBABLY VIA AN INTERMEDIATE SPIROCYCLIC COMPLEX, WHOSE 3,MEMBERED RING IS OPENED BY ADDN. OF THE GRIGNARD REAGENT BETWEEN THE HO BEARING C ATOM AND THE C ATOM OF THE 6,MEMBERED RING. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

1/2   022   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--STERICALLY HINDERED QUINAMINE -U-

AUTHOR-(03)-YERSHOV, V.V., RASULEVA, D.KH., VOLODKIN, A.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (4), 956-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--STEREOCHEMISTRY, IR SPECTRUM, UV SPECTRUM, CYCLOHEXANE,
   ALKYNE, BROMINATED ORGANIC COMPOUND, AMINE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1302
                              STEP NO--UR/0062/70/000/004/0956/0957
CIRC ACCESSION NO--AP0134976
                   --UNCLASSIFIED--

UNCLASSIFIED   PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0134976
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. REACTION OF MORPHOLINE WITH
  4,BROMO,R,METHYL,2,6,DI,TERT, BUTYL,2,5,CYCLOHEXADIEN,1,ONE GAVE THE
  4,MORPHOLINO ANALOG, M. 103-40EGREES, WHICH WAS CHARACTERIZED BY ITS UV
  AND IR SPECTRA. A REACTION SCHEME WAS GIVEN.   FACILITY: INST.
  KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

TITLE--EFFECT OF SUBSTITUENTS ON THE REACTIVITY OF AROXYL RADICALS WITH
DI,TERT,BUTYL PEROXIDE -U-

AUTHOR-(04)-PROKOFYEV, A.I., SOLODOVNIKOV, S.P., NIKIFOROV, G.A., YERSHOV,
V.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER KHIM. 1970, (3), 558-61

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--REACTION KINETICS, ORGANIC PEROXIDE, BENZENE DERIVATIVE,
CHEMICAL REACTION RATE, ELECTRON THEORY, ACTIVATION ENERGY, FREE RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0742   STEP NO--UR/0062/70/000/003/0558/0561

CIRC ACCESSION NO--AP0124412

CIRC ACCESSION NO--AP0124412   UNCLASSIFIED   PROCESSING DATE--23OCT70

USSR

UDC: 621.373:530.145.6

ARKHIPOV, V. K., YERSHOV, Ye. I., PANOV, Ye. I., RYZHAKOVA, Z. L.,
and TARASOV, R. P.

"Generator of Specially Formed Light Pulses Based on the Gas
Laser"

Translation: A light-pulse generator is described in which light
signals in the nanosecond range are formed with the deviation of
the light beam of a helium-neon laser LG-56 in an electrooptical
deviating device under the action of a pulse controlling voltage.
The structural peculiarities and the basic output characterist-
ics of the generator are given. Author's abstract

1/1

1/2   014   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--RELATION BETWEEN THE STRUCTURE AND LUMINESCENCE OF AZOMETHINES,
   DERIVATIVES OF 4,4 PRIME,DIAMINOSTILBENE AND 4,4 PRIME, DIAMINO BIBENZYL
AUTHOR-(03)-AGRACHEVA, YE.G., KUZNETSOVA, T.A., YERSHOV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2) 379-82

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--LUMINESCENCE SPECTRUM, AZO COMPOUND, CONJUGATE BOND SYSTEM,
   STILBENE, AMINE DERIVATIVE, BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1569   STEP NO--UR/0079/T0/040/002/0379/0382

CIRC ACCESSION NO--AP0112563
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0112563

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MIXING OF 2 MOLES OF APPROPRIATE
ALDEHYDE WITH 1 MOLE AMINE IN HOT ETOH GAVE THE CORRESPONDING
AZOMETHINES WHOLE LUMINESCENCE SPECTRA WERE REPORTED.   THE MAIN FACTOR
DETG. THE LUMINESCENCE IN THIS GROUP OF COMPDS. IS THE EXISTENCE OF
QUASICUINOID STRUCTURE. INCREASING THE DEGREE OF POSSIBLE CHAIN
CONJUGATION IN MOST CASES DECREASES THE INTENSITY OF LUMINESCENCE. THE
FOLLOWING P-ARCH:NC SUB6 H SUB4-CH:CHC SUB6 H SUB4 N:CHAR-P WERE
REPORTED (AR SHOWN):P-ME SUB2 NC SUB6 H SUB4, M. 316DEGREES; O-HOC SUB6
H SUB4, M. 252DEGREES; 5,2-CL(HO)C SUB6 H SUB3, M. 290-90.5DEGREES;
5,2-BR(HO)C SUB6 H SUB3, M. 350DEGREES; 3,5,2-BR SUB2 (HO)C SUB6 H SUB2,
M. 350DEGREES; AND 2,HYDROXY,1,NAPHTHYL, M. 304DEGREES; ALSO THE
FOLLOWING (P-AR-CH:NC SUB6 H SUB4 CH SUB2) SUB2; P-ME SUB2 NC SUB6 H
SUB4, M. 245DEGREES; O-HOC SUB6 H SUB4, M. 221.5DEGREES; 5,2-CL(HO)C
SUB6 H SUB3, M. 252DEGREES; 5,2-(HO)BRC SUB6 H SUB3, M. 265-5DEGREES;
3,5,2-BR SUB2 (HO)C SUB6 H SUB2, M. 235DEGREES; AND
2,HYDROXY,1,NAPHTHYL, M. 273DEGREES.

INTRAVENOUS AND INTRASPLENIC RADIOPORTOGRAPHY IN PATIENTS WITH PORTAL HYPERTENSION

M. D. Patsiora, T. F. Belinskaya, Yu. A. Ershov

Summary

Intravenous radioportography (determination of the cardioportal time) was carried out in 78 patients with portal hypertension. The investigations have shown that intravenous radioportography in combination with other techniques is perspective in the diagnosis of portal hypertension. However, it not always make it possible to evaluate the form of portal hypertension, inasmuch as changes of the cardioportal time mainly depend on the degree of obstruction of the portal system and the development of collateral circulation.

Intrasplenic radioportography was done in 16 patients with renal hypertension. The latter technique is perspective in the diagnosis of portal hypertension, as well as in the evaluation of features specific to collateral routs of circulation. Intrasplenic radioportography in combination with other techniques should also be utilized for the recognition of the severity of liver affection in patients suffering from portal hypertension.

REEL/FRAME
19771289

Luminescence

USSR

UDC: 547.639

AGRACHEVA, YE. B., KUZNETSOVA, T. A., and YERSHOV, YU. A., Moscow Textile
Institute, Moscow, Ministry of Higher and Secondary Specialized Education
RSFSR

"Relationship Between Structure and Luminescence of Azomethines, Derivatives
of 4,4-Diaminostilbene and 4,4-Diaminobibenzyl"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 379-382

Abstract: For purposes of elucidating the effect of conjugation on the
luminescence of azomethines, the authors synthesized and studied two series
of azomethines, viz. derivatives of 4,4'-diaminostilbene and 4,4'-diamino-
bibenzyl (including 10 azomethines obtained for the first time). It was
found that the principal factor causing luminescence in the stilbene series
is conjugation, while in the bibenzyl series the luminescence is due to the
presence of a quasiquinoid structure. The introduction of haloatoms into
the aldehyde component makes the difference in the luminescence intensity
of the corresponding representatives of the two series less sharp, since
there is a decrease in the strength of the quasiquinoid structure in these
cases, and the system conjugation has a greater effect on luminescence.
1/1

USSR

YERSHOV, Yu. G., KHRENOV, V. I.

"The Problem of the Role of Adsorbed Gas During Boiling"

K Voprosu o Poli Adsorbirovannogo Gaza pri Kipenii [English Version Above], Minsk, 1971, 9 pages (Translated from Referativnyy Zhurnal, Khimiya, No 3, 1972, Abstract No 3 B1467 by the author's).

Translation: A study is made of the filling of glass capillaries from 4 to 180 µ in diameter with various liquids. The capillaries are used as models of microdepressions on heat exchange surfaces. It is found that the rate of filling of the capillaries depends on their length, capillary diameter and conicity, as well as surface tension of the liquid. It is shown that brief boiling and later cooling of a fluid sharply increases the rate of filling of capillaries. Based on these data, it is assumed that the adsorbed gas trapped by the liquid in depressions on a heating surface can serve as a center of vapor formation only at the very beginning.

I/1

Higher Algebra & Geometry and Topology

USSR

YERSHOV, YU. L.; Corresponding Member of the Academy of Sciences USSR, Institute of Mathematics of the Siberian Department of the Academy of Sciences USSR, Novosibirsk

UDC 517.11:518.5

"Continuous Lattices and A-Spaces"

Abstract: The article contains an expansion of a number of results from an earlier article by the author and a comparison of concepts introduced in the earlier article with the concept of a continuous lattice, as defined by D. SCOTT. The article also indicates possibilities of expanding D. SCOTT's construction to construct a λ-calculus model; viz., it is possible to construct an (infinite) class S of recursively enumerable sets such that it possesses the principal computable numeration $\nu : N \to S$ and such that there exists $\mathfrak{M}\text{or}\ (\mathfrak{G}, \mathfrak{G})$, where $\mathfrak{G} = (S, \nu)$, the numbered sets $\mathfrak{G}$ and $\mathfrak{M}\text{or}\ (\mathfrak{G}, \mathfrak{G})$ are (recursively) isomorphic and the "identification" of $\mathfrak{G}$ and $\mathfrak{M}\text{or}\ (\mathfrak{G}, \mathfrak{G})$ forms the λ-calculus model.

1/2

USSR

YERSHOV, YU. L., Doklady Akademii Nauk SSSR, Vol 207, No 3, 1972, pp 523-526

The basic concept of the article -- that of an A-space -- is defined as the topological T_0-space X subject to certain conditions. The A-space X is said to be an A_0-space if X (and hence also X_0) has the least element. Any subset X_0 of the A-space X that satisfies the conditions, together with an induced topology, is said to be a basic subspace (of the A-space X).

2/2

USSR

UDC 518.5

YERSHOV, YU. L.: Corresponding Member of the Academy of Sciences USSR, Insti-
tute of Mathematics, Siberian Department of the Academy of Sciences USSR,
Novosibirsk

"On Elementary Group Theories"

Abstract: The article gives theorems which show that groups or classes of
groups which in a certain sense are far from Abelian have an unsolvable theo-
ry. Constructions are given showing that in a finitely generated group which
is not a finite extension of the center, a certain ring of whole algebraic
numbers is relatively elementarily definable. It was proved by J. ROBINSON
that in any ring of whole algebraic numbers, a ring of whole rational numbers
which has a hereditarily unsolvable theory is definable. Thus, the elementary
theory of the above group is unsolvable.

1/1

USSR

POLYAKOVA, N. M., YERSHOV, Yu. N.

"Representation of a Control Algorithm in a Form Convenient for Digital Computer Realization"

Resheniye Nekotor. Fiz.-tekhn. Zadach. [Solution of Certain Problems of Physics and Technology -- Collection of Works], Dnepropetrovsk, 1972, pp 175-177 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V840).

Translation: This work demonstrates the possibility of representing a certain control algorithm in a form convenient for digital computer realization.

1/1

USSR

UDC 8.74

ARKHIFOV, I. M., YERSHOV, V. A., YERSHOVA, E. B.

"Problem of Algorithms for Selecting Connecting Paths in Four-Cascade Commutation Systems"

V sb. Sist. raspredeleniya inform. (Information Distribution Systems -- collection of works), Moscow, Nauka Press, 1972, pp 136-145 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V571)

Translation: On the basis of analyzing the macrostates of a four-cascade commutation circuit, the algorithms for setting up the circuit diagram are formulated and described. The probability of the occurrence of internal blockings for the formulas and algorithms is calculated. The formulation of the algorithm for multicascade commutation systems witharbitrary structural parameters is presented.

1/1

USSR   UDC 532.74

VIKTORINA, M. M., DERYAGIN, B. V., Corresponding Member of the USSR Academy
of Sciences, YERSHOVA, I. G., ZNAMENSKIY, B. V., and CHURAYEV, N. V.

"Paramagnetism of Modified Water (Water II)"

Abstract: This article contains a description of a microcapillary procedure
for measuring the magnetic susceptibility of volumes of liquid on the order
of 10^{-6} to 10^{-7} cm^3 which is a modification of the well-known Gouy method.
The procedure was checked by measuring the magnetic susceptibility of a
column of benzene; ordinary water (bidistillate) was used as the standard
liquid. Analogous measurements were then made for modified water. On the
basis of the preliminary experiments only a qualitative conclusion of para-
magnetism of the anomalous component could be drawn. It was visually ap-
parent that upon inclusion of the magnetic field, the columns of sufficiently
concentrated modified water and the columns of ordinary water shifted to
different sides in the capillaries. Results of one of the last series of
experiments, in which some quantitative estimates could be made, are pre-
sented in a table. For columns of modified water with a low content of
1/2

USSR

VIKTORINA, M. M., et al, Doklady Akademii Nauk SSSR, Vol 197, No 1, March-
April 1971, pp 114-116

anomalous component, the magnetic susceptibility was greater than $-0.38 \cdot 10^{-6}$.
The mechanism of the effect of the anomalous component is discussed in detail,
and a formula is derived for using the presented data to make a rough estimate
of the magnetic susceptibility of pure anomalous component (water II). Using
this formula, a value of $7 \cdot 10^{-6}$ was obtained.

2/2

1/2   009

UNCLASSIFIED

TITLE--SYNTHESIS OF SOME UNSATURATED 1,6,DISUBSTITUTED 2,5,DITHIOBIUREAS
-U-

PROCESSING DATE--04DEC70

AUTHOR-(02)-SMOLANKA, I.V., YERSHOVA, I.I.

COUNTRY OF INFO--USSR

SOURCE--UKR. KHIM. ZH. 1970, 36(3), 273-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC SULFUR COMPOUND, UREA DERIVATIVE, METAL ION, ORGANIC
SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0903

STEP NO--UR/0073/70/036/003/0273/0275

CIRC ACCESSION NO--AP0137931

UNCLASSIFIED

CIRC ACCESSION NO--AP0137931   UNCLASSIFIED   PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   RNCS AND H SUB2 NNHCSNH SUB2 FORM THE FOLLOWING SHOWN ON MICROFICHE.   SEVERAL OF THE LATTER COMPDS. FORM INSOL. COMPDS. WITH CU PRIME2 POSITIVE, ZN, HG PRIME POSITIVE, HG PRIME2 POSITIVE, BI, AT, AND PB IONS AND MAY BE USEFUL IN GRAVIMETRIC ANALYSIS.

FACILITY: UZHGOROD. GOS. UNIV., UZHGOROD, USSR.

UNCLASSIFIED

USSR   UDC 614.777:[615.277.4:547.53

IL'NITSKIY, A. P., YERSHOVA, N. P., KHESINA, A. YA., ROZHKOVA, L. G.,
KLUBKOV, V. G., and KOROLEV, A. A., Institute of Experimental and Clinical
Oncology, Academy of Medical Sciences USSR, Institute of General and Communal
Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, and First
Moscow Medical Institute imeni I. M. Sechenov

"Stability of Carcinogens in Water and Effectiveness of Decontamination
Methods"

Abstract: Polycyclic aromatic hydrocarbons, especially benzpyrene, can re-
main main active in water a long time and spread to considerable distances from
the source of contamination. The wide distribution of these carcinogens
in water is promoted by the presence of certain substances that help them to
dissolve, e.g., surfactants which at concentrations of 10 to 50 mg/Ll can
increase the solubility of benzpyrene as much as 10-fold. Certain purifi-
cation methods (ultraviolet irradiation, chlorination, ozonization, gamma
irradiation) decrease the concentration of the carcinogens in varying degrees.
Ozonization is the most effective, gamma irradiation the least effective.
1/2

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USSR

IL'NITSKIY, A. P., et al., Gigiyena i Sanitariya, No 4, 1971, pp 8-12

Experiments showed that bacteriological indicators (e.g., the coli titer) following the use of ultraviolet or gamma rays reveal little about the presence or absence of carcinogenic hydrocarbons. Sixty minutes' boiling of water containing benzypyrene at a concentration of 0.002 to 0.002 μg/L neutralized most of the compound.

2/2

USSR

UDC 669.14.018.8:539.37

SINEL'NIKOV, M. I., and YERSHOVA, L. S., Zaporozh'ye

"Effect of Reciprocal Crystallographic Phase Orientation on the Plastic Deformation of Corrosion-Resistant Steels"

Abstract: Results are presented of an investigation of slip processes in ferrite-austenite steel and determination of the reciprocal ferrite and austenite lattice orientations which may determine the stress level necessary for excitation of dislocation motions in the adjacent phase. The deformation mechanism of Kh21N5T steel in which the two-phase structure is conserved up to 1100°C with approximately equal ferrite and austenite content, was studied on the IMASh-5s vacuum installation at 1100°C and 4080%/hour deformation rate. Samples with structure obtained by hot plastic deformation and with Widmansttat structure resulting from recrystallization were tested at the same time. The results show that a fine crystal textured austenite with a crystal lattice regularly oriented with respect to the ferrite crystal lattice is formed as a result of ($\alpha \rightarrow \gamma$) transformation in two-phase ferrite-austenite steels. The regular phase lattice orientation obtained as a result of ferrite-austenite steel recrystallization facilitates the plastic flow on the interphase boundary and increases the plasticity of two-phase steels.

1/1
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Public Health, Hygiene and Sanitation

USSR

UDC 617-001.34-084-02(477)

YERSHOVA, M. A., Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases

"Incidence, Causes, and Prophylaxis of Vibration Sickness"

Kiev, Vrachebnoye Delo, No 7, Jul 70, pp 116-119

Abstract: Vibration sickness was first recognized as an independent nosological entity in the Ukraine in 1958. Records for the following decade show a steady increase in the incidence of the disease up to 1965 (owing to the introduction of machines with high vibration parameters and to improved diagnostic techniques), and a gradual decrease thereafter. If the level of vibration sickness in machine building is taken as 100 in 1965, the incidence during the same year for the Ukraine as a whole would be 29.1 and that for the construction materials industry, 49.6. The corresponding figures for 1968 were 61.8, 24.3, and 18.1 respectively. For such occupations as driller, molder, polisher, and machinist, the disease was far than pneumoconiosis. The main causes of vibration sickness relate to the type of tools and equipment installed and the inadequate use of properly designed vibration-absorbing devices. Tested means of dealing with the problem are discussed including the introduction of new technological processes and remote control.
1/1

USSR

GLUSHKOVA, M. A., YERSHOVA, M. M., OVCHINNIKOVA, N. A., and BUSLAYEV, YU. A.,
Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of
Sciences USSR

"Study of Some Reactions Using Phosphine Derivatives of Niobium and Tantalum
Pentachlorides"

Abstract: Synthesis of the $MCl_5 \cdot R_3P$ type compounds (M= Nb, Ta; R= Bu, Ph) was
carried out in CCl_4, using a 1:1 ratio of starting components. Solutions of Ph_3P
in CCl_4 or Bu_3P in benzene were added dropwise to a saturated solution of MCl_5
in CCl_4. Orange $NbCl_5$ and yellow $TaCl_5$ formed and precipitated during the
addition. After 12 hours, solid was separated by decantation, washed with CCl_4
and dried yielding $MCl_5 \cdot R_3P$ -- powdery products, soluble in CCl_4 and C_6H_6.
The tantalum products melted higher than the niobium derivatives. When heated
above 300°C they decomposed. $MCl_5 \cdot R_3P$ reacted with ethanol yielding MCl_3-
$(OC_2H_5)_2Ph_3P$. When dry ammonia was passed through a benzene solution of
1/2

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USSR

GLUCHKOVA, M. A., et al., Zhurnal Neorganicheskoy Khimii, Vol 17, No 1, Jan 72,
pp 147-149

$NCl_3 \cdot R_3P$, the products formed were $NbCl_5 \cdot 6NH_3 \cdot 0.5C_6H_6$ and $TaCl_5 \cdot 7NH_3 \cdot 0.5C_6H_6$.
Study of the thermal behavior of $NbCl_5 \cdot Bu_3P$ in argon showed that roentgeno-
amorphous niobium phosphine chloride — $NbPCl_2$ — is formed at 475°C, exhibiting
plastic properties.

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UNCLASSIFIED
TITLE--NITROSYL DERIVATIVES OF NIOBIUM AND TANTALUM -U-
PROCESSING DATE--23OCT70

AUTHOR-(04)-BUSLAYEV, YU.A., GLUSHKOVA, M.A., YERSHOVA, M.M.,
  OYCHINNIKOVA, N.A.
COUNTRY OF INFO--USSR

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DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NIOBIUM, TANTALUM, IR SPECTRUM, CHLORIDE, NITROSYL CHLORIDE,
  AMORPHOUS MATERIAL, COMPLEX COMPOUND

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CIRC ACCESSION NO--AP0120301
UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--23OCT7(

CIRC ACCESSION NO--AP0120301

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PASSING DRY NO INTO A SOLN. OF
  METAL CHLORIDE IN C SUB6 H SUB6 (PREPD. OVERNIGHT BY LEACHING) GAVE
  BROWN COMPLEXES: NBCL SUB5 .NO AND TACL SUB5 .NO.C SUB6 H SUB6. THESE
  PROVED TO BE AMORPHOUS IN X RAY ANAL. THE IR SPECTRA HAVE BANDS IN THE
  1480 CM PRIME NEGATIVE1 AND 1990 CM PRIME NEGATIVE1 REGIONS, CAUSED BY
  NO BOND VIBRATIONS.   FACILITY: INST. OBSHCH. NEORG. KHIM. IM.
  KURNAKOVA, MOSCOW, USSR.

UNCLASSIFIED

Extraction and Refining

USSR

ALIMARIN, I. P., BOL'SHOVA, T. A., and YERSHOVA, N. I., Chair of Analytical Chemistry

UDC 543.432

"Gallium Extraction With Tri-n-butyl Phosphate From Ammonium Thiocyanate Solutions"

Moscow, Vestnik Moskovskogo Universiteta, Seriya II -- Khimiya, Vol 11, No 5, Sep-Oct 70, pp 568-572

Abstract: The article describes results of a study of the conditions and mechanism of gallium extraction with tri-n-butyl phosphate from ammonium thiocyanate solutions. . . . gram quantities of gallium were determined photometrically with . . . -pyridylazoresorcinol as the reagent, and milli-gram quantities were determined complexometrically. The thiocyanate ion and chloride ion concentrations were determined argentometrically, and the concentration of chlorides in the presence of thiocyanate ions was determined by a method based on the oxidation of thiocyanate ions with hydrogen peroxide in an alkaline medium. The extraction of gallium was studied as a function

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USSR

ALIMARIN, I. P., et al., Vestnik Moskovskogo Universiteta, Seriya II --
Khimiya, Vol 11, No 5, Sep-Oct 70, pp 568-572

of thiocyanate ion concentration, aqueous phase acidity, and metal concentra-
tion. Chemical analysis data, as well as results obtained by the equilibrium
shift method, indicate that in the organic phase the gallium-to-thiocyanate
ion ration is 1 : 3.

2/2

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USSR

SERDYUK, A. M. and YERShOVA, N. K., Kiev Institute of General and Communal Hygiene

UDC 612.014.425.426

"Effect of a Low-Intensity Ultrahigh-Frequency Electromagnetic Field on Brain Bioelectrical Activity in the Rabbit"

Abstract: The response of rabbits exposed to a low-intensity ultrahigh-frequency electromagnetic field (0.05 to 6 v/m) for 60 days was two-phase. The first 2 to 4 weeks were characterized by the stimulation of cortical activity manifested by an intensification of the frequency of the alpha waves on the EEG. The second stage lasting about 2 weeks was one of inhibition, reflecting the appearance of delta waves. The magnitude of the reaction varied directly with the intensity of irradiation. There were wide differences in the responses of the individual animals. In general, however, the experiments showed that the cerebral cortex of rabbits is highly sensitive to a low-intensity ultrahigh-frequency electromagnetic field.

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USSR

YERSHOV, O. A., YERSHOVA, T. I., STOLYAROVA, N. M., and YARIN, L. P.

UDC 533.6.08:621.375.826

"A Laser Anemometer for Measuring Airflow Velocities"

Minsk, Inzhenerno-Fizicheskiy Zhurnal, Vol 24, No 5, May 1973, pp 888-890

Abstract: A description of a laser anemometer is presented, together with some results of measurements of mean and fluctuating velocities in a free turbulent jet. It is shown that the experimental data are in good agreement with theory and with results obtained by other methods. This testifies to the effectiveness of the proposed system of a laser anemometer, and to the possibility of its use for measuring the characteristics of turbulent streams. 2 figures. 5 references.

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ACC. Nr

AP0049962

Abstracting Service:
CHEMICAL ABST. 5/70

Ref. Code

4R0051

YERSHOVA T.I

105527s Ultraviolet absorption spectra of alkene hydroacridines. Ershova, T. I.; Ershov, O. A.; Vysotskii, V. I.; Stonik, V. A. (USSR). *Opt. Spektrosk.* 1970, 28(1), 47–50 (Russ). Absorption spectra of acridine (I), 1,2-dihydroacridine (II), 1,2,3,4-tetrahydroacridine (III), 1,2,7,8-tetrahydroacridine (IV), 1,2,5,6,7,8-hexahydroacridine (V), and 1,2,3,4,5,6,7,8-octahydroacridine (VI) were scanned in the range 210–400 mμ in 10^{-2}–$10^{-4} M$ EtOH, or hexane solns. The effect of the symmetry and size of the π-electron system on the spectral properties of I analogs was thus investigated. The absorption corresponds to $\pi \rightarrow \pi^+$ transitions in I–V; a weak $n \rightarrow \pi^*$ band was obsd. in the spectrum of VI at 235 mμ. The conclusion was made on basis of the changes between the spectra in solvents of different polarity. Redn. of the conjugate system led to hypsochromic shifts in the series I–VI. The form of the conjugated system obviously affected the size of shift. (The longwave absorption was the same in I and II; significant shifts occurred between I, and III, or IV and V.) Analogy between the spectra of I analogs and the corresponding compds. of the anthracene series was obsd. The effect of the heterocyclic N atom on the electron satn. in the π-electron system is discussed.   H. Parizkova

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REEL/FRAME

19801900

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USSR

UDC 612.017.1.014.46:615.28

PERELYGIN, V. M., Professor, SHPIRT, M. B., ARIPOV, O. A., and YERSHOVA, V. I., Kirgiz Institute of Epidemiology, Microbiology and Hygiene, Frunze

"The Effect of Some Pesticides on Immunological Reactivity"

Abstract: Various immunological indexes (agglutinin titers, phagocytosis, peripheral blood, cholinesterase activity, skin test with morphine, protein spectrum, changes in weight, and so forth) were studied dynamically in rabbits and mice poisoned with DDT, TMTD (tetrathion), sevin, or zineb daily for 6 months. Three doses were used: (i) permissible residual amount or dose insufficient to elicit changes, (ii) dose sufficient to detect physiological and biochemical changes, and (iii) toxic dose. Immunobiological reactivity proved to be a fairly sensitive indicator of the effect of pesticides. Changes occurred even after permissible residual amounts, although they were not persistent. After a brief and slight decrease or increase in reactivity, there was a tendency toward normalization. Doses sufficient to cause initial toxic symptoms resulted in decreased phagocytosis of leukocytes and sharp reduction in antibody titers and immunogenic properties of blood serum. Large (toxic) doses usually caused early decompensation and
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USSR

PERELYGIN, V. M., et al., Gigiyena i Sanitariya, No 12, 1971, pp 29-33

immunological reactivity diminished steadily. These changes preceded the appearance of symptoms of specific pathology. The agglutinin titer, protective serum antibodies, leukocytic phagocytosis, and skin test with morphine are the most sensitive indexes of immunological reactivity.

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USSR

SOLONIN, S. V., YERSHOVA, V. S., MAZOVER, S. I.

UDC: 533.652/.661.013

"Determining the Minimum Flight Time Trajectory of an Airplane by the Method of Dynamic Programming With Regard to the Sphericity of the Earth"

Tr. Leningr. gidrometeorol. in-ta (Works of the Leningrad Hydrometeoro-logical Institute), 1971, vyp. 42, pp 43-50 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B400)

Translation: The paper deals with the problem of determining the minimum flight time trajectory of an aircraft in a variable wind field with regard to the sphericity of the earth. It is important to account for the earth's sphericity on a long flight path. The method of dynamic programming is used to determine the minimum-time trajectory. A program for computing the minimum-time trajectory in algol-60 is set up in accordance with the functional equations of this method. An example is given of determination of the minimum-time trajectory for a specific synoptic situation. Authors' abstract.

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USSR

SOLONIN, S. V., YERSHOVA, V. S., MAZOVER, S. I.

UDC: 533.652/.661.013

"Determining the Trajectory of Minimum Flight Time of an Airplane with Restrictions on Coordinates"

Tr. Leningr. gidrometeorol. in-ta (Works of the Leningrad Hydrometeorological Institute), 1971, vyp. 42, pp 36-42 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B399)

Translation: The paper deals with the problem of determining the minimum flight time trajectory for horizontal flight of an aircraft in a variable wind field with restrictions on the phase coordinates. The method of dynamic programming is used to determine the minimum-time trajectory. A program is given for computing a minimum-time trajectory in algol-60 algorithmic language, together with an example of calculation of a minimum-time trajectory for a specific synoptic situation. All calculations were checked on the BESM-4 digital computer. Bibliography of 6 titles. Authors' abstract.

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USSR

UDC: 553.652/.661.013

SOLONIN, S. V., YEROSHOVA, V. S., MAZOVER, S. I., GAVRILOV, E. M.

"Determining the Trajectory of Minimum Flight Time of an Aircraft by the Method of Dynamic Programming"

Translation: The paper deals with the problem of an optimum accounting for the effect of a variable wind field on airplane flight. The authors formulate the problem of determining the trajectory along which flight from a point of departure to a point of arrival takes place in minimum time. The airplane trajectory is plotted in a rectangular coordinate system. The method of dynamic programming is used to determine the minimum-time trajectory. In conformity with the principle of optimality on which dynamic programming is based, recurrent relations are written out and used for step-by-step optimization. A program is given for determining the minimum-time trajectory by the method of dynamic programming in algorithmic language algol-60. The program contains all operations which immediately

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USSR

SOLONIN, S. V. et al., Tr. Leningr. gidrometeorol. in-ta, 1971, vyp. 42,
pp 24-35

precede optimization: computation of wind velocity components, the flight
path of the airplane, etc. An example is given of calculation of the
minimum-time trajectory for a given synoptic situation. The initial data
for determining the minimum-time trajectory were the values of the geo-
potential taken at points of intersection of a rectangular grid from a
chart of absolute baric topography corresponding to the flight altitude.
All calculations were checked on the BESM-4 computer. Bibliography of 14
titles. Author's abstract.

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USSR

MASTRYUKOVA, T. A., SHIPOV, A. E., GORBENKO, E. B., KABACHNIK, M. I., KAGAN, YU. S., YERSHOVA, YE. A., SHABANOVA, M. P., and SAVCHENKO, K. N., Institute of Heteroorganic Compounds, Academy of Sciences USSR

"A New Type of Selective Organophosphorus Insecticides and Acaricides. 2. Methyldithiophosphonic Acid Derivatives"

Abstract: In an earlier article the authors examined a new type of selective insecticides and acaricides, viz. derivatives of mono- and dithiophosphoric acids containing amino acid residues, their esters and methylamides. The present article deals with an analogous series of methyl dithiophosphonates, obtained by the reaction of the corresponding chloroacetyl derivatives of amino acids or their esters with ammonium O-ethyl methyldithiophosphonate. It was found that compounds of this series are more toxic for arthropods and warm-blooded animals than the corresponding dithiophosphates. Substances containing a free carboxyl group are the least toxic. A study of the insecticidal and acaricidal activity of the resultant compounds shows that they are more characterized by acaricidal activity and that they are more

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active insecticides and acaricides than the corresponding phosphates, but the selectivity of their effect on arthropods is weaker than in the case of dithiophosphates. A comparison of the effect of these two groups on arthropods and warm-blooded animals shows greater selectivity in the case of methyl dithiophosphonates.

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USSR

UDC: 632.95

YERSHOVA, Ye. A.

"Toxicodynamics of Some Dimethylphosphonic Acid Derivatives Which Contain Peptide Bonds"

V sb. Gigiyena primeneniya, toksikol. pestitsidov i klinika otravl. (Pesticides -- Safety Measures in Using, Toxicology, and the Poison Clinic--collection of works), vyp. 9, Kiev, 1971, pp 171-175 (from RZh-Khimiya, No 7, Apr 72, Abstract No 7N583)

Translation: The anticholinesterase activity of the compound EtOP(S)(Me)NH, CONHCH₂COOEt (EC = 20) (I) in vitro is comparatively low, but when rats are injected with compound I in a dose of 46 mg/kg (LD₅₀), a typical poison pattern develops after only 30 minutes, and there is a sharp drop of cholinesterase activity in the tissues, especially in the brain, stomach and blood. It is assumed that the corresponding thiolphosphonate is formed in the organism of the animal with LD₅₀ for white mice 17-18 times less than for compound I.
P. V. Popov.

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USSR

UDC: 539.1.074

GRAMMATIKATI, V. S., GRINEV, M. P., YERSHOVA, Z. F., KOZLOV, L. L.,
LITVINOVA, T. G., MIKHAYLOV, L. M., MOLIN, A. A., PANCHENKOV, G. M.

"Color Indicators for Visual Evaluation of Dose During Radiation
Sterilization"

Translation: It is suggested that a plasticized PVC film containing an acid-
sensitive dye be used as a color dose indicator for the 0.1-5.0 Mrad range.
The sensitivity of indicators to radiation as a function of film composition
and dye used is studied. Color dose indicators are calibrated using the
ferrosulfate method and calorimetry. A method is suggested for instrumental
testing of changes in the color of indicators using spectrophotometry of
irradiated specimens, allowing doses to be measured with errors of $\pm 10-12\%$.
Practical recommendations are presented for the use of color dose indicators
to check radiation sterilization. 2 figures, 1 biblio. ref.

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Acc. Nr:
AP0048185

Ref. Code:
4R0007

102491q Study of iron oxidation in cummingtonite by the γ-resonance (Moessbauer) spectroscopic method. Ershova, Z. P.; Babeshkin, A. M.; Perfil'ev, Yu. D. (Inst. Geol. Rud. Mestorozhd., Petrogr., Mineral. Geokhim., Moscow, USSR). Geokhimiya 1970, (2), 252-6 (Russ). The Fe^{2+} oxidn. in amphibolite was studied with cummingtonite samples from Krivoi Rog by detn. of chem. and optical characteristics and γ-resonance by the Moessbauer method. The areas of Moessbauer spectra were measured graphically. The amt. of Fe^{2+} in cummingtonite, detd. from the spectral areas, agreed well with the chem. detns. The value of the peak area, corresponding to Fe^{2+} in the M_4 position, remained unchanged during heating of cummingtonite under dynamic conditions up to the solid phase transformation at 900° accompanied by the disintegration of mineral structure and formation of new phases: magnesioferrite $(MgFe_2O_4)$ and hematite. This substantiated the S. Ghose theory (1961) on the stronger M-O bond in the position M_4. Oxidn. of Fe in cummingtonite during heating >500° occurred at the expense of Fe^{2+} in the M_1, M_2, and M_3 positions. The degree of cummingtonite oxidn. at various temps. can be calcd. from the value of the spectral area.
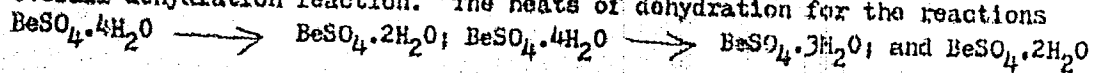BLJR

REEL/FRAME
19791897

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USSR

VASIL'YEV, V. G., YERSHOVA, Z. V., UTKINA, O. N., and CHEBOTAREV, N. T.

"Dehydration of Beryllium Sulfate Tetrahydrate"

Abstract: The mechanics of the dehydration of $BeSO_4 \cdot 4H_2O$ were followed at temperatures of 25 - 340°C and pressures of 1 - 760 torr by thermogravimetry, x-ray, and differential thermal analysis. The hydrated salt can lose one, two, three, or four of the water molecules resulting in the formation of the tri-, di-, monohydrate, or anhydride, respectively. Solid solutions such as $BeSO_4 \cdot H_2O$ + $BeSO_4$ were present under certain conditions. The structure of the tri- and tetrahydrate changes for the di- and monohydrate impeding the overall dehydration reaction. The heats of dehydration for the reactions $BeSO_4 \cdot 4H_2O \longrightarrow BeSO_4 \cdot 2H_2O$; $BeSO_4 \cdot 4H_2O \longrightarrow BeSO_4 \cdot 3H_2O$; and $BeSO_4 \cdot 2H_2O$

$\longrightarrow BeSO_4 \cdot H_2O$ are equal to 25.8, 13.5, and 15.0 kcal/mole respectively.

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USSR   .   .   ⌐

VASIL'YEV, V. G., et al., Zhurnal Neorganicheskoy Khimii, Vol 17, Vyp 3,
1972, pp 625-630

Energies of activation for the same reactions are 8.6, 15.0, and 18.4 and
kcal/mole as determined from thermogravimetry and 9.0, 14.0, and 19.5 kcal/
mole as determined from differential thermal analysis.

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Nuclear Science and Technology

USSR

FRADKIN, G. M., BREZHNEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, N. I. (Deceased), KODYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., MALYKH, YU. A., NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V., and CHUSHKIN, YU. V., State Committee on the Use of Atomic Energy USSR, Fourth International Conference of the United Nations on the Peaceful Use of Atomic Energy, Geneva, 6-16 Sep 71

"Development of Isotopic Power Technology in the USSR"

Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 358-365

Abstract: The construction in the USSR of isotopic thermoelectric generators for powering oceanographic and navigation devices, hydrographic, automatic radiometeorological, magnetic variation stations, high-elevation cosmic ray stations, and other scientific research stations and ground installations is reported on. The most suitable for fuel applications are isotopes with a half-life period within the limits 100 days to 100 years (approximately 50 isotopes), of which 12-15 can be obtained in large amounts. Most quantities of fission radioactive isotopes and also the most widely used radioactive Sr^{90} are obtained by processing radioactive waste solutions. To simplify isolation of radiochemically pure elements, including Sr^{90}, the group concentration method is used, based on calcium oxalate precipitation. The most promising technique is extraction separation of alkaline-earth elements with the isolation of pure strontium. Here the following extractants are used: a

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USSR

solution of di-2-ethylhexylorthophosphoric acid in kerosene from a nitric acid medium, and a solution of salicylaldoxime in tributyl phosphate from an alkaline (sodium hydroxide or ammonia) solution. Currently construction has been completed for blocks with activities in the tens and hundreds of kilocuries based on Ce^{144} (20,000 curies), Sr^{90} (9000-100,000 curies), and Cs^{137} (50,000-150,000 curies), and also blocks based on Pu^{238}, Po^{210}, Cm^{242}, and Co^{60}. The thermal capacity of these blocks lies within the range 1-1000 watts. An empirical formula was derived and tested for the power yield in an isotopic (thermal) block. Also discussed is biological protection during development and construction of isotope power sources containing kilocurie amounts of radioactive heat. In dealing with the conversion of radioactive decay energy, the thermoelectric method was found to be most fully mastered at present: low-temperatures semiconductor materials (up to 300°C) have been obtained with quite high efficiencies (5-8%), as well as medium-temperature (300-700°C) and high-temperature (higher than 700°C) semiconductor materials. Combining different materials in the form of cascade elements already permits attainment of 12-15% conversion efficiency in prototypes. Demands of minimum weight and size and also low background of attendant neutron and gamma-radiation led to construction of portable generators of the MIG-67 type based on Pu^{238}. The unique properties of Cm^{242} and Po^{210} (high specific power yield and fairly low-gamma-radiation intensity) made feasible construction of isotopic thermoelectric generators using cascaded converters with efficiencies of 8-10% in the 300-350°K range.

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USSR

FRADKIN, G. M., BREZHNEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, N. I.
(Deceased), KUDYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., MALYKH, YU. A.,
NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V. and CHUSHKIN, YU. V.,
State Committee for the Use of Atomic Energy USSR

"Advancement of Research in the Field of Nuclear Power Engineering in the
USSR (Report Presented at the Fourth United Nations International Conference
on the Peaceful Uses of Atomic Energy held 6 to 16 September 1971 in
Geneva)"

Abstract: This report cites data on the Soviet development of the thermo-
electric generators designed for feeding oceanographic and navigation
devices, hydrographic, automatic, radiometeorological, magnetic variation
stations, high-mountain cosmic ray stations, and other scientific research
land stations. The report covers the scientific and technical fundamentals
of such energy sources and cites the characteristics of some generators.
Discussed in some detail are various aspects of radio isotopic fuels,
selection, properties, distinctive characteristics, evaluation, requirements,
cost factors, availability, handling safety factors, and forms of applica-
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USSR

FRADKIN, G. M., et al, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

tion. The potential use of extraction separation of alkali-earth elements for obtaining pure strontium is noted. A table lists the comparative characteristics of various isotopes having potential use in thermoelectric generators. Much consideration is given to topics dealing with energy release in an isotopic unit, biological protection, radioactive decay energy conversion, thermal flow chart selection, and generator designs. Described and illustrated are some thermoelectric generators of various designations (using Ce^{144}, Cs^{137}, Sr^{90}, Pu^{238}, $Cm^{242}(Po^{210})$) including Beta-1, Beta-2, Beta-C, Efir, Penguin, MIG-67 (portable-type), and generators with cascade converters. (8 illustrations).

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YERTANOV, I.O.

UDC 612.398.145.1.014.47:551.11...

DNA CATABOLISM IN THE ORGANS OF RATS UNDER THE INFLUENCE OF TRANSVERSELY DIRECTED ACCELERATIONS

Abstract: Exposure of rats to transverse accelerations of 15 g, imparted for six minutes, resulted in a 20% decrease in the DNA content in their spleens and caused no changes in liver DNA content. The exposure brought about no variations in DNAase activity in tissue homogenates or their supernatants. However, the total activity of the free and bound enzyme in the liver measured in the homogenate after treatment with Triton X-100 was 17% lower in the experimental animals than in the controls. The physicochemical properties of DNA (molecular weight and secondary structure) from tissues of animals which were exposed to accelerations remained unaltered in comparison with normal levels.

It is known that transverse accelerations cause functional, morphological and biochemical shifts in the animal body. There is a definite correlation between structural impairments and biochemical changes in the cells of animals subjected to high accelerations (N. I. Razumov and I. M. Khazen). Animals exhibit a decrease in oxygen concentration in the tissues and this results in a decrease in the level of cell respiration with manifestations of hypoxia (A. S. Barer, et al., 1969). A shortage of oxygen resources can cause an impairment in functioning of cell membranes. Data published by Moorek and Brooly show that during liver hypoxia there is a disturbance of oxidative phosphorylation and a decrease in the K+ level in the mitochondria. It is also known that an oxygen shortage in the tissues causes damage to the membrane of lysosomes and mitochondria with an impairment in their permeability (De Duve, 1959, 1960; Frederik, Chevremont-Comhaires).

Accordingly, acceleration is among the factors capable of making labile the membrane of subcellular structures. The labilization of lysosome membranes is usually accompanied by the setting free of enzymes from

Food Technology

SLONIMSKIY, G. L., BRAUDO, Ye. Ye., YERTANOV, I. D., TOLSTOGUZOV, V. B.,
BONDAREVA, E. S., and PLASHCHINA, I. G., Laboratory of Physics of Polymers,
Institute of Elementoorganic Compounds, Academy of Sciences USSR

"Susceptibility of Proteins in New Food Products to Attack by Proteolytic
Enzymes"

Abstract: The susceptibility of proteins in different kinds of synthetic
caviar (based on casein, evaporated milk, etc.) and synthetic groats to
attack by proteolytic enzymes of the gastrointestinal tract in vitro was
compared with the susceptibility of the original protein mixtures used to
make the caviar and groats. The susceptibility of proteins to attack by
pepsin in all the kinds of caviar studied was higher than that of the
proteins in the original mixture. The degree of trypsin and chymotrypsin
proteolysis of the pepsin-digested proteins in the caviar was equal to or
higher than the degree of proteolysis of the pepsin-digested original
protein mixtures. The degree of pepsin proteolysis of proteins in the
synthetic groats was equal to or lower than the degree of proteolysis of
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USSR

SLONIMSKIY, G. L., et al, Voprosy Pitaniya, No 6, 1970, pp 25-31

the original protein mixtures. The degree of trypsin proteolysis of the
pepsin-digested proteins in the groats was equal to the degree of pro-
teolysis of the pepsin-digested original protein mixtures.

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Abstract: An experimental study was made of the population inversion of the spin levels of Fe^{3+} ions in andalusite (Al_2SiO_5) in the three-centimeter range and the temperature range of 2-60° K. In this temperature range in andalusite, in contrast to ruby and rutile, there is still no noticeable effect from the two-phonon relaxation processes. The possibilities of using andalusite in masers operating at increased temperatures are analyzed.

Experimental curves are presented showing that the inversion coefficient in andalusite even at the temperature of liquid nitrogen in the three-centimeter range does not drop below 2.0-2.2 which is at least twice as high as in ruby at the same temperatures. This means that in an andalusite maser in the three-centimeter range it is possible to count on obtaining a noise temperature of 40-50° K at the temperature of liquid nitrogen (77.4° K). If the operating frequency of the amplifier is reduced and we go to the 10 centimeter range,

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USSR

YERU, I. I., et al., _Izvestiya vysshikh uchevnykh zavedeniy, Radiofizika,_ Vol XV, No 1, 1972, pp 38-42

at the temperature of liquid nitrogen an inversion coefficient of 6-7 can be obtained and the noise temperature can be reduced to 20-25° K. With a favorable ratio of the Hamiltonian constants A_1 and A_2 ($A_1/A_2 \gg 1$, that is, in the absence of the effect of the upper, third doublet) it is theoretically possible to obtain an even higher inversion coefficient at the nitrogen temperature than at the helium temperature.

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USSR   UDC: 621.373:530.145.6

YERU, I. I., PESKOVATSKIY, S. A., CHERNETS, A. N.

"Paramagnetic Amplification in the Millimeter Range"

V sb. Kvantovaya elektronika. Vyp. 3 (Quantum Electronics—collection of
works. No 3), Kiev, "Nauk. dumka", 1969, pp 265-275 (from RZh-Radiotekhnika,
No 11, Nov 70, Abstract No 11D344)

Translation: The authors investigate the possibility of three-level ampli-
fication on andalusite in the 3-cm band, and four-level amplification in the
3-mm band. The basic characteristics are presented for amplifiers which are
developed. For instance the described four-level amplifier on a frequency
of 100.4 GHz provided paramagnetic amplification of 30 DB in the 5.5 ± 0.5
MHz band. With a space factor of 30 percent, the characteristic product
was 170-200 MHz. The magnetic field strength is equal to 2.8 kilogausses.
The power of illumination on a frequency of 116.6 GHz was no greater than
30 mW. It is shown that the andalusite amplifier has parameters as good as
the best of rutile amplifiers, assuring paramagnetic amplification on the
highest frequency -- 100.4 GHz. A. K.

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THIN SUPERCONDUCTING FILMS IN A UHF FIELD.
II. NONLINEAR PROPERTIES OF THIN SUPERCONDUCTING FILMS IN A UHF FIELD

Yeru, I. I.; Kashchey, V. A.; Peskovatskiy, S. A.

The nonlinear properties of thin $(d < \lambda_L(0), d < \xi_0)$ lead, tin and indium super-conducting films in a UHF field $(10^{10}$ Hz) are investigated experimentally at temperatures between 1.5 and 4.2° K. The results which can be explained by excitation of Cooper pairs via the energy gap by an UHF current, agree well with the pair excitation mechanism considered in the first part of the paper [1], despite the fact that the results were obtained with films possessing a nonuniform current distribution along the film length. The results also indicate a new possibility of observing the behavior of the principal superconductor parameters and measuring their relaxation rate.

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USSR   UDC 621.372.824

YERUKHIMOV, A. Kh., SAVCHUK, L. L., TROK, R. A., USOV, A. F.

"Analysis of Optimal Relations in a Coaxial System with Combined Insulation"

Elektrofiz. apparatura i elektr. izolyatsiay (Electrophysics Equipment and Electrical Insulation), Moscow, Energiya Press, 1970, pp 387-392 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8B149)

Translation: This article contains an analysis of optimal relations in a coaxial system with combined insulation formed by dielectrics with different dielectric constants. Three cases are investigated: a dielectric with a smaller dielectric constant is applied to the internal electrode, the external electrode and both electrodes simultaneously. The auxiliary conditions are constancy of the thickness of the dielectric with lower dielectric constant or constancy of the cross section of the dielectric with higher dielectric constants. The relations permitting selection of the parameters of the system which insures minimum field intensity in the given dielectric are obtained. There are three illustrations.

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USSR   UDC 681.142.331

YERUKHIMOVICH V. M.

"Conversion of Input Analog Variables in Probability-Pulse Analog Computers"

Novocherkassk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, No 1,
1972, pp 88-90

Abstract: The operating characteristics of a probability analog-pulse conver-
ter and the possibility of functional conversion of input analog variables
were investigated. The probability-pulse coding consists in conversion of the
analog variable a to a random series Z(t), the probability of the occurrence
of pulses in which is equal to a, that is,

$$P(Z = 1) = a, \quad Z \in \{0, 1\}.$$

     The utilization of a pseudorandom noise generator based on a shift regis-
ter with linear feedback in probability converters was investigated. The
errors introduced by using pseudorandom noise and the condition of obtaining
uniform distribution are analyzed. Formulas are derived showing that at the
output of the probability converter a series is obtained with the probability
of occurrence of pulses proportional to the quotient from dividing the input
analog variables. Special consideration is given to solving to control problems
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USSR

YERUKHIMOVICH, V. M., Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, No 1, 1972, pp 88-90

where the necessity arises for functional conversion of the input analog vari-ables. The described probability analog-pulse converters can perform this operation with the help of functional decoding converters [Peluprovodnikovyye koliruyshchiye i dekoliruyushchiye preobrazovateli, Energiya Press, 1976] connected to the shift register with linear feedback. The pseudorandom process at the output of the functional decoding converters is investigated.

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USSR   UDC: 621.396.677.861

YERUKHIMOVICH, Yu. A.

"Analysis of Generalized Two-Mirror Antennas"

Moscow, Radiotekhnika, No 11, 1972, pp 61-70

Abstract: A detailed analysis is made of two-mirror antennas with
various modifications. The data obtained is compared with results
of experiment. The analysis is conducted in an approximation of
geometrical optics, and begins with a discussion of the geometry
of antennas structured on the basis of second-order curves. An-
tennas considered in the analysis are generalized antennas in which
the wave front reflected from the small mirror is toroidal, corres-
ponding to two caustic curves: a focal ring of specified diameter,
and that part of the axis of symmetry cut by the reflected rays.
Antennas with an imaginary focal ring and hyperbolic generatrix are
discussed together with antennas with real focal rings and ellip-
tical generatrices. A photograph of the latter type of device is
reproduced. The author expresses his thanks to G. Z. Ayzenberg for
his advice.

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