

USSR

UDC 619:576.809.518:576.858.2

BADAYEV, F. A., CHEVELEV, S. F., MITIN, N. I., ARKHIPOV, N. I., and PERSHIN, G. N., All-Union Scientific Research Institute of Veterinary Virology and Microbiology and All-Union Scientific Research Chemico-Pharmaceutical Institute

"The Antivirus Activity of Synthetic Compounds"

Moscow, Veterinariya, No 6, Jun 73, pp 44-46

Abstract: Indolyl-3-propiohydroxamic acid (1), indolyl-3-acetohydroxamic acid (2), 2,4,6-trichlororesorcinol (3), 2,4,6-trichlorophloroglucinol (4), 2,4,6-tribromophloroglucinol (5), N-(o-tolyl)-N-cyanoethylaminobenzoquinone (6), tetrahydrotetraoxonaphthalene dihydrate (oxolin) (7), beta-indolyl-propionic acid (8), and beta-indolylbutyric acid (9) inhibited to 98.4% of more the propagation of the virus of Aujeszky's disease in a cell culture. The prophylactic and therapeutic activities of (1), (2), (3), and (7) and the prophylactic activity of (4), (5), (6), (7), and (8) in connection with the experimental infection of rabbits with the virus were studied. A prophylactic activity was exhibited by (1), (3), and (8): 16.6-40% of the infected rabbits that had been treated with these compounds survived, whereas all of

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BADAYEV, F. A., et al., Veterinariya, No 6, Jun 73, pp 44-46

the controls died. A slight therapeutic effect was exerted by (2) and (6): the rabbits treated with (2) died 7 days later than controls, while one out of three animals treated with (7) survived. (1), (3), and (8) were also tested in connection with experiments in which sheep were infected with Aujeszky's disease. These compounds had a slight therapeutic effect on the sheep.

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UDC 619:616.981.452.636.4

USSR

ARKHIPOV, N. I., PICHUGIN, L. M., BURTSEV, V. I., and KUSHNIR, A. T., All-Union Scientific Research Institute of Veterinary Virology and Microbiology

"Cytochemical Evaluation of Hog Cholera Virus Vaccine"

Moscow, Veterinariya, No 4, 1971, pp 43-45

Abstract: Comparative cytomorphological and cytohistochemical study of immunity production was conducted in gilts immunized with avirulent lapinized and cultural hog cholera virus vaccines (by inhalation and intramuscular injection). The lymph nodes, spleen, liver, lungs, and blood were examined at various times after vaccination. The various changes produced by the vaccines were most pronounced after 4 to 6 days: hyperemia in the lymph nodes, hyperplasia of the lymph follicles, and a sharp plasma cell reaction, especially in the regional lymph nodes and spleen (where the plasma cells increased 3- to 4-fold). The lymphocytes in the peripheral blood showed a similar increase. Biochemical analysis of the blood revealed marked changes in the serum proteins: sharp decrease in albumins and increase in the alpha- and gamma-globulins. All the animals were completely immune to cholera at this time. The cultural vaccine elicited the strongest and most prolonged immunomorphological response and conferred the highest degree of immunity.

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UDC: 519.2:62-50

ROTACH, V. Ya., ARKHIPOV, N. V.

"Solution of the Pelegrin Problem for Objects With Delay in the Case of Uncorrelated Input Signals"

Tr. NII upravl. mashin i sistem (Works of the Scientific Research Institute for Control Computers and Systems), 1971, vyp. 5, pp 127-131 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V306)

Translation: The Pelegrin problem in the statistical dynamics of automatic systems is the name given to the generalization of the Wiener problem to systems with a predetermined invariable section when, in addition to the useful signal with superimposed interference, the system is subjected to other disturbances whose point of application does not coincide with that of the useful signal. In this paper, methods of optimizing multidimensional systems are used to find a general solution with regard to the limitations which are imposed by delay in the given section of the system. From the author's resumé.

1/1

1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--RB, CS-CL, CLO SUB3 -H SUB2 O SYSTEM AT 25DEGREES -U-  
AUTHOR--(03)-ARKHIPOV, S.M., KASHINA, N.I., KUZINA, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. NEORG. KHIM. 1970, 15(6), 1640-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--TERNARY FLUID SYSTEM, CRYSTALLIZATION, SOLUBILITY, SOLID SOLUTION, AQUEOUS SOLUTION, RUBIDIUM CHLORIDE, CESIUM CHLORIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/1387 STEP NO--UR/0078/70/015/006/1640/1642  
CIRC ACCESSION NO--AP0135061  
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0135061

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RBCL-CSCL-H SUB2 O SYSTEM WAS STUDIED BY SOLY. METHOD AND BY X-RAY DIFFRACTION. THE SYSTEM FORMS A LIMITED SOLY. OF A SERIES OF SOLID SOLN. LIMITS OF CRYSTN. FIELDS OF SOLID SOLNS. OF RBCLO SUB3 WITH CSCLO SUB3, OF CS(RB)CL, AND RB(CS)CL ARE DETD.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SODIUM IODIDE, CESIUM IODIDE, ALUMINUM IODIDE, POTASSIUM  
IODIDE, CESIUM IODIDE, ALUMINUM IODIDE, AND RUBIDIUM IODIDE, CESIUM  
AUTHOR--(03)-ARKHIPOV, S.M., REVZINA, T.V., MIKHEYEVA, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 820-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--PHASE DIAGRAM, SOLID SOLUTION, IODIDE, SODIUM COMPOUND, CESIUM  
COMPOUND, ALUMINUM COMPOUND, RUBIDIUM COMPOUND, EUTECTIC MIXTURE,  
MULTICOMPONENT CHEMICAL MIXTURE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1994/1717 STEP NO--UR/0078/70/015/003/0820/0824  
CIRC ACCESSION NO--AP0115546

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0115546

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TRIANGLE PHASE DIAGRAMS OF MI-CSE-AL<sub>3</sub> SYSTEMS (WHERE M EQUALS NA, K, OR RB) SPLIT INTO 4 SECONDARY TRIANGULAR PHASE DIAGRAMS. THE SECTIONS NAI-AL<sub>3</sub>-CSE-AL<sub>3</sub> SUB<sub>3</sub> (WHERE N EQUALS 1 OR 2) AND NAI-CSE-AL<sub>3</sub> SUB<sub>3</sub> APPEAR AS QUASIBINARY SYSTEMS FORMING LIMITED SOLID SOLNS. AND EACH HAVING ONE EUTECTIC, I.E. AT 165 AND SIMILAR TO 43 MOLE PERCENT CSE-AL<sub>3</sub> SUB<sub>3</sub>, 150 AND SIMILAR TO 46 MOLE PERCENT CSE-2AL<sub>3</sub> SUB<sub>3</sub>, AND 240DEGREES AND SIMILAR 8 MOLE PERCENT NAI, RESP. PHASE DIAGRAMS OF SYSTEMS OF CSE-AL<sub>3</sub> SUB<sub>3</sub> WITH KI-AL<sub>3</sub> SUB<sub>3</sub> AND RBI-AL<sub>3</sub> SUB<sub>3</sub> ARE CONSTRUCTED. THEY FORM EUTECTICS, AT 175DEGREES AND SIMILAR TO 59 MOLE PERCENT KI-AL<sub>3</sub> SUB<sub>3</sub> AND SIMILAR TO 195DEGREES AND SIMILAR TO 75 MOLE PERCENT RBI-AL<sub>3</sub> SUB<sub>3</sub>, RESP. THE SYSTEM OF RBI-AL<sub>3</sub> SUB<sub>3</sub> HAS LIMITED SOLID SOLY. AT BOTH CONCENTRATIONAL EXTREMES. EUTECTICS OF THE TERNARY SYSTEM NAI-CSE-AL<sub>3</sub> SUB<sub>3</sub> ARE (M.P., MOLE PERCENT NAI, AND MOLE PERCENT CSE GIVEN): 115DEGREES, 23.5, 5.5; 145DEGREES, 22.0, 21.0; 160DEGREES, 31.0, 21.0; AND 235DEGREES, 2.0, 53.0.

UNCLASSIFIED



1/2 009 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SOLUBILITY IN THE SODIUM CESIUM PARALLEL TO CHLORIDE, CHLORATE H  
SUB2 O SYSTEM AT 25, 50, AND 75DEGREES -U-  
AUTHOR--(02)-ARKHIPOV, S.M., KASHINA, N.I.  
COUNTRY OF INFO--USSR *A*  
SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 760-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHLORIDE, SOLID SOLUTION, SODIUM COMPOUND, CESIUM COMPOUND,  
SOLUBILITY  
CENTRAL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/0713 STEP NO--UR/0078/70/015/003/0760/0764  
CIRC ACCESSION NO--AP0126425  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126425

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY. OF NACLO SUB3, CSCLO SUB3, H SUB2 O AND CSCL, CSCLO SUB3, H SUB2 O SYSTEMS WAS STUDIED AT 25DEGREES AND SOLY. ISOTHERMS WERE CONSTRUCTED. SOLY. IN NA PRIME POSITIVE, CS PRIME POSITIVE PARALLEL TO CL PRIME NEGATIVE, CLO SUB3 PRIME NEGATIVE MINUS H SUB2 O SYSTEMS WAS DETD. AT 25, 50, AND 75DEGREES AND CRYSTN. FIELDS ARE PRESENTED FOR NA CL, AND CA CL, CSCL AND NACLO SUB3, CSCLO SUB3 SOLID SOLNS. THE INVESTIGATED SYSTEMS ARE OF A SIMPLE EUTONIC TYPE. A RESULTS ARE TABULATED.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--PHASES OF VARIABLE COMPOSITION IN A SODIUM CHLORIDE, CESIUM  
CHLORIDE, WATER SYSTEM -U-  
AUTHOR--(03)-ARKHIPOV, S.M., KASHINA, N.I., KUZINA, V.A.  
COUNTRY OF INFO--USSR **A**  
SOURCE--ZH. NEORG. KHIM. 1970, 15(4), 1086-9  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--SODIUM CHLORIDE, CESIUM COMPOUND, THERMAL ANALYSIS, X RAY  
DIFFRACTION, SOLID SOLUTION, WATER  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1999/1114 STEP NO--UR/0078/70/015/004/1086/1089  
CIRC ACCESSION NO--AP0123106  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123106

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY, IN NaCl, CsCl, H SUB2 O SYSTEM WAS DETD. AT 25DEGREES. DTA AND X RAY DIFFRACTION STUDY OF THE SOLID PHASE OF VARIABLE COMPN. CONTG. SMALLER THAN 33.7 MOLE PERCENT NaCl SHOWED THAT IT IS MADE UP OF SUBSTITUTED AND INTERSTITIAL SOLID SOLNS. OF NaCl AND CsCl.

UNCLASSIFIED

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"

Elektron. tekhnika. Nauchno-tekhn. sb. Gazorazryadn. pribory  
(Electronic Engineering, Scientific-Technical Collection of  
Gas Discharge Devices) 1970, No. 3(19), pp 33-36 (from RZh-  
Radiotekhnika, No. 3, March 71, Abstract No. 3D250)

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

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Acc. Nr:

**AP0106264**

Abstracting Service: *670*  
INTERNAT. AEROSPACE ABST.

Ref. Code:

*UR0120*

A70-28184 # A device for transmitting analog signals  
(Ustroistvo dlia peredachi analogovykh signalov). V. K. Arkhipov, M.  
V. Gaifullin, Iu. N. Kruglov, and V. G. Shatokhin. *Pribory i Tekhnika*  
*Ekspérimenta*, Jan.-Feb. 1970, p. 195-197. In Russian.

Description of a device for transmitting information in analog form, using He-Ne laser radiation to attain a time resolution of 9 nsec. A detailed study is made of the transfer characteristics of an optical telemetric channel for transmitting pulsed nanosecond signals in analog form. It is shown that, if the light intensity at the modulator output at the initial operating point amounts to 12 to 17% of the maximum and the operating conditions of the photodetector are correctly chosen, a pulse with an amplitude of up to 300 V can be transmitted through the telemetric channel with minimum nonlinear distortions. It is noted that the wideband feature of the transmission line in such a system is determined mainly by the time resolution of the photomultiplier.

A.B.K.

*mje*

REEL/FRAME  
**19881508**

*4*

UDC: 621.391.1

USSR

ARKHIPOV, V. S., Active Member of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"Cadence Synchronization of a Multichannel Pilot Communications System"

Moscow, Radiotekhnika, Vol. 26, No 6, Jun 71, pp 7-13

Abstract: A method of cadence synchronization of a system of communications with phase telegraphy is considered. To eliminate phase ambiguity, unkeyed pilot signals are introduced into the group signal. Between the pilot signals are  $m-1$  information components with frequency spacing  $w_p$  of the order of a few dozen  $H_z$  (where  $m$  is a positive whole number). This close spacing ensures fairly strong correlation between the random phase components of the carriers of partial channels and the closest pilot signal, which makes it possible to compensate for the nonstationary nature of the short-wave channel. The synchronizing method boils down to comparing the positions of the vectors of the group spectrum components in system of coordinates which are fixed relative to determined components of the above-mentioned vectors. The systems of coordinates are formed by vectors corresponding to the sine and cosine components of reference voltages generated by the frequency-changing circuit at the reception end. If the receiving and transmitting frequency changers are mismatched

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ARKHIPOV, V. S., Radiotekhnika, Vol. 26, No 6, Jun 71, pp 7-13

by  $\Delta t$ , then the positions of the above-mentioned vectors in the corresponding systems of coordinates will not coincide. The difference in the angles of turn of the vectors in the corresponding systems will be proportional to  $\Delta t$ . A diagram of the device is presented, and the sign of the mismatch is determined. Coarse and fine adjustment circuits are provided in the cadence synchronization system.

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UDC 669.15'24-194:539.125.517.2

MEN'SHIKOV, A. Z., ARKHIPOV, V. Ye., ZAKHAROV, A. I., and SIDOROV, S. K.,  
Institute of Metal Physics of the Ukrainian National Center of the Academy  
of Sciences USSR

"Atomic Correlation in Invar Ferro-Nickel Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 309-  
315

Abstract: An experimental investigation was made of the nuclear diffusion scattering of neutrons on hardened specimens of ferro-nickel alloys (50, 65, and 70 at% Fe). The specimens contained the isotope of nickel 62 having a negative amplitude of scattering. The parameters of the short-range order ( $\alpha < 0$ ) in the first and the second coordination spheres were calculated by the method of least squares from experimental curves of the dependence of the differential scattering section on the wave vector. The calculation of the number of atoms in the first coordination sphere indicates that in hardened nickel alloys containing 65 and 70 at% Fe, a short-range order of the NiFe or NiFe<sub>3</sub> types is being established. A parallel investigation was made of the change of the linear expansion coefficient and parameters of the short-range order depending on the annealing temperature of the Invar alloy. The experiments revealed that temperature annealing, reducing to a development

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MEN'SHIKOV, A. Z., et al., Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 309-315

of a short-range order, decreases the anomaly of the linear expansion coefficient. Therefore, the atomic correlation of the short-range-order type can only attenuate the Invar phenomenon, but it cannot be its source. Two figures, one table, fifteen bibliographic references.

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1/2 005 UNCLASSIFIED PROCESSING DATE--18SEPT0  
TITLE--TO IMPROVE THE METHODS OF CONTROLLING THE TRANSPORTATION PROCESS  
-U-  
AUTHOR--ARKHIPOV, YE. *A*  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, RECHNOY TRANSPORT, NO 1, JAN 70, PP 11-13  
DATE PUBLISHED----JAN70  
  
SUBJECT AREAS--MILITARY SCIENCES, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--INLAND WATERWAY TRANSPORTATION, TRANSPORTATION SYSTEM  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1987/0917 STEP NO--UR/0310/70/000/001/0011/0013  
CIRC ACCESSION NO--AP0104339

UNCLASSIFIED

2/2 005

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104339

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE IS AN ACCOUNT OF THE SECOND THEORETICAL SEMINAR ON GENERALIZATION OF THE EXPERIENCE OF THE USE OF MATHEMATICAL METHODS IN THE CONTROL OF THE TRANSPORTATION PROCESS WHICH WAS HELD IN LENINGRAD ON 7-10 APRIL 1969. MORE THAN 90 PRODUCTION AND SCIENTIFIC WORKERS FROM 20 ORGANIZATIONS OF RIVER AND RELATED FORMS OF TRANSPORT PARTICIPATED IN THE WORK OF THE SEMINAR. SOME 23 REPORTS WERE GIVEN.

UNCLASSIFIED

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USSR

ARKHIPOVA, Ye. S., ZEL'YEV, N. S.

"Software for M-20 Computer Program-Controlled Indicator"

Vychisl. Mat. i Vychisl. Tekhn. [Computational Mathematics and Computer Equipment -- Collection of Works], No 2, Khar'kov, 1971, pp 76-78, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V701 by the author's).

Translation: A description is presented of two standard subroutines designed for display device software.

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ARKHIPOVA, G. P.

13 MAR 70

JMS 5 7493

\*Методика комплексного обследования физического состояния населения в условиях производственной деятельности  
З.Ю. Архипова, канд. мед. наук, зав. кафедрой физиологии человека в условиях производственной деятельности, Институт физиологии человека в условиях производственной деятельности, Москва, 1970.

The study was conducted in 1970-1971 by the chief and local public health institutions. It was based on a specially developed method which defined the objectives, tasks, and objects of investigation. In particular, a 9,000 person sample of the rural population from two regions of the oblast, Mchurlinki and Sopotniki, served as the object for investigation of the physical condition of the rural population. In accordance with the objectives and tasks of the study a "Card of medical and social survey of the rural resident" was developed which is consistent with the principles of both a family and individual survey. The organizational principles of our work were based on: 1) aid of local party and medical services; 2) utilization of the existing system of public health agencies and institutions; 3) active involvement of public organizations and the broad community in the study.

In the present report we summarize the concrete experience gained in organizing and performing mass physicals on the rural population of Tambovskaya Oblast which are a component of the program of a specific sociohygienic study.

In the current literature it is customary to submit information about scientific research at the start of minutes of the results and much less often are the aspects of organization of research discussed. At the same time, it is very important, particularly for specialists in social hygiene, for the knowhow pertaining to organization of investigations to be the subject of discussion and even of special study.

Article by G. P. Arkhipova, G. V. Romanovskikh, Dept. of Social Hygiene and Public Health Organization (headed by Professor A. P. Gorbenko, corresponding member of the USSR Academy of Medical Sciences), First Moscow Medical Institute (head I. M. Sedukhin), Moscow, Soviet Union. Ukrainian Journal of Social Hygiene, Kishinev, No 10, 1972, submitted 3 March 1972. (P. 22-24)

ORGANIZATION AND PERFORMANCE OF COMPLEX PHYSICAL EXAMINATIONS ON THE RURAL POPULATION OF TAMBOVSKAYA OBLAST

UDC: 616-084.144-73

1/2 029 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--COMPARATIVE STUDY OF THE THERMAL OXIDATIVE STABILITY OF POLYAMIDES  
AND POLYIMIDES OF VARIOUS STRUCTURES -U-  
AUTHOR--(04)-RAFIKOV, S.R., ARKHIPOVA, I.A., BUKETOVA, N.I., LDOKOVA, G.M.  
COUNTRY OF INFO--USSR  
SOURCE--TR. INST. KHIM. NAUK, AKAD. NAUK KAZ. SSR 1970, 28, 107-14  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--THERMAL DEGRADATION, OXIDATIVE DEGRADATION, POLYAMIDE RESIN,  
POLYIMIDE RESIN, POLYCONDENSATION, PHTHALIC ANHYDRIDE, PYROMELLITIC  
ACID, ANHYDRIDE, HEAT RESISTANCE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/0769 STEP NO--UR/0000/70/028/000/0107/0114  
CIRC ACCESSION NO--AT0132867  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132867

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYCONDENSATION OF (P,H SUB2 NC SUB6 H SUB4) SUB2 O WITH 1,4,DICHLOROPHTHALIC ANHYDRIDE (I), 1,4,DIBROMOPHTHALIC ANHYDRIDE (II), 4,5,DIIODOPHTHALIC ANHYDRIDE (III), PYROMELLITIC DIANHYDRIDE (IV), OR IV CONTG. SIMILAR TO 1PERCENT I, II OR III GAVE THE CORRESPONDING POLYAMIDES, WHICH, UPON HEATING AT 300DEGREES FOR 3 HR, WERE CONVERTED TO POLYIMIDES. DTA OF THESE POLYMERS SHOWED THAT THE SMALL AMT. OF THE HALOGEN CONTG. MONOMER, ADDED TO THE POLYMN. MIXT., CONSIDERABLY INCREASES THE HEAT RESISTANCE OF THE RESULTING POLYMERS AND INCREASES THE APPARENT ACTIVATION ENERGY OF THEIR THERMAL OXIDATIVE DEGRADATION.

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1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--THERMAL AND THERMOOXIDATIVE AGING AND STABILIZATION OF POLYIMIDES  
-U-  
AUTHOR--(03)-RAFIKOV, S.R., ARKHIPOVA, I.A., BUKETOVA, N.I.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(3), 234-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--PHENYLENE, PYROMELLITIC ACID, IMIDE, PHTHALIC ANHYDRIDE,  
THERMAL STABILITY, CHEMICAL STABILIZER, BROMINATED ORGANIC COMPOUND,  
TENSILE STRENGTH, PLASTIC FILM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/0687 STEP NO--UR/0460/70/012/003/0234/0237  
CIRC ACCESSION NO--AP0124359  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124359

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLY(OXDIPHENYLENE  
PYROMELLITIMIDE) (I) POWDER OR FILMS CONTG. HALOGENATED PYROMELLITIC  
DIANHYDRIDE IN THE MIDDLE OF THE CHAIN OR AHLOGENATED PHTHALIC ANHYDRIDE  
AT THE TERMINALS, WAS DEGRADED AT 500-630DEGREES. THE STABILIZED I HAS  
SUPERIOR DEGRADATION RESISTANCE AND HIGH APPARENT ACTIVATION ENERGY.  
THE MOST EFFECTIVE STABILIZERS WERE THE BROMINATED FRAGMENTS. TTHE  
STABILIZED I FILMS HAD EXCELLENT TENSILE STRENGTH, WHICH WAS UNAFFECTED  
EVEN AT GREATER THAN 500DEGREES. FACILITY: INST. KHIM. NAUK,  
ALMA ATA, USSR.

UNCLASSIFIED

USSR

UDC 541.18.04:547.1'118

MATROSOV, YE. I., KULUMBETOVA, K. ZH., ~~ARKHIPOVA, L. I.~~ MEDVED', TA. YA.,  
and KABANCHIK, M. I., Institute of Hetero-Organic Compounds, USSR Academy of  
Sciences

"Acid-Base Properties of Substituted Tetraphenyl-Methylene-Diphosphine Dioxides"

Moscow, Izvestiya Akad. Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 72,  
pp 199-201

Abstract: Potentiometric titration with perchloric acid of the dioxides  
of tetraphenylmethylenediphosphines substituted in the methylene bridge  
was carried out in nitromethane. The obtained values of the alkalinity  
constant  $pK_a$  ( $CH_3NO_2$ ) were found to be linearly related to the  $\sigma^*$ -con-  
stants of the substitutes.

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AA0044784- ARKHIPOVA N.K.

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

243014 CIRCUIT FOR VERIFYING SIGNALS. A signal incoming on the rail (9) to the receiving/transmitting module (1) is memorized in (2) decoded in (3) and amplified by (4). The coder (6) returns to the receiving module a signal which should be identical to that being verified. The signals are compared at a control point (external) and a coded message is despatched to the comparison module (7) for another check. If everything is all right the relay (8) operates and one of the amplifiers (5) issues a signal for operating a required piece of apparatus.

28.2.68 as 1222288/18-24.N.K.ARKHIPOVA et al.  
CENTRAL INST.OF COMPLEX AUTOMATION.(23.9.69.)  
Bul 16/5.5.69. Class 21c, 74b. Int.Cl.G 05f,  
G 08c.

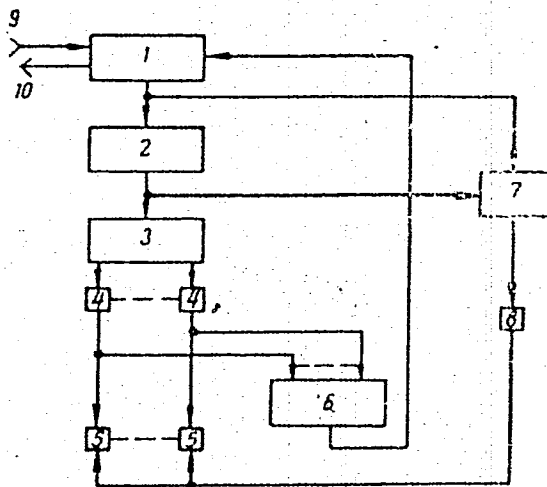
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19771597

AA0044784



AUTHORS: Arkhipova, N. K.; Dmitriyev, V. F.; Shapovalova, O. K.  
Tsentral'nyy Nauchno - Issledovatel'skiy Institut Kompleksnoy  
Automatizatsii

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19771598

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USSR

ARKHIPOVA, O. G., and PAVLOVA, I. V.

"Biochemical Investigations in the Study of the Toxicity of Chemicals"

V sb. Printsiy i metody ustanovl. predel'no dopustimkh kontsentratsiy vredn. veshchestv v vozdukhne prostr. promyshchenny (Principles and Methods of Establishing Maximum Permissible Concentrations of Harmful Substances in the Air of Industrial Premises -- Collection of Works), Moscow, "Meditsina," 1970, pp 41-49 (from RZh-Biologicheskaya Knizhny, No 2, 25 Jan 71, Abstract No 2F2037 by A. IGNAT'YEV)

Translation: Survey. Bibliography with three titles.

1/1

- 1/2 025 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--TOXIC EFFECTS OF ISOPROPYL NITRITE AND ISOPROPYL NITRATE -U-

AUTHOR--(021)-YUNUSOVA, KH.K., ARKHIPOVA, O.G.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(1), 110-12

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ISOPROPYL NITRATE, NITRITE, TOXICITY, LIVER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0047

STEP NO--UR/0390/70/033/001/0110/0112

CIRC ACCESSION NO--AP0103727

UNCLASSIFIED

272 025

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0103727

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTS. ON MICE AND RATS SHOWED THAT INHALED ISOPROPYL NITRITE WAS MORE TOXIC THAN ISOPROPYL NITRATE, WITH MEDIAN LETHAL CONCNS. OF 2700 AND 29,000 MG-M PRIME3, RESP. ISOPROPYL NITRATE DID NOT INDUCE METHEMOGLOBIN FORMATION IN THE BLOOD. THE BULK OF INHALED ISOPROPYL NITRATE WAS RESORBED IN THE LUNGS, BUT A FRACTION WAS REDUCED TO ISOPROPYL NITRITE IN THE LIVER.  
FACILITY: INST. GIG. TR. PROFZABOL., MOSCOW, USSR.

UNCLASSIFIED



2/2 019  
CIRC ACCESSION NO--AP0125265

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ENERGY MAPS WERE CONSTRUCTED MATH., CORRESPONDING TO THE VARIOUS EXTENDED AND COILED CONFORMATIONS POSSIBLE IN N,ACETYL,L,ALANINE METHYLAMIDE FOR SOLVENT SYSTEMS OF DIFFERENT DIELEC. CONSTS., BASED ON ESTD. STRENGTHS OF THE H BONDS IN SUCH MEDIA. THE DIPOLE MOMENTS WERE CALCD. FOR THE VARIOUS CONFORMATIONS AND THE ENTROPY IMPLICATIONS OF THE ENERGY MAPS ARE DISCUSSED. FACILITY: INST. KHIM. PRIR. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--THEORETICAL ANALYSIS OF CONFORMATIONS OF SOME METHYLAMIDES OF N  
ACETYLDIPEPTIDES -U-  
AUTHOR-(03)-LIPKIND, G.M., ARKHIPOVA, S.F., POPOV, YE.M.  
COUNTRY OF INFO--USSR *A*  
SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 3, PP 331-338  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY  
TOPIC TAGS--PEPTIDE, MOLECULAR STRUCTURE  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1998/0177 STEP NO--UR/0463/70/004/003/0331/0338  
CIRC ACCESSION NO--AP0120877  
UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--23OCT70  
CIRC ACCESSION NO--AP0120877  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONFORMATIONS OF THE MOLECULES WITH THREE AMIDE GROUPS: N,ACETYLGLYCYLGLYCINE, N,ACETYL,L (D) ALANYL,L,ALANINE AND N,ACÉTYL,L,VALYL,L,VALINE HAVE BEEN INVESTIGATED. THE GEOMETRICAL PARAMETERS OF FAVORABLE FORMS WITHOUT HYDROGEN BONDING HAVE BEEN CALCULATED USING THE MINIMIZATION PROCEDURE AND DEPICTED ON THE TWO DIMENSIONAL PHI (C PRIMEALPHA MINUS N) MINUS PSI (C PRIMEALPHA MINUS C PRIME) CONFORMATIONAL MAPS. THE VALUES OF THE PHI AND PSI ANGLES IN THE PREFERRED CONFORMATIONS OF CORRESPONDING COMPOUNDS WITH TWO AMINO GROUPS CAN BE USED AS THE ZERO APPROXIMATION IN THE SEARCH FOR THE POTENTIAL ENERGY MINIMUM OF THE OLIGOPEPTIDES. THE SIGNIFICANT SCATTERING IN THE PHI AND PSI VALUES FOUND FOR THE METHYLAMIDES OF N ACETYLDIPEPTIDES AS WELL AS THE DEVIATIONS FROM ADDITIVITY OF ENERGIES ARISING WITH INCREASE OF PEPTIDE CHAIN LENGTH CAN BE CONSIDERED AS THE EVIDENCE FOR MUTUAL DEPENDENCE OF CONFORMATIONAL STATE OF THE TWO AMINO ACID RESIDUES. THE MOST STABLE AMONG THE STRETCHED FORMS INVESTIGATED ARE THOSE THAT HAVE THE ANGLES OF ROTATION ABOUT THE C PRIMEALPHA MINUS N AND C PRIMEALPHA C PRIME BONDS CLOSE TO THOSE OCCURRING IN THE RIGHT HANDED ALPHA HELIX AND IN THE BETA STRUCTURE. THE EFFECT OF DISTURBANCES OF THE STEREOREGULARITY OF THE ASYMMETRIC CENTERS IN THE PEPTIDE CHAIN ARE ALSO DISCUSSED. FACILITY: INSTITUTE FOR CHEMISTRY OF NATURAL PRODUCTS, ACADEMY OF SCIENCES, USSR, MOSCOW.

UNCLASSIFIED

1/2 006 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--THEORETICAL STUDY OF CONFORMATIONS OF N,ACETYL,L,PHENYLALANINE  
METHYLAMIDE -U-  
AUTHOR-(03)-LIPKIND, G.M., ARKHIPOVA, S.F., POPOV, YE.M.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 315-22  
DATE PUBLISHED--70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--PHENYLALANINE, AMIDE  
CCNTRGL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/0750 STEP NO--UR/0062/70/000/002/0315/0322  
CIRC ACCESSION NO--AP0124420  
UNCLASSIFIED

2/2 006 UNCLASSIFIED PROCESSING DATE--30OCT70  
CIRC ACCESSION NO--AP0124420  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONFORMATIONAL ANAL. WAS MADE FOR  
N,ACETYL,L,PHENYLALANINE METHYLAMIDE AND THE MOL. MAP PROJECTIONS WERE  
PRESENTED AND DISCUSSED. FACILITY: INST. KHIM. PRIR. SOEDIN.,  
MOSCOW, USSR.

UNCLASSIFIED

USSR

ARKHOVSKIY, V. F. (Editor)

"Conversion and Processing of Information. Collection of Articles"

Preobrazovaniye i Obrabotka Informatsii. Sb. Statey [English Version Above], Moscow, Moscow University Press, 1972, 191 pages (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V642).

Translation: This collection contains a number of articles in three sections: "Programming," "Conversion of Information" and "Processing of Information." The first section of the collection includes articles on programming of statistical problems, editing programs, programs for printer output of graphic and symbolic information, etc. The articles in the second section are dedicated to pressing problems of conversion of information in various computer input-output devices, measuring and control systems. The third section of the collection contains articles which analyze general problems of information processing using correlation devices and conversion devices, test systems, as well as individual circuits of computer input-output devices, automatic computers, computing, measurement and control systems.

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USSR

UDC 681.325.65

ARKHOVSKIY, V. F.

"Design Methods of Improving the Dynamic Precision of Servo-Type Analog-Digital Converters"

Taganrog, Region. nauch.-tekhn. seminar po stat. analizu, modelir. i avtomatiz. kontrolya ob'yektov s konstrukt. slozhn. strukturoy--sbornik (Regional Scientific and Technical Seminar on Statistical Analysis, Modeling and Automated Monitoring of Objects With a Structurally Complex Design--collection of works), vyp. 6, 1972, pp 25-29 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 72, abstract No 11B304)

Translation: The author considers methods of correcting servo-type analog-digital converters with respect to speed. The base circuit is selected, an optimum equivalent circuit is synthesized and the defining equation is derived, a table of parameters is computed for different states of the system, and the laws are found which govern the mutual relation between the parameters of the system and its state. The synthesis of the structures contains a check on all possible hypotheses of different functioning of correction systems with determination of the main output characteristics. The results of modeling are given. Five illustrations, bibliography of two titles. L.P. 1/1

USSR

UDC: 681.327

SHEVELEV, A. Ye., ARKHOVSKIY, V. F.

"Signal-Brightness Converter of Image Display Device"

Novyye Beskontaktn. Elektron. Ustroystva. Ch. 2 [New Contactless Electronic Devices. Part II -- Collection of Works], Moscow, 1970, pp 210-212 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B262, by T. R.)

Translation: It is noted that when various problems are solved by digital computer, complex functional relationships of three variables must be displayed. These problems include the following: cross section of a heterogeneous body, graphs of distributions as functions of a new parameter (for example, time or temperature), nonlinear surfaces, etc. In these cases, scanning by cross sections or multiple imposition of images (cone-image type) are ineffective. The most successful method is the brightness-modulation method. In the transmission of data from the computer to the "modulator," the cathode ray tube of the device contains two units: a digital-analog converter and an interrupter-modulator. The principal requirements on these units are determined. Three illustrations.

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Reliability

USSR

UDC: 621.396.6.019.3

ARKIN, G. I.

"Planning Abbreviated Tests of Articles of Electronic Technology"

Elektron. prom-st'. Nauch. tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1972, No 1, pp 61-64 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8V316)

Translation: A method is proposed for planning abbreviated tests which guarantee the required reliability of estimated quality of articles of electronic technology.

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USSR

UDC 519.33+519.272

ARKIN, V. I., LEVIN, V. L., Central Mathematical Economics Institute,  
Academy of Sciences of the USSR, Moscow

"Variational Problem With Functions of Several Variables and Operator  
Limitations: Principle of the Maximum and Theorem of Existence"

Moscow, DAN SSSR, 1971, vol 200, No 1, Sep 71, pp 9-12

Abstract: The following variational problem is considered. It is required  
to maximize the functional

$$\Phi(\bar{u}) = \int_0^1 \int_0^1 c(x, y, u(x, y)) dx dy$$

assuming the limitations

$$\int_0^1 f(x, y, u(x, y)) dy = 0;$$

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USSR

ARKIN, V. I., LEVIN, V. L., DAN SSSR, vol 200, No 1, Sep 71, pp 9-12

$$\int_0^1 g(x, y, u(x, y)) dx = 0;$$

the mapping  $\bar{u} = u(x, y) : K \rightarrow U$  is measurable and

$$u(x, y) \in U(x, y)$$

for nearly all  $(x, y) \in K$  where  $K = \{(x, y) : 0 \leq x \leq 1, 0 \leq y \leq 1\}$ ,  $U$  is a complete, separable metric space. A necessary and sufficient condition of optimality is established in the form of the principle of the maximum, and a theorem of existence of the extremum is formulated. Bibliography of nine titles.

2/2

- 5 -

Acc. Nr. **AP0102303**

Abstracting Service:  
CHEMICAL ABST. **6-70**

Ref. Code  
**4A0460**

- 112496j Structure and molecular motion in blended polymers studied by a paramagnetic probe method. Kovarskii, A. L.; Arkina, S. N.; Vasserian, A. M. (Inst. Khim. Fiz., Moscow, USSR). Vysokomol. Soedin., Ser. B 1970, 12(1), 38-41 (Russ).  
 The addn. of triethylene glycol dimethacrylate (I) and cumene peroxide to butadiene-acrylonitrile rubber (II) and heating to achieve ~85% polymn. of I reduces the rotational mol. motion of II due to the formation of the crosslinked polymethacrylate structure. The degree of the mol. motion decrease was detd. by measuring the decrease of the rotational periods ( $\tau$ ) of 2,2,6,6-tetramethylpiperidinoxy or of its 4-hydroxy- or 4-oxo-derivs., added to II, by the paramagnetic probe method (A. M. Vasserian, *et al.*, 1967, 1968, 1969). The decrease of  $\tau$  to  $10^{-7}$  sec corresponding to "frozen" free radicals was not uniform at various II sample locations, indicating nonhomogeneity regions. CPJR

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REEL/FRA  
19860253

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1/2 064 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--SPIN DETONATION NATURE OF THE TANGENTIAL HIGH FREQUENCY VIBRATIONS  
IN LIQUID ROCKET ENGINE COMBUSTION CHAMBERS -U-  
AUTHOR-(04)-ARKOV, D.F., VOYTSEKHOVSKIY, B.V., MITROFANOV, V.V.,  
TOPCHIIAN, M.E.  
COUNTRY OF INFO--USSR  
SOURCE--PMTF ZHURNAL PRIKLADNOI MEKHANIKI I TEKHNICHESKOI FIZIKI,  
JAN.-FEB. 1970, P. 155-157  
DATE PUBLISHED-----70

SUBJECT AREAS--ORDNANCE, PROPULSION AND FUELS

TOPIC TAGS--COMBUSTION INSTABILITY, COMBUSTION CHAMBER, ROCKET ENGINE,  
LIQUID PROPELLANT, SPINNING DETONATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1996/1549

STEP NO--UR/0207/70/000/000/0155/0157

CIRC ACCESSION NO--AP0118532

UNCLASSIFIED

2/2 064

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118532

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COMPARISON OF THE MAIN FEATURES OF A HIGH FREQUENCY INSTABILITY OBSERVED IN THE COMBUSTION CHAMBERS OF LIQUID ROCKET ENGINES WITH THE FEATURES OF A SPIN DETONATION. IT IS SHOWN THAT THE CONDITIONS CREATED NEAR THE ATOMIZERS OF A LIQUID ROCKET ENGINE ARE THE SAME AS THOSE OCCURRING BEHIND THE LEADING EDGE IN A SPIN DETONATION. IT IS CONCLUDED THAT THE OBSERVED HIGH FREQUENCY INSTABILITY IS A SPIN DETONATION UNDER THE SPECIFIC CONDITIONS OF A LIQUID ROCKET ENGINE COMBUSTION CHAMBER. METHODS OF PREVENTING THIS INSTABILITY FROM OCCURRING ARE CONSIDERED.

UNCLASSIFIED

USSR

UDC 669.295.5:539.376

AGEYEV, N. V., PETROVA, L. A., GREKOV, N. A., GRANKOVA, L. P.,  
KOZLOVSKAYA, T. M., and ARKOVENKO, G. I., Moscow

"Creep of IVT-1, a  $\beta$ -Alloy of Titanium"

Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 163-167

Abstract: The creep of IVT-1, a  $\beta$ -alloy of titanium (7% Mo, 5.5% Cr, 3% Fe, 3% Al, remainder Ti) was determined at temperatures of 100, 200, 250, and 350°C at stresses of 120, 115, 110, 90, 80, and 75 kg/mm<sup>2</sup> over 1,000 hours and in some cases up to 2,500 hours. The limiting stress causing 0.02% residual deformation of the alloy after 1,000 hours is 105 kg/mm<sup>2</sup> at 200°C and 79 kg/mm<sup>2</sup> at 250°C. The rate of stable creep at these stresses and temperatures is  $2 \cdot 10^{-5}$ %/hr. The creep tests showed that if two specimens tested under identical conditions show different initial deformation, the specimen with greater initial deformation generally has lower creep than the specimen with less initial deformation. Total deformation increases little with increasing load time at 100-250°C and 120-75 kg/mm<sup>2</sup>. Following creep tests, some breakup of  $\beta$  phase grains is observed; migration of grain boundaries and displacement along grain axes (slipping) were noted.

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USSR

UDC 669.295.5:539.376

AGEYEV, N. V., PETROVA, L. A., GREKOV, N. A., GRANKOVA, L. P.,  
KOZLOVSKAYA, T. M., and ARKOVENKO, G. I., Moscow

"Creep of IVT-1, a  $\beta$ -Alloy of Titanium"

Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 163-167

Abstract: The creep of IVT-1, a  $\beta$ -alloy of titanium (7% Mo, 5.5% Cr, 3% Fe, 3% Al remainder Ti) was determined at temperatures of 100, 200, 250, and 350°C at stresses of 120, 115, 110, 90, 80 and 75 kg/mm<sup>2</sup> over 1,000 hours and in some cases up to 2,500 hours. The limiting stress causing 0.02% residual deformation of the alloy after 1,000 hours is 105 kg/mm<sup>2</sup> at 200°C and 79 kg/mm<sup>2</sup> at 250°C. The rate of stable creep at these stresses and temperatures is  $2 \cdot 10^{-5}$ %/hr. The creep tests showed that if two specimens tested under identical conditions show different initial deformation, the specimen with greater initial deformation generally has lower creep than the specimen with less initial deformation. Total deformation increases little with increasing load time at 100-250°C and 120-75 kg/mm<sup>2</sup>. Following creep tests, some breakup of  $\beta$  phase grains is observed; migration of grain boundaries and displacement along grain axes (slipping) were noted.

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- 72 -



USSR

UDC 669.293.5.296.537.312.62.539.374

SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A.  
ARKUSHA, T. I., OSIPOV, V. N., SERDYUKOV, Yu. A.

"Cathode-Ray Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

Probl. Sverkhprovodyashch. Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp.187-192. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 1785 by the authors).

Translation: Industrial modes of melting ingots 90 mm in diameter and weighing up to 45 kg in a cathode ray furnace by the method of double vacuum remelting, and modes of hot pressing of ingots into bars 50 mm in diameter and forging of pressed bars to 18-22 mm in diameter are developed for alloys of Nb with Zr. Bars produced by cathode ray melting, hot pressing, and forging are used to produce wire 0.2 mm in diameter, the mechanical and superconducting properties of which are measured. 2 figs; 16 biblio refs.

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USSR

UDC: 537.312.62

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SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A., ARKUSHA, T. I., OSIPOV, V. N., SERDYUKOV, Yu. A.

"Electron-Beam Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting Materials--collection of works), Moscow, "Nauka", 1970, pp 187-192 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D554)

Translation: Cycles for smelting ingots 90 mm in diameter weighing up to 45 kg in an electron-beam furnace by the method of double vacuum remelting, and schedules for hot-pressing the ingots into bars 50 mm in diameter and for forging the pressed bars to a diameter of 18-20 mm are worked out under industrial conditions for niobium-zirconium alloys. Wire 0.2 mm in diameter is made from the bars produced by the methods of electron-beam melting, hot-pressing and forging, and the mechanical and superconducting properties of this wire are measured. Two illustrations, bibliography of sixteen titles. Resumé.

1/1

USSR

UDC 669.018.4.537.312.62

SAVITSKIY, Ye. M.; BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A., ARKUSHA, T. I., OSIPOV, V. N., and SERDYUKOV, Yu. A.

"Cathode Ray Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

Problemy Sverkhprovodyashchikh Materialov [Problem of Superconducting Materials — Collection of Works], Moscow, Nauka Press, 1970, pp 187-192

Translation: Modes for production of ingots 90 mm in diameter weighing up to 45 kg in a cathode ray furnace by double vacuum remelting, and modes of hot pressing of ingots into bars 50 mm in diameter and forging of the pressed bars to diameters of 13-20 mm have been developed under industrial conditions for alloys of niobium with zirconium. Wire 0.2 mm in diameter has been produced from the bars manufactured by cathode ray melting, hot pressing, and forging; the mechanical and superconducting properties of the wires are measured.

2 figures, 16 biblio. refs.

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USSR

UDC 577.391

SHIKHODYROV, V. V., ~~ARLASHCHENKO, N. I.~~, and GRIGOR'YEV, YU. G., Institute of Biophysics, Ministry of Health USSR, Moscow

"Morphological Changes and Disturbances in the Physiological Functions Induced in the Rabbit's Organ of Equilibrium by the Action of Ionizing Radiation"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 560-565

Abstract: Rabbits were irradiated with gamma-rays in a dose of 800 r at a dose rate of 500 r min. The most pronounced disturbances of functions of the vestibular analyzer developed within the first hours after irradiation. During this time compression of the membranous labyrinth took place as a result of disturbed lymph circulation. Because of this compression, crypts connecting the membranous with the osseous labyrinth were torn apart together with the blood vessels passing through them. Subsequently dystrophic changes took place in the inner ear, leading finally to necrosis of the sensory and secretory epithelium. Within the first hours after the action of radiation, there were pronounced changes in the labyrinth function, which were indicated by a lowering of the intensity of the nystagmus reaction in response to stop stimuli and a reduced sensitivity to position changes. In later stages of the 1/2

radiation injury, the degree to which the functions of the vestibular analyzer were impaired did not correspond to the morphological changes in the inner ear, because compensatory mechanisms of the central nervous system came into play.

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USSR

UDC: 8.74

ARLAZAROV, V. L., LEMAN, A. A., ROZENFEL'D, M. Z.

"Macro-Language"

Makro-yazyk. In-t probl. upr. (avtomatika i telemekh.) (cf. English above. Institute of Control Problems [Automation and Remote Control]), Moscow, 1970, 14 pp, 10 k. "Knizh. letopis", 1971, No 28, 45 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V507 K)

[No abstract]

1/1

USSR

UDC: 621.396.69:621.372.54

ARLEYEVSKAYA, N. Ya.

"A Ladder-Type Electromechanical Band Filter"

USSR Author's Certificate No 266099, filed 16 Sep 64, published 28 Jul 70  
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V344 P)

Translation: This Author's Certificate introduces an electromechanical ladder-type band filter for torsional vibrations with resonators and ferrite converters arranged in parallel and connected by wires. The resonators are made from half dumbbells fastened on a plate of rectangular cross section with high wave impedance. The resonators are fastened to a common base by means of rods with low wave impedance as compared with that of the resonator at the point where the rod is connected.

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USSR

A

GROMOV, K. Ya.; ARL'Y, R.; et al (Joint Institute for Nuclear Research)

"New Isotopes  $^{176}\text{Os}$  and  $^{177}\text{Os}$  and Information on the Decay of Isotopes  $^{177-180}\text{Re}$   
and  $^{178-180}\text{Os}$  and on the Decay Scheme of  $^{179}\text{Re}$ "

Moscow, Izvestiya Akademii Nauk SSSR: Seriya Fizicheskaya; April, 1970; pp 702-12

ABSTRACT: Isotopes of osmium were obtained by irradiating metallic gold and mercuric oxide in an external beam of protons with an energy of 660 Mev of the synchrocyclotron of the Joint Institute for Nuclear Research; rhenium isotopes were obtained as daughter isobars of osmium.

The half-lives of the light isotopes of osmium:  $^{176}\text{Os}$  (3.0 min),  $^{177}\text{Os}$  (3.5 min),  $^{178}\text{Os}$  (6.0 min),  $^{179}\text{Os}$  (7.3 min),  $^{180}\text{Os}$  (22.0 min), and  $^{181}\text{Os}$  (110 and 2.7 min), were determined.

The new isotopes  $^{176}\text{Os}$  and  $^{177}\text{Os}$  were identified on the basis of a genetic bond with daughter isobars of tungsten and tantalum.

A rhenium decay scheme is suggested which is based on data obtained from this work on gamma radiation of  $^{179}\text{Re}$  and on well-known data on conversion electrons.

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1/2 021 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--NEW ISOTOPES PRIME 176 OS AND PRIME 177 OS AND INFORMATION ON THE  
DECAY OF ISOTOPES PRIME 177-180 RE AND PRIME 178-180 OS AND ON THE DECAY  
AUTHOR--(02)-GROMOV, K.YA., ARLT, R.  
COUNTRY OF INFO--USSR A  
SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR: SERIYA FIZICHESKAYA; APRIL,  
1970; PP 702-12  
DATE PUBLISHED-----70  
SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY  
TOPIC TAGS--OSMIUM ISOTOPE, RHENIUM ISOTOPE, GOLD, PROTON, RADIOACTIVE  
DECAY, HALF LIFE, TUNGSTEN, TANTALUM, NUCLEAR ISOBAR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3004/1403 STEP NO--UR/0048/70/000/000/0702/0712  
CIRC ACCESSION NO--AP0131811  
UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--27NOV70  
CIRC ACCESSION NO--AP0131811  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ISOTOPES OF OSMIUM WERE OBTAINED BY IRRADIATING METALIC GOLD AND MERCURIC OXIDE IN AN EXTERNAL BEAM OF PROTONS WITH AN ENERGY OF 660 MEV OF THE SYNCHROCYCLOTRON OF THE JOINT INSTITUTE FOR NUCLEAR RESEARCH; RHENIUM ISOTOPES WERE OBTAINED AS DAUGHTER ISOBARS OF OSMIUM. THE HALF LIVES OF THE LIGHT ISOTOPES OF OSMIUM: PRIME 176 OS (3.0MIN) PRIME 177 OS (3.5 MIN), PRIME 178 OS (6.0 MIN), PRIME 179 OS (7.3 MIN), PRIME 180 OS (22.0 MIN), AND PRIME 181 OS (110 AND 2.7 MIN), WERE DETERMINED. THE NEW ISOTOPES PRIME 176 OS AND PRIME 177 OS WERE IDENTIFIED ON THE BASIS OF A GENETIC BOND WITH DAUGHTER ISOBARS OF TUNGSTEN AND TANTALUM. A RHENIUM DECAY SCHEME IS SUGGESTED WHICH IS BASED ON DATA OBTAINED FROM THIS WORK ON GAMMA RADIATION OF PRIME 179 RE AND ON WELL KNOWN DATA ON CONVERSION ELECTRONS. FACILITY: JOINT INSTITUTE FOR NUCLEAR RESEARCH.

UNCLASSIFIED

USSR

UDC 669.71.046.44

ARLYUK, B. I., KIRILLOVA, T. A., YERMOLAYEVA, E. M., SMIRNOV, M. N., FIRFAROVA, I. B.

"Analysis of the Phase Composition of Aluminate Cakes and Slurry by the Chemical Method"

Tr. Vses. n.-i. i proyekt. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 70, pp 43-50 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G126)

Translation: On the basis of investigation of the solubility of compounds contained in the cakes and slurries of alumina production, a procedure is proposed for successive leaching out of them in alkaline and acid solutions for quantitative phase analysis. The correspondence of the analysis results by the given procedure and also the results from x-ray micrography and crystal-optical methods is demonstrated. The basic causes of incompleteness of extraction of the  $Al_2O_3$  and  $Na_2O$  from the cakes is the formation of Ca-aluminates and Na-Ca-silicates during the sintering process and also the occurrence of secondary reactions when leaching out the crushed cake leading to the formation of hydrogranates and tricalcium hydroaluminates. 1 illustration and 5 tables.

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1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--THERMODYNAMIC ANALYSIS OF THE REASONS FOR ALUMINA LOSSES DURING THE  
LEACHING OF A SINTERED MASS -U-  
AUTHOR-(04)-ARLYUK, B.I., SMIRNOV, M.N., KOLOTUSHKINA, S.P., KIRILLOVA,  
T.A.  
COUNTRY OF INFO--USSR  
SOURCE--TSVET. METAL. 1970, 43(3), 37-42  
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINA, THERMAL ANALYSIS, CALCIUM OXIDE, SILICON DIOXIDE,  
SODIUM OXIDE, GARNET, SULFATE, SINTERING FURNACE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605109/805 STEP NO--UR/0136/70/043/003/0037/0042

CIRC ACCESSION NO--AP0140898

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140898

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INCREASE OF SIO SUB2 CONC. IN THE ALUMINATE LEACHING SOLN., CAUSED BY DISSOLVING BETA 2CAO.SIO SUB2, PROMOTES THE FORMATION OF THE SOLID PHASE, CONTG. AL SUB2 O SUB3. TO INVESTIGATE THE SOLY. OF 2CAO.SIO SUB2 THE FINE GROUND SINTERED MASS WAS TREATED WITH AN ALUMINATE SOLN. AT 40, 55, 65, 75, AND 90DEGREES UP TO 6 HR. THE SOLN. CONTAINED 25, 85, 140, 250, AND 300 G AL SUB2 O SUB3-L.; THE OTHER COMPONENTS WERE PRESENT IN THE RATIO AL SUB2 O SUB3:NA SUB2 O:SO SUB4 PRIME2 NEGATIVE EQUALS 80:10:5:0.2. THE SOLN. WAS ANALYZED AFTER THAT TREATMENT BY DETN. OF AL SUB2 O SUB3, NA SUB2 O, AND SIO SUB2. THE DECOMP. OF 2CAO.SIO SUB2 IS RETARDED AND THE SIO SUB2 AMT. IN THE SOLN. LIMITED BY THE FORMATION OF A FILM OF TOBERMORITE AND HYDROGARNET, WHICH COATED THE SOLID 2CAO.SIO SUB2. AFTER A COMPLETE DISSOLN. OF 2CAO.SIO SUB2, THE SIO SUB2 CONC. DEPENDS ON THE SOLY. OF NA ALUMINOSILICATE HYDRATE. IF THE SOLN. IS SATD. WITH SIO SUB2, 2CAO.SIO SUB2 IS DECOMP. VERY SLOWLY AND THE SECONDARY LOSSES OF AL SUB2 O SUB3 ARE REDUCED.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--RECOVERY PHENOMENA IN SACCHAROMYCES CEREVISIAE. I. LETHALITY AND  
MITOTIC RECOMBINATION INDUCED BY GAMMA RAYS AND CHEMICALS IN UV  
AUTHOR--(03)-OLTEANU, V., KUZNETSOVA, O.B., ARMAN, I.P.  
COUNTRY OF INFO--USSR  
SOURCE--GENETIKA 1970, 6(2), 123-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--SACCHAROMYCES, UV RADIATION BIOLOGIC EFFECT, RADIATION  
SENSITIVITY, MICROORGANISM MUTATION, RADIATION INDUCED MUTATION,  
MITOSIS, INORGANIC ACID, NITROGEN COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1998/2051 STEP NO--UR/0473/70/006/002/0123/0129  
CIRC ACCESSION NU--AP0122280  
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0122280

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LETHALITY AND MITOTIC RECOMBINATION INDUCED BY UV, GAMMA RAYS, NITROUS ACID, AND NITROSOGUANIDINE (I) HAVE BEEN STUDIED IN UV SENSITIVE DIPLOID S. CEREVISIAE. THE SUPERSENSITIVE STRAIN PG-61 AND WILD TYPE PG-60 DEMONSTRATED APPROX. EQUAL RESISTANCE TO THE LETHAL EFFECT OF IONIZING RADIATION AND NITROSOGUANIDINE. AFTER 20 AND 40 MIN. EXPOSURES TO NITROUS ACID, THE SURVIVAL RATE OF THE SENSITIVE STRAIN WAS APPROX. 1.5 TIMES LOWER THAN THAT OF WILD TYPE. IN EXPTS. WITH UV, THESE STRAINS SHOWED A 25-28 FOLD DIFFERENCE IN SURVIVAL RATE. IT IS CONCLUDED THAT THE UN MUTATION AFFECTS REPAIR ONLY OF UV DAMAGE, I.E., PHOTOPRODUCTS OF THE DNA PYRIMIDINE DIMER TYPE. DARK REPAIR OF LETHAL DAMAGE CAUSED BY OTHER AGENTS (GAMMA RAYS, I) OCCUR NORMALLY, WITH THE EXCEPTION OF A SMALL PART OF THE DAMAGE INDUCED BY NITROUS ACID. NO DIFFERENCE IN THE FREQUENCY OF RECOMBINANTS INDUCED BY NITROUS ACID WAS SLIGHTLY HIGHER THAN THAT OF WILD TYPE. IT IS CONCLUDED THAT THERE IS A CORRELATION BETWEEN SESITIVITY TO THE LETHAL EFFECT AND FREQUENCY OF INDUCED RECOMBINANTS, IN AGREEMENT WITH THE PREMISE THAT RECCOMBINATION IS A RESULT OF DAN DAMAGE. THE FREQUENCY OF RECOMBINATION IN WILD TYPE CELLS WAS HIGHEST WHEN INDUCED BY GAMMA RAYS, SLIGHTLY LOWER WITH UV AND NITROUS ACID, AND LOWEST WITH I. FACILITY: I. V. KURCHATOV INST. AT. ENERGY, MOSCOW, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--NOISES OF AVALANCHE SILICON DIODES --U-  
AUTHOR--ARMENCHA, N.N., TARKHIN, D.V. *A*  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 385-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--AVALANCHE DIODE, SILICON DIODE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/0258 STEP NO--UR/0449/70/004/002/0385/0387  
CIRC ACCESSION NO--AP0105332  
UNCLASSIFIED



2/2 016

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105332

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VARIATION WAS STUDIED OF THE SPECTRAL CHARACTERISTIC NOISE (AT F EQUALS 0.15-35 MHZ) DUE TO ILLUMINATION. IF  $I_{2PIFTAU-I SUB1}$  IS SMALLER THAN 1, WHERE TAU IS THE MEAN LIFETIME OF A MICROPLASMA IN THE SWITCH OFF STATE, I IS THE MEAN MICROPLASMA CURRENT, AND I SUB1 IS THE AMPLITUDE OF THE CURRENT PULSE, THE MICROPLASMA NOISE DECREASES WITH INCREASING PHOTOELEC. CURRENT. THE DEPENDENCE OF THE NOISE OF AVALANCHE SI DIODES ON THE MULTIPLICATION COEFF. WAS ALSO STUDIED...

UNCLASSIFIED

USSR

UDC: 621.375.4

*A*  
ARMENSKIY, Ye. V., GULYAYEV, Yu. T., and POTEKHIN, A. M.

"Transistor Cascode Amplifier of the Common Emitter - Common Collector Type for the Middle Frequencies"

Moscow, Izmeritel'naya Tekhnika, No 7, 1970, pp 57-59

Abstract: Cascode amplifiers, which have recently been receiving a good deal of attention in connection with measurement technique and electrical automatic systems, are very promising for use as variable voltage amplifiers in the middle frequencies when connected in the common emitter and common collector configuration. The article shows that an amplifier of this type has a gain one to two orders higher than the ordinary amplifier with common emitter in practical circuits with a reduction in the output resistance. The basic cascode circuit and its equivalent are given including an analysis of the equivalent circuit. Possible values of circuit components for practical cases are given.

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1/2 027 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--THE "COBRA" SYMPTOM IN THE CLINICAL PICTURE OF GLAUCOMA -U-  
AUTHOR--(02)-REMIZOV, M.S., ~~ARMEYEV, A.A.~~ *A*  
COUNTRY OF INFO--USSR  
SOURCE--VESTNIK OFTAL'MOLOGII, 1970, NR 2, PP 44-48  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--EYE DISEASE, BLOOD CIRCULATION, DIAGNOSTIC MEDICINE  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PRGX Y REFL/FRAME--1986/0838 STEP NO--UR/0357/70/000/002/0044/0048  
CIRC ACCESSION NO--AP0102800  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0102800

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIENCE GATHERED OVER A PERIOD OF MANY YEARS IN STUDYING THE DYNAMICS OF THE ANTERIOR CILIARY ARTERIES CALIBER IN GLAUCOMATOUS PATIENTS IS SUMMARIZED. DATA ON THE MEASUREMENT OF THE CALIBER ALONG DIFFERENT LENGTHS OF THE ARTERIES IN PERSONS BELOW AND ABOVE 40 YEARS OF AGE, BOTH WITH AND WITHOUT GALUCOMA, PRESENTING DIFFERENT TENSION AT THE TIME OF EXAMINATION ARE REPORTED. IN GALUCOMATOUS PATIENTS A CHARACTERISTIC ENLARGEMENT OF THE ANTERIOR CILIARY ARTERIES NEAR THE SCLERAL EMISSARY (THE "COBRA" SYMPTOM), CLOSELY ASSOCIATED WITH THE RISE OF TENSION, IS NOTED. THE DEGREE OF DILATION AND THE LENGTH OF DISTENDED ARTERIES IN THE REGION OF THE EMISSARY INCREASE PARALLEL WITH THE RISING INTRAOCULAR TENSION. THE "COBRA" SYMPTOM CONTINUES FOR SOME TIME EVEN AFTER THE TENSION HAS DROPPED, THIS ENABLING ITS UTILIZATION IN AN EARLY DIAGNOSIS OF GLAUCOMA. THE "COBRA" SYMPTOM IS QUITE VALUABLE ALSO IN ASSESSING THE EFFICACY OF THE TREATMENT AND IN PROGNOSTICATION OF GLAUCOMA.

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AN0045467

Our institute has three -- in Murmansk, Apatity and Loparskaya. The various types of equipment at the stations include an automatic all-sky camera. This camera takes one photograph per minute. A wide-angle optical system permits it to photograph the entire sky at once. In the coming years we intend to conduct a complex and extensive study of auroras. Aircraft, balloons and the most modern equipment will assist us.

Our laboratory has been conducting regular observations for more than 10 years. A large volume of scientific material has been collected in this time. We follow the work of our foreign colleagues with great interest and exchange various types of information with them. In the future we intend to carry out a number of joint projects within the framework of Soviet-French scientific cooperation. [4]

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Ref. Code: UR9003

JPRS 50054

Polar Geophysical Institute Will Lead Aurora Studies

**APPROVED FOR RELEASE: 08/09/2001** **CIA-RDP86-00513R002200210017-6"**

(Excerpts: "Toward the Secrets of Nature," by R. Armejev; Moscow, Izvestiya, 7 February 1970, p. 6)

[Following is an interview by correspondent R. Armejev with Leonid Sergeevich Yevlashin, head of the aurora laboratory of the Polar Geophysical Institute, Kola Affiliate of the Academy of Sciences USSR.]

The Polar Geophysical Institute of the Kola Affiliate of the Academy of Sciences USSR henceforth will be the leading institute in the photographic observation of auroras. Our task will be the thorough investigation of auroras for the purpose of studying the physics of the upper layers of the atmosphere (ionosphere), situated approximately 100 kilometers from the earth. It is here that auroras are formed. Their study will enable us to learn more of the properties of interplanetary space -- the magnetosphere. Here the distances are greater -- six to eight earth radii.

In our investigations we use optical observations, or photometry. There are observation stations in the auroral zone throughout the world.

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19780414

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1/2 029

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--NUCLEOPHILIC SUBSTITUTION IN A SERIES OF PHOSPHORUS V ACID  
DERIVATIVES. IV. KINETICS OF CHLOROPHOSPHONATE HYDROLYSIS -U-

AUTHOR-(03)-NEYMYSHEVA, A.A., ARMOLAYEVA, M.V., KNUNYANTS, I.L.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 798-803

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL KINETICS, ACTIVATION ENERGY, CHLORINATED ORGANIC  
COMPOUND, ORGANIC PHOSPHORUS COMPOUND, HYDROLYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3006/1501

STEP NO--UR/0079/70/040/004/0798/0803

CIRC ACCESSION NO--AP0135162

UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0135162

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC DATA WERE SHOWN FOR THE TITLE REACTION RUN IN ME SUB2 CO CONTG. 5 VOL. PERCENT H SUB2 O AT TEMPS. OF 0, 10, 20, AND 30 DEGREES, FROM WHICH WERE CALCD. THE VALUES OF ACTIVATION ENERGIES (THESE WERE IN THE RANGE OF 6-10 DCAL-MOLE), DELTA S (28-34 E.U.), AND DELTA F (14-15 KCAL-MOLE) VALUES FOR A SERIES OF RP(O)(OR)CL IN WHICH R WAS SELECTED FROM ME, ET, PR, ISO PR, BU, MEETCH, ISO BU, PH, AND CLCH SUB2 CH SUB2. THE TABULATED DATA FOR THE KINETICS OF HYDROLYSIS OF THE CL ATOM WERE COMPARED WITH EXISTING DATA ON HYDROLYSIS OF RO POCL SUB2 AND (RO)SUB2 POCL. THE STEADY DECLINE OF RATE CONSTS. FOR SUCH HYDROLYSIS IN PASSING FROM R SUB2 POCL TO RP(O)(OR)CL IS EXPLAINED BY THE EXISTENCE OF P D CONJUGATION OF THE O ATOM OF THE RO GROUP, WITH THE RESONANCE EFFECT CAUSED BY THE RO GROUP BEING DEPENDENT ON THE NATURE OF THE OTHER GROUPS AT THE CENTRAL P ATOM.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--ELECTROTRANSFER IN A BISMUTH AND LEAD SYSTEM -U-  
AUTHOR--(02)-ARMYANOV, S.A., BELASHCHENKO, D.K.  
COUNTRY OF INFO--USSR *A*  
SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 229-30  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--BISMUTH ALLOY, LEAD ALLOY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1984/0164 STEP NO--UR/0370/70/000/001/0229/0230  
CIRC ACCESSION NO--AP0054960  
UNCLASSIFIED



2/2 008

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054960

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTROTRANSFER IN THE BI, PB ALLOYS HAS BEEN INVESTIGATED AT 500DEGREES BY THE METHOD OF STATIONARY DISTRIBUTION OF THE COMPONENTS IN A VERTICAL CAPILLARY. THE RESULTS OBEY THE EQUATION  $Z \text{ SUBBI} \text{ EQUALS} \text{ MINUS } 1.5 \text{ N SUBPB} (4 \text{ PLUS } 0.78 \text{ N SUBPB})$  ( $Z \text{ SUBBI} \text{ EQUALS EFFECTIVE CHARGE OF BI IN THE ALLOY, N SUBPB EQUALS AT. PERCENT PB}$ ). THE RATIO OF THE COMPONENTS DISPERSION CROSS SECTION VARIES IN THE RANGE 0.64-0.68.

UNCLASSIFIED

USSR

UDC 621.357.7:669.258

ARMYANOV, ST., VITKOVA, ST., PANGAROV, N.

"Dependence of the Magnetic Characteristics of Electrolytic Cobalt Coating on the Texture and Phase Composition"

V sb. Nauch.-tekhn. konf. po probl. Razrab. mer zashchity met. ot korrozii, 1971. Tezisy dokl. vyp. 2. Sekts. 4-5 (Scientific and Technical Conference on the Problems of the Development of Measures for Protection of Metals from Corrosion. 1971. Topics of Reports. Vyp. 2. Sections 4-5 -- collection of works), Moscow, 1971, pp 101-104 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6L300)

Translation: It was established that the magnitude of the coercive force ( $H_c$ ) of Co deposits depends both on the orientation of the  $\alpha$ -Co crystals and on the amount of  $\beta$ -phase of the Co in the deposit. For the orientation of the  $\alpha$ -Co  $[0001]H_c$  and the rectangularity of the hysteresis loop decreased with an increase in  $H_c$  perfection of the texture since in this case the axis of easy magnetization lay perpendicular to the plane of the plate. With a texture  $[1120]$  of  $\alpha$ -Co and  $[110]$  of  $\beta$ -Co respectively,  $H_c$  increased with a decrease in the amount of Co phase since the magnetic anisotropy constant of  $\alpha$ -Co is higher than that of  $\beta$ -Co.

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USSR

UDC: 681.3.06:51

ARNAUDOV, D. D.

"Use of the ALGEM-ST3 System of Programming Automation for Operation With List Quantities"

V sb. Tsifr. vychisl. tekhnika i programmir. (Digital Computer Technology and Programming--collection of works), vyp. 6, Moscow, "Sov. radio", 1971, pp 83-87 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V736)

Translation: The paper considers a method of working with list quantities by using the ALGEM-ST3 system of programming automation. A method is demonstrated for construction of chain lists in the form of data blocks under which the indices of elements of the blocks are used as communications addresses. The aggregate of associative units is represented in the form of two composite data blocks: a block of headings of units and a block of list words. The method is experimentally checked out on the "Minsk-22" computer. Author's abstract.

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USSR

UDC: 539.3

SANKIN, Yu. N., ARNAUT, V. P., GORSHENINA, G. N., UGLEVA, O. N.

"Concerning a Numerical Method in the Nonlinear Theory of Thin-Walled Elastic Shells"

Tr. Ul'yanovsk. politekhn. in-ta (Works of the Ul'yanovsk Polytechnical Institute), 1972, 8, No 2, pp 191-202 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9V73)

Translation: It is proposed that Newton's iteration process be used to solve nonlinear equations of equilibrium of shells of revolution which can not be considered flat, and whose stressed state is described by modified Reissner equations (E. L. Aksel'rad, Izv. AN SSSR. Otd. tekhn. n. Mekhan. i mashinostr., 1960, No 4, pp 84-92 -- RZhMekh 1961, 6v41). The effectiveness of this method is evaluated on the example of solution of a system of nonlinear equations for a flat diaphragm. As a result of intercomparison of initial approximations and the behavior of discrepancies in differential operators, it is concluded that the given iteration process converges satisfactorily. L. A. Shapovalov.

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USSR

UDC: 681.325

~~ARNOLD, E. E.~~

"A Parametric Converter Which Changes Impedance, Capacitance and Inductance to a Frequency-Modulated Signal"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, Jun 72, Author's Certificate No 340080, Division H, filed 16 Jun 69, published 24 May 72, p 192

Translation: This Author's Certificate introduces a parametric converter which changes impedance, capacitance and inductance to a frequency-modulated signal. The device contains an adder connected at the output to the input of an amplifier with inertial nonlinear feedback. The output of the amplifier is connected to a measurement circuit made in the form of resistive and reactive elements connected in series. The tiepoint between the resistive and reactive elements is connected to the inputs of a phase inverter and an integrating link, which is connected to the adder input. As a distinguishing feature of the patent, the range is extended and measurement accuracy is improved by adding a differentiating link connected between the adder and the phase inverter.

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USSR

UDC: 654.147.2/.3

ARNOL'D, E. E.

"~~A~~ Converter Which Changes a Pickup Parameter to a Phase-Modulated Signal"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 4, Feb 71, Author's Certificate No 292174, Division G, filed 23 Sep 69, published 6 Jan 71, p 134

Translation: This Author's Certificate introduces a converter for changing a pickup parameter to a phase-modulated signal. The unit contains a sinusoidal reference voltage oscillator, a measurement bridge, a phase shifter and a linear adder. As a distinguishing feature of the patent, the device is designed to suppress parasitic amplitude modulation, to extend the range of phase deviation, and to improve the linearity of the modulation characteristic. The unit contains an additional linear adder with two inputs, and an amplifier connected between the output of the additional adder and the diagonal of the bridge. Both adders are connected by one of their inputs to the reference voltage oscillator, and by the other to the output of the phase shifter. The input of the phase shifter is connected to the measurement diagonal of the bridge.

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USSR

UDC: 519.9+513.83

ARNOL'D, V. I.

"Lectures on Bifurcations and Versal Families"

Moscow, Uspekhi Matematicheskikh Nauk, Vol 28, No 5(167), Sep/Oct 72, pp 119-184

Abstract: These lectures deal with replotting the arrangement of phase curves of a vector field close to a singular point when there is a change in the parameters on which the vector field depends. A convenient technical means for studying such arrangements is to use deformations of the vector field which have a special property of universality -- so-called versal families. The results of the study are presented chiefly in the form of explicit expressions for versal families and analysis of the corresponding bifurcation diagrams. Applications of the general theory are illustrated by classifying the specifics of the decrement of general two-parameter families of linear autonomous systems, and classifying the singularities of the neutral surface (stability boundary) in general three-parameter families of linear systems; topologically versal deformations of singular points of nonlinear systems of ordinary equations are presented for all cases of de-

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USSR

ARNOL'D, V. I., Uspekhi Matematicheskikh Nauk, Vol 28, No 5(167), Sep/Oct 72, pp 119-184

generation of codimensionality 1, and some cases of degeneration of codimensionality 2; applications in the theory of hydrodynamic stability are considered. The paper contains the following seven sections: 1. Local Analytical Problems; 2. Theorems of Transversality; 3. Versal Deformations; 4. Application: Classification of Singularities of Decrement-Diagrams; 5. Simplest Bifurcations of Singular Points of Differential Equations; 6. Simplest Versal Deformations; 7. Classification of Singular Points.

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USSR

UDC 539.216.22:621.318.1

RODICHEV, G. M. ~~ARNOL'D. O. P.~~, Krasnoyarsk Polytechnical Institute

"Realization of the Trigger Effect in Magnetic Films in the Presence of Constant Magnetic Fields"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No 3, 1972, pp 105-107

Abstract: Experiments to study the effect of constant magnetic fields applied along the easy magnetization and difficult magnetization axes on achievement of a trigger effect and on the final magnetization states after the action of a pulsed field along the difficult magnetization axis are described. These experiments show the possibility of controlling the trigger effect and the possibility of applying controlling pulses of short duration in magnetic film memory units. The experiments also provide some information on certain features of the motion of the magnetic moment under the action of a pulsed field  $H_j$  and also information on inertia. Experiments are conducted on films obtained by thermal evaporation of an 81.5% Fe alloy in a vacuum. The film thickness was 750 Å. The film had an anisotropy field  $H_k = 2.9$  oe, a coercive force  $H_c = 1.6$  oe, and an angular dispersion  $\alpha_{90} = 1.3^\circ$ . It is shown that under weak pulsed fields the constant fields directed opposite to the pulse

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USSR

RODICHEV, G. M., ARNOL'D, O. P., Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, No 3, 1972, pp 105-107

impede the achievement of a trigger effect and that under strong pulsed fields the same field constants facilitate the achievement of a trigger effect. In the latter case the range of pulses leading to a trigger effect increases. Under the action of small pulsed fields the constant field makes conditions for achievement of a trigger effect poorer, since the rotating moment acting on the magnetization decreases. Under strong pulsed fields the decrease in the rotating moment due to the constant field does not have any considerable value, but the time in which the rotating moment reaches its greatest value increases due to the fact that the magnetic moment in the initial state is somewhat deflected opposite to the direction of the pulsed field.

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1/2 030 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--IRON NICKEL PHOSPHORUS MAGNETIC FILMS OBTAINED BY CHEMICAL  
REDUCTION -U-  
AUTHOR--(03)-MALOYEV, N.YA., ARNOLD, O.P., ZUBAKIN, A.M.  
COUNTRY OF INFO--USSR *A*  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(3), 135-6  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY, MATERIALS, PHYSICS  
TOPIC TAGS--MAGNETIC MATERIAL, METAL FILM, IRON ALLOY, NICKEL ALLOY,  
PHOSPHORUS ALLOY, CHEMICAL REDUCTION, MAGNETIC COERCIVE FORCE, MAGNETIC  
HYSTERESIS  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1998/1031 STEP NO--UR/0139/70/013/003/0135/0136  
CIRC ACCESSION NO--AT0121627  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0121627

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MAGNETIC ANISOTROPY OF FILMS OBTAINED BY REDN. OF SOLNS. CONTG. FESO SUB4. 7H SUB2 O 20 NISO SUB4. 78 SUB2 O 30, KNAC SUB4 H SUB4 O SUB6. 4H SUB2 O 50, AND NAH SUB2 PO SUB4. H SUB2 O G,L. WAS STUDIED WITH FILMS PPTD. ON ROUND GLASS DISKS COATED WITH 500 ANGSTROM THICK CU AND ACTIVATED IN 0.1PERCENT PDCL SUB2 AT PH 9 AND 75DEGREES. IN WEAK FIELDS, H IS SMALLER THAN H SUBC EQUALS 13 OE, THE CURVE OF MAGNETIC MOMENTS VS. H EXHIBITED 2 PI PERIODS IN THE INTERVAL OF 1.91-19.3 OE. THE CURVES IN FORWARD AND REVERSE DIRECTIONS INTERSECTED. ROTATIONAL HYSTERESIS LOSSES WERE ASCRIBED TO IRREVERSIBLE STRUCTURAL CHANGES. AT H GREATER THAN H SUBC, THE PERIODICITY VANISHED AND ROTATING MOMENTS WERE CONST. THIS AND THE ABSENCE OF TEXTURE INDICATED THAT ROTATIONAL ANISTROPY WAS ABSENT. SUCH FILMS WERE DESIGNATED AS HIGH COERCIVE ISOTROPIC FILMS. FACILITY: KRASNOYARSK, GOSPEDINST., KRASNOYARSK, USSR.

UNCLASSIFIED

ARNOLD, V. I.

Chemistry

NEW BOOKS OF 'NAUKA' PUBLISHING HOUSE

List: Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 42, No 4, April 1972, pp 147-149]

SO: JPRS 560

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Mathematical, Physical and Technical Sciences

*Avtomaticheskoye upravleniye* (Automatic Equipment and the Control of Communication Networks). Collection of Articles, Institute of Problems of Data Transmission. Moscow, 1971, 216 pages, 300 copies, 1 r 15 k.

N. I. Apenko and A. S. Dubovik. *Prilozhaya optika* (Applied Optics). Moscow, 1971, 392 pages, 10,000 copies, 1 r 04 k.

V. I. Arutid. *Obyknoennyye differentsial'nye uravneniya* (Ordinary Differential Equations). Moscow, 1971, 240 pages, 40,000 copies, 87 k.

A. L. Brudna. *Teoriya funktsiy devstvitel'nogo peremennogo* (Theory of Functions of a Real Variable). Moscow, 1971, 120 pages, 21,000 copies, 35 k.

N. V. Butonin. *Vvedeniye v analiticheskuyu mekhaniku* (Introduction to Analytical Mechanics). Moscow, 1971, 266 pages, 25,000 copies, 56 k.

*Voprosy primeneniya sverkhzvukovoy temperatury v elektrotekhnike* (Questions of the Application of Ultrasonic Temperatures in Electrical Engineering). Institute of Electrical Machine Building, Leningrad, 1971, 103 pages with 111., 2100 copies, 48 k.

D. M. Gorolov, V. B. Kurzin, and V. E. Soren. *Aerodinamika reaktorov v reaktivnykh potokakh* (The Aerodynamics of Grids in Nonstationary Flow). Institute of Hydrodynamics, Siberian Department, Novosibirsk, 1971, 272 pages, 1650 copies, 1 r 32 k.

I. I. Dorman, V. S. Smirnov, and M. I. Tyasto. *Koordinatnyye iuchki v zernitsem pole Zemli* (Cosmic Rays in the Earth's Magnetic Field). Moscow, 1971, 400 pages, 2600 copies, 1 r 90 k.

Functional Analysis

USSR

ARNOL'D, V. I.

"Placement of Ovals of Real, Plane Algebraic Curves, Involutions of Quadri-dimensional Smooth Manifolds, and the Arithmetic of Integral Quadratic Forms"

Moscow, Funktsional'nyy Analiz i yego Prilozheniya, Vol 5, No 3, 1971,  
pp 1-9

Abstract: The purpose of this article is to show how the connection between the placement of the sections of a real algebraic curve on the projective plane, on the one hand, and the topology of some complex algebraic surfaces, on the other, can be put to use. The author finds that it can be used to derive information concerning the placement of the ovals of real, planar algebraic curves from simple considerations of four-dimensional topology and the arithmetic of integral quadratic forms. He considers a real algebraic curve of degree  $n$  on a projective plane  $RP^2$ , the curve being a compact, smooth, unidimensional, boundless manifold whose components of connectivity, diffeomorphic with respect to a circle, are known as ovals. The assumption is made that the curve is of even degree, in which case the ovals lie in  $RP^2$ . Each of them will have an inside part, diffeomorphic to a circle, and an outside part, diffeomorphic to a Möbius sheet. The author  
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ARNOL'D, V. I., Funktsional'nyy Analiz i yego Prilozheniya, Vol 5, No 3, 1971, pp 1-9

expresses his gratitude to A.N. Varchenko, D. A. Gudkov, V. A. Rokhlin, and D. B. Fuks for their comments and their support. He is associated with the Moscow State University.

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USSR

ARNOL'D, V. I., Moscow State University

"Modes and Quasimodes"

Moscow, Funktsional'nyy Analiz i yego Primeneniya, Vol 6, No 2, Apr-Jun 72, pp 12-20

Abstract: Attention is called to the fact that quasiclassical concepts of the form of high-frequency natural oscillations of bounded regions contradict general considerations of symmetry based on a study of stratification of a set of ellipsoids in accordance with different symmetry groups. These considerations are applicable to oscillatory systems with a finite and an infinite number of degrees of freedom and, in general, to all problems in which quadratic parameter-dependent forms are encountered. This dilemma is resolved by showing that functions derived within the quasiclassical framework are not modes (eigenfunctions) or even close to any modes but are rather merely quasimodes: under the initial conditions established by such functions, oscillations will eventually resemble standing waves. It is pointed out that this situation does not obviate the usefulness of quasiclassical approximations to eigenvalues. The author thanks M. A. Isakovich, A. I. Shnirel'man, L. D. Faddeyev, A. M. Veselova, and S. P. Novikov for constructive criticism. Bibliography of nine titles.

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USSR

UDC: 512.83

ARNOL'D, V. I.

"Matrices Depending on Parameters"

Moscow, Uspekhi Matematicheskikh Nauk, vol. 26, No. 2, March-April 1971, pp 101-114

Abstract: This paper offers a solution to the problem of finding a simple normal form to which a particular matrix or any similar family of matrices can be reduced, by using some transformation which is a continuous function of the matrix elements. The solution is found for a family of matrices which are holomorphically dependent on the parameters. Prompting the need for such a solution is the fact that the reduction of a matrix to the Jordan normal form is an uncertain procedure and that, in analyzing a family of matrices, an attempt to reduce them to the Jordan form results in a loss of their continuity with respect to the parameters. Dedicating his paper to Ivan Georgiyevich Petrovskiy, on the occasion of his 70th birthday, the author expresses his thanks to N. N. Brushlinskiy, D. A. Kazhdan, and S. G. Kreyn for their advice.

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UDC 517

ARNOL'D, V. I.

"On Local Problems in Analysis"

Moscow, Vestnik Moskovskogo Universiteta, No 2, 1970, pp 52-56

Abstract: Several natural questions that arise in studying problems of the local behavior of different analytical objects are pointed out. Three examples of analytical objects are given: 1. A real function  $f$  analytical in the neighborhood of the point  $R^n$ . 2. A system of differential equations

$$\dot{x} = v(x), \tag{1}$$

defined by a vector field analytical in the neighborhood of point  $O$ . 3. An analytical mapping  $F$  of the neighborhood of point  $O$  into the neighborhood of point  $O$ . The following three examples of local problems are given: 1. Does the function  $f$  at the point  $O$  have a local minimum? 2. Is the equilibrium position  $O$  of system (1) (or the fixed point  $O$  of the reflection  $F$ ) stable in the Lyapunov sense or asymptotically? 3. Are the two given systems (1) and

$$\dot{x} = u(x) \tag{2}$$

equivalent topologically in the neighborhood of the equilibrium position  $O$ ?

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ARNOLD, V. I., Vestnik Moskovskogo universiteta, No 2, 1970, pp 52-56

A problem is defined as the partition of a space of increments of functions analytical in 0 into a certain number of classes. A formal definition of a trivial problem is set up and the sample problems are tested for whether they are trivial. The following is given as a sample of a nontrivial problem: the topological classification of phase curves of system (1) in the neighborhood of the equilibrium position 0 in complex space  $C^n$ ,  $n \geq 2$ .

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ARNOL'D, V. I., Moscow State University

"Topological Invariants of Algebraic Functions. II"

Moscow, Funktsional'nyy Analiz i Yego Prilozheniya, Vol 4, No 2, Apr/Jun 70,  
pp 1-9

Abstract: The cohomology of groups of braids is used to prove the nonrepresentability of algebraic functions of several variables by superpositions of algebraic functions of a smaller number of variables. A previous article with the same title (Trudy Moskogo Matematicheskogo Obshchestva, Vol 21, 1970, pp 28-43) used the relationship between algebraic functions and braids to calculate the cohomologies of groups of braids. The reason for the nonrepresentability is shown to be topological: classes of cohomologies of the complement to the manifold of the branching of the function induced by classes of cohomologies of groups of braids prevent the representation of the function in the form of a superposition. The following theorem is proved. An algebraic function of  $k$  variables  $a_1, \dots, a_k$

$$z^n + a_1 z^{n-2} + a_2 z^{n-3} + \dots + a_k = 0 \quad (k = n - 1)$$

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ARNOL'D, V. I., Funktsional'nyy Analiz i Yego Prilozheniya, Vol 4, No 2, Apr/Jun 70, pp 1-9

cannot be represented in the form of a superposition of algebraic functions with the number of variables smaller than  $k$  if  $n = 2^r$ ,  $r \geq 2$ . In particular, the root of the fourth degree polynomial considered as a function of the coefficients cannot be represented in the form of a superposition of algebraic functions of two variables. The definition of superposition is discussed.

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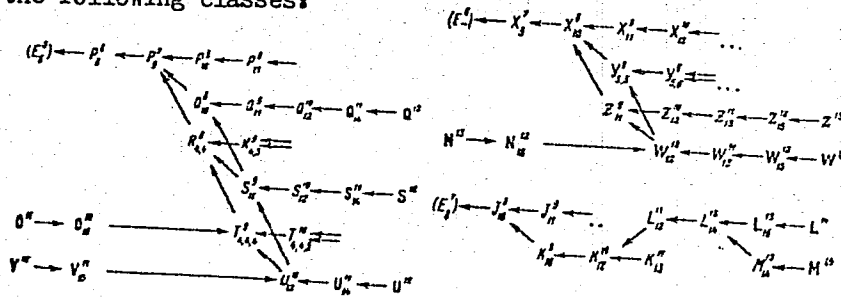
USSR

ARNOL'D, V. I., Moscow State University

"Classification of Unimodal Critical Points of Functions"

Moscow, Funktsional'nyy Analiz i Yego Prilozheniya, Vol 7, vyp 3, Jul-Sep 73, pp 75-76

Abstract: The article states the following theorem, together with certain corollaries: Every finite-multiple kernel of a function at a critical point either is 0-modal and reduces to one of the normal forms A, D, E, or belongs to one of the following classes:



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ARNOL'D, V. I., Funktsional'nyy Analiz i Yego Prilozheniya, Vol 7, Vyp 3,  
Jul-Sep 73, pp 75-76

The letters here designate classes of kernels which are stably equivalent. The indicated polynomials of degree  $k$  define sufficient  $k$ -streams. The superscript is the codimension of a class; the subscript (if it is a single one), the multiplicity  $M$ . The arrows designate adjoining elements; in any neighborhood of each point of a set of  $k$ -streams from a given class there are the points of all the classes to which the arrows lead from the given class (and of some other classes; not all the adjoining elements are indicated).

The author thanks A. M. GABRIELOV, S. M., HUSEYN-ZADEH and J. MILNOR for useful discussions, and dedicates the article to I. M. GEL'FAND on his sixtieth birthday.

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USSR

UDC 621.039.534.6

ARNOL'DOV, M. N., IVANOVSKIY, M. N., MOROZOV, V. A., PLETENETS, S. S.,  
and SUBBOTIN, V. I.

"Solubility of Gases in Eutectic Sodium-Potassium Alloy"

Moscow, Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 18-22

Abstract: The article describes results of the measurement of the solubility of gases in the eutectic sodium-potassium alloy at various temperatures. The apparatus used by the authors, in contrast to the device used by E. COMPERE and J. SAVOLAINEN, permits study of the equilibrium between gas and alloy in direct contact with each other. This made it possible to measure the solubility not only of hydrogen, but also of such gases as nitrogen, argon, and helium. In addition, information could be obtained on the kinetics of the interaction of the gases with the alloy. The hot volume method was used to study the solubility of the gases in the alloy.

The first series of experiments yielded the dependence of the hydrogen pressure on the amount of hydrogen absorbed by the alloy

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ARNOL'DOV, M. N., et al., Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 18-22

at 380° C. The dependence of activity coefficient,  $\gamma$ , of hydrogen in the alloy on the hydrogen concentration was calculated. In the second series of experiments, undertaken following removal of hydrogen from the alloy by evacuation, the temperature dependence of the saturation concentration of hydrogen in the alloy was calculated, as well as the temperature dependence of the dissociation pressure of the saturated hydrogen solution.

Some results are described of the kinetic study of the interaction of gases with alloy. The process of hydrogen evolution, as well as the process of absorption, is described by a first-order reaction equation. The solubility of the inert gases was determined for the alloy at 300° C. The absorption rate of the inert gases is much slower than hydrogen absorption.

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USSR

UDC 621.039.51.001.8

ARNOL'DOV, M. N., BOGATYREV, V. K., DUBOVSKIY, B. G., IVANOVSKIY, M. N.,  
KALENICH, V. N., KIR'YANOV, G. I., MILOVIDOVA, A. V., FROLOV, V. V.

"Activation Control of Oxygen in Circulating Sodium-Potassium Coolant Using  
a Neutron Generator"

Tr. VNII radiats. tekhn. (Works of the All-Union Scientific Research Insti-  
tute of Radiation Engineering), 1972, No. 7, pp 137-144 (from RZh-50. Yadernyye  
reaktory, No 11, Nov 72, Abstract No 11.50.93)

Translation: The first stage in carrying out continuous control of oxygen in a  
circulating loop with an Na-K alloy and a mockup of a nuclear reactor circuit  
is described. The basis of the method is the familiar reaction for deter-  
mining oxygen on the basis of  $N^{16}$  (the reaction  $O^{16}(n, p)N^{16}$ ). A small-  
scale neutron generator of the type NGI-5 with a flux of about  $5 \cdot 10^8$  neutron/  
/sec was used for activation. This method for oxygen control on the basis of  
the  $N^{16}$  isotope is also applicable in the active loop of a nuclear reactor.  
4 ill., 2 tables, 2 ref.

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