

USSR

BARYKIN, and TUNKEL', I., Ogonek, No 50, Dec 71, p 11

Yu. M. Lopukhin continues. "However, it is not merely a matter of the clinical effect. It has already been proven. The work on thymus transplantation and the whole gamut of investigations yield significant scientific results. Rem Viktorovich Petrov believes, and we are beginning to share his viewpoints with increasingly greater confidence, that the thymus is not only a starter. It is also a switch. After consolidating the immunological foundations, it begins to exclude the proteins that are inherent only in man's embryonic development, but are harmful and even dangerous to the adult, from the activity of the organism. Does this mean that in a human organism with an underdeveloped thymus these harmful proteins continue to be active?

Hence, does it also become possible to affect the embryonic protein? This is not ruled out either. The biophysicist Sergey Serafimovich Vasilevskiy has already discovered in patients suffering from the Louis-Bar syndrome a protein, which, at first glance, has been given an ingenious name, i.e., "beta-feta-protein," and the possibility of treating some diseases is seen in it.

In medicine a discovery is primarily a humane act. It can have not only practical, but also scientific prospects, as in this case. It is already a fact that it gives remarkable clinical results. But here, in the Department of Clinical and Experimental Surgery at the Second Moscow Medical Institute  
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another aspect of the discovery can also be seen, i.e., tears of joy.

"We are extremely fortunate to have found this clinic, these kind people," the mother says through tears.

At this moment she again remembers the sleepless nights, the endless attempts at treatment with a great variety of drugs, and simply the hopes for a miracle...

Petya is already walking. He made the first step on his own on the tenth day after the operation.

The ward which housed the nine children that had undergone surgery, the ward to which even experienced physicians came with unceasing wonder as at their first lesson, is empty. The tiny patients went home to Frunze, to Magnitogorsk, to Orel...

The following notes appeared in their case histories: "There were no infectious diseases following surgery," "he is active," and "abatement of ataxia noted."

Yuriy Mikhaylovich Lopukhin, Yuriy Ivanovich Morozov, and their colleagues are working to save today's and, even more, tomorrow's patients.

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USSR

UDC 681.325.65:525

~~BARYKIN, N. A.~~, ZAYGERMAKHER, D. M., KHOKHLOV, G. N., BALUSHKIN, K. S.,  
KOZOBRODOV, V. A.

"Logic Circuits Based on Pneumatic Relay Elements"

Pnevmatich. Privody i Sistemy upr. [Pneumatic Drives and Control Systems  
-- Collection of Works], Moscow, Nauka Press, 1971, pp 267-272, (Translated  
from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya  
Tekhnika, No 11, 1971, Abstract No 11 A74 from the Resume).

Translation: The basic characteristics and nomenclatures of pneumatic relay  
automation elements (PERA) are presented, as well as typical logic device  
circuits based on these elements. A modular-element method of planning of  
devices based on PERA and the experience of the application of the standard  
circuits are studied. 6 Figures; 1 Table; 1 Biblio. Ref.

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USSR

PLEKHOV, V. A., BERDASHKEVICH, N. A., BARYKIN, N. P., KAGANOV, A. A.

"Study of Plasticity and Deformation Resistance of EP303 Steel"

Tr. Ufim. Aviats. In-t. [Works of Ufim Aviation Institute], 1971, No 25, pp 127-134, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 V1180 by R. A. Vasin).

Translation: Results are presented from standard tensile and upsetting tests of EP303 steel specimens in the 80-1,300° temperature range. The dependence of the basic characteristics of the steel on temperature and degree of deformation is presented in graphic form; the change in microstructure of specimens at various temperatures is shown.

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USSR

BARYKIN, N. P., POYUROVSKIY, Yu. V., NIKOLAYEV, V. A., VASHURIN, A. M.,  
PLEKHOV, V. A.

"Calculation of Thermoelastic Stresses During Cooling of Stamps at Various Rates"

Tr. Ufim. Aviats. In-t. [Works of Ufim Aviation Institute], 1971, No 25, pp 111-119, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 V43, by N. T. Glazunova).

Translation: This article presents results of theoretical and experimental studies of the stress field in heated, hollow, thickwall, long cylinders cooled in various media. Axisymmetrical distribution of temperature in the cross section is assumed. The temperature field along the cylinder is assumed constant. Under these conditions, the temperature and corresponding stress field in the body in the radial direction are described by certain logarithmic rules. For long bodies of rectangular cross section, the author's recommend that the actual contour be replaced by an equivalent cylinder, with the condition of equality of areas of side surfaces. The results of the study are illustrated by graphs of temperature stresses in cylindrical stamps of type 5KhV steel, cooled in oil and in air. 8  
Biblio. Refs.

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Public Health, Hygiene and Sanitation

USSR

UDC 614.3:658.5

ZUBELEVICH, V. A., and BARYKINA, A. A., Sanitary Epidemiological Station of the Rogachev Rayon, Gomel'skaya Oblast

"Organization of Current Sanitary Supervision Carried Out by a Sanitary-Epidemiological Station"

Moscow, Gigiyena i Sanitariya, No 3, Mar 73, pp 71-72

Abstract: To improve the efficiency of sanitary supervision in the Rogachev Rayon, a special card file was introduced at the rayon sanitary-epidemiological station. Cards with a distinctive color corresponding to the type and branch of supervision are used (e.g., blue for the subdivision of communal sanitation and white for school inspection). In the case of violations of sanitary rules discovered during an inspection, the number of examinations (the number of persons examined) and the date on which these violations are expected to be removed are entered on a card. If inspection on this date discloses that some violations remain, a later date for another inspection is entered on the same card and the card is filed under the month corresponding to that data. The system of keeping track of violations of sanitary rules is the same as that applied in connection with the checking of the carrying out of prophylactic inoculations.

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1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--COAXIAL HEATING OF MOLDS FOR PLASTICS -U-  
AUTHOR-(02)-BARYLO, M.S., LYASHENKO, V.A.  
COUNTRY OF INFO--USSR *B*  
SOURCE--PLAST. MASSY 1970, (6), 75-6  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--ELECTRIC CURRENT, HEATING, PLASTIC FABRICATING MACHINERY  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3007/0703 STEP NO--UR/0191/70/000/006/0075/0076  
CIRC ACCESSION NO--AP0136142  
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136142

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COAXIAL ELEC. HEATER CONSISTS OF A STEEL ROD 8 MM IN DIAM. WELDED AT 1 END CENTRALLY INTO A STEEL TUBE OF 16 MM INSIDE DIAM. THE FREE ENDS OF THE TUBE AND ROD ARE CONNECTED TO THE TERMINALS OF 12V ELEC. A.C. SOURCE. DUE TO OPPOSITE CURRENT FLOWS IN THE TUBE AND ROD THERE IS AN INTERACTION BETWEEN THE MAGNETIC FLUXES IN THE NARROW GAP AND A GENERATION OF HEAT. PANELS CONTG. SEVERAL OF THESE HEATERS ARE SUITABLE FOR THE UNIFORM HEATING IN THE 150-250DEGREES RANGE OF MOLDS FOR PLASTICS. THE HEATERS HAVE MUCH LONGER LIFE EXPECTANCY AND ARE MORE ECONOMICAL THAN RESISTANCE OR INDUCTION HEATERS.

UNCLASSIFIED



USSR

WEINSTEIN, B. K.; BARYNIN, V. V. (Institute of Crystallography, USSR Academy of Sciences)

"X-Ray Diffraction and Electron Microscope Study of Hexagonal Crystals of Catalase. I. Electron Microscope Study"

Moscow, Kristallografiya; July-August, 1971; pp 751-63

ABSTRACT: The three-dimensional structure of the hexagonal modification of catalase was determined by an electron microscope projection. The form and dimensions of a molecule were established. The orientation of the axes of symmetry of a molecule in a cell was found. It was shown that a molecule consists of four subunits, the centers of gravity of which form a tetrahedron.

The article contains 23 equations and 6 figures. There are 12 references.

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1/2 032 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--RELIABLE SEMIKILLED 18GPS STRUCTURAL STEEL -U-

AUTHOR--SOKOLOVSKIY, P.I., BARYNINA, I.M., YAKOVLEVA, V.S.

COUNTRY OF INFO--USSR

SOURCE--PROM. STROIT. 1970, (2), 30-2

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--STRUCTURAL STEEL, IMPACT STRENGTH, DUCTILITY, CHEMICAL  
COMPOSITION, CARBON, MANGANESE STEEL, SILICON STEEL, FATIGUE  
STRENGTH/(U)18GPS STRUCTURAL STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0584

STEP NO--UR/0227/70/000/002/0030/0032

CIRC ACCESSION NO--AP0107181

UNCLASSIFIED

B

2/2 032

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107181

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMPACT AND FATIGUE TESTING OF HJT ROLLED ANGLES, CHANNELS, AND PLATES OF C 0.15-0.22, MN 0.80-1.26, SI 0.03-0.10PERCENT SEMIKILLED STEELS SHOWED THEIR STRENGTH AND DUCTILITY WERE HIGHER THAN THOSE OF KILLED AND SEMIKILLED STEELS WITH MN LOWERED TO 0.60PERCENT; THE TRANSITION TEMP. WAS 10-20DEGREES LOWER.

UNCLASSIFIED

USSR

UDC: 621.583.8 : 621.039.66

~~BARYSHEV, B. A., GYAVGYANEN, L. V., DIAMANT, L. M., ISKOL'DSKIY, A. M., KRASHNOGOLOVYY, I. I., and NESTERIKHIN, Yu. Ye.~~

"Nanosecond Electronic-Optical Photorecorder 'Channel' With Amplified Image Brightness"

Novosibirsk, Avtometriya, No 6, 1971, pp 53-58

Abstract: This paper represents a continuation of the work being done by the Institute of Automation and Electrometry on the design of devices for parallel recording and processing of optical signals obtained in the investigation of nanosecond and subnanosecond processes. A description is given in this paper of a multistage electronic-optical converter, developed by the authors, which has an electrostatic input chamber and two stages of image brightness magnification. A photograph and a functional diagram of the converter are given. Some of the advantages of this "Kanal" (Channel) instrument are low exposure time in frame operation, high electric field intensity near the photocathode due to the presence there of a control grid, a larger screen, high noise immunity, and a type of structure permitting assembly-line production by the Ministry of the Electronics Industry. The authors thank Yu. A. Shapiro for making the numerical computations, V. Yu. Sholokhov, Yu. N.

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USSR

UDC: 621.383.8 : 621.039.66

BARYSHEV, B. A., et al, Avtometriya, No 6, 1971, pp 53-58

Yevgrafov, and V. A. Gubachenko for their help in the structural development of the instrument, and V. D. Prilepskikh for helping prepare the apparatus.

USSR

UDC 621.315.592

NESMELOVA, I. M., BARYSHEV, N. S., VOLKOVA, F. P., CHERKASOV, A. P."Reflection Spectra of Single Crystals of  $Cd_xHg_{1-x}Te$  Solid Solutions"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 950-951

Abstract: A study was made of the reflection spectra of  $Cd_xHg_{1-x}Te$  single crystals as a function of the electron concentration  $n_0$  and the cadmium telluride content at room temperature. The studies were performed on n-type single crystals grown by the vertical zone refining method. The electron concentration varied from  $10^{15}$  to  $10^{18} \text{ cm}^{-3}$ , and samples were studied with a composition of  $x = 0.17-0.48$ . For specimens with an electron concentration of less than  $10^{17} \text{ cm}^{-3}$ , the reflection coefficient for fixed wave lengths increases with a decrease in the cadmium telluride content in the solid solution. Thus, the index of refraction increases with a decrease in  $x$ . Obvious plasma minima were observed in the reflection spectra of the specimens with  $n_0 = 5 \cdot 10^{17} - 2 \cdot 10^{18} \text{ cm}^{-3}$ , by the position and magnitude of which the effective electron masses were calculated. The tabulated data include the values of the effective masses of the electrons calculated by Keyn [Cane] theory. We experimentally obtained values of  $m_n/m_0$  agreeing with the values calculated by Keyn theory.

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USSR

UDC 621.382.2

CHASHCHIN, S. P., SAF'YAN, T. L., BARYSHEV, N. S., AVER'YANOV,  
I. S., and MARKINA, N. P.

" $Pb_{1-x}Sn_xSe$  Monocrystalline Photodiodes"

Leningrad, Fizika i tekhnika poluprovodnikov, vol. 5, No. 8, 1971,  
p 1633

Abstract: The Pb-Sn-Se combination has promise as an infrared sensor in a broad range of wavelengths. This brief communication shows that annealing the crystals of this combination is unnecessary to obtain the photosensitivity in the p-n junction formed by the crystals since there is always a region of low vacancy concentration when the junction is obtained by deviating from the stoichiometric state. The authors describe the method they have developed for preparing  $Pb_{0.95}Sn_{0.05}Se$  diodes of the p-type with a carrier concentration of  $10^{19}$  per cubic centimeter. A curve of the spectral distribution for the photosensitivity of such diodes at the temperature of liquid nitrogen is given. The curve shows a maximum at a wavelength of about 10 microns.

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USSR

UDC 620.179.16

BARYSHEV, S. Ye. and YURIN, V. N.

"Measurement of the Main Parameters and the Adjustment of Locating Heads on the Basis of the Spectral Composition of an Echo Signal"

Sverdlovsk, Defektoskopiya, No 2, 1972, pp 90-99

Abstract: The influence of an electrical load and an acoustic load upon the spectra of echo signals is investigated. The procedure and the equipment are proposed for measuring the basic electromechanical characteristics of a locating head, namely the frequency of the conversion maximum and the quality factor, and for adjustment of the locating head in accordance with the echo-signal spectrum. A special pulse meter was devised which measures frequency characteristics. This meter has a radio-pulse selector which permits the transceiving amplitude-frequency characteristics of combined locating heads to be observed on the screen of an electron-beam tube. Such instruments are nonstandard, and are not being produced in series either in the USA or in the USSR. 6 figures. 1 table.

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USSR

UDC 534.232.46-8

BARYSHEV, S. YE., DAVYDOV, V.G.

"Binary-Comparative Ultrasonic Head"

USSR Author's Certificate No 256327, filed 11 June 68, published 20 Mar 70 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A426P)

Translation: A binary-comparative ultrasonic head is patented, which differs in the decreased dimensions, and which contains a piezoelectric element and a circuit for matching the piezoelectric element with an ultrasonic receiver and generator. The piezoelectric element is fulfilled in the form of a differential capacitor, the grounded electrode of which is applied to one of the surfaces of a quartz oscillator, and two non-grounded electrodes are applied to the opposite side of the quartz oscillator; and the circuit for matching the piezoelectric element with the ultrasonic receiver and generator is fulfilled in the form of a transformer, one of the windings of which is connected with the receiver, and the other (which has a tap from a central point joining it with the generator) is connected with the non-grounded electrodes. A circuit for the head is presented. 1 ill. L.K.

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1/2 035 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--BOLT AMPERE CHARACTERISTICS OF AMORPHOUS LAYERS BASED ON A PRIMEII  
B PIMEIV-C PRIMEV TERNARY SYSTEMS -U-  
AUTHOR--(05)-BARYSHEV, V.G., BOLTIIYETS, N.A., BORSCHEVSKIY, A.S.,  
GORIUNOVA, N.A., ORESHKIN, P.T.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 372-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS, MATERIALS  
TOPIC TAGS--AMORPHOUS SEMICONDUCTOR, VOLT AMPERE CHARACTERISTIC, THIN FILM  
SEMICONDUCTOR, ARSENIDE, GERMANIUM COMPOUND, CADMIUM COMPOUND,  
PHOSPHIDE, PULSE SIGNAL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/0088 STEP NO--UR/0449/70/004/002/0372/0375  
CIRC ACCESSION NO--AP0105174  
UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105174

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMORPHOUS LAYERS (2-6 MU THICK) WERE PREPD. BY VACUUM SPUTTERING OF CDGEAS SUB2, ZNGEAS SUB2, AND CDGEP SUB2 ON GALSS SUBSTRATES AND WERE PROVIDED WITH EVAPD. METAL ELECTRODES (SN, PB). THE FILM COMPNS. DID NOT CORRESPOND TO THOSE OF THE INITIAL SUBSTANCES; THE CONTENT OF THE LEAST VOLATILE COMPONENT (GE) WAS DECREASED. ON THE DYNAMIC CURRENT VOLTAGE CHARACTERISTICS OF THE FILMS, SWITCHING FROM THE CUTOFF TO THE OPEN STATE WITH MEMORY WAS FOUND. THE CHARACTERISTICS WERE NOT AFFECTED BY CHANGES IN FREQUENCY OF 3 ORDERS OF MAGNITUDE. THE THRESHOLD OF NEG. RESISTANCE IN THE FILMS STUDIED WAS SIMILAR TO 2 TIMES 10 PRIME4 V-CM. THE CURRENT VOLTAGE CHARACTERISTICS STUDIED WITH RECTANGULAR PULSES SHOWED THAT THE MEMORY IS PRESENT FOR PULSE DURATION GREATER THAN 4 TIMES 10 PRIME NEGATIVE6 SEC AND THAT THE BREAKDOWN VOLTAGE INCREASES WITH DECREASING PULSE DURATION. THE SWITCHING FROM THE CUTOFF TO THE OPEN STATE IS DETD. BY AN ACCUMULATED CHARGE; I.E., IT DEPENDS ON BREAKDOWN VOLTAGE AS WELL AS ON BREAKDOWN CURRENT. FACILITY: FIZ. TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--S TYPE NEGATIVE RESISTANCE IN FILM ELEMENTS BASED ON OXYGEN FREE  
COMPOUNDS SPRAY COATED BY AN EXPLOSIVE METHOD -U-  
AUTHOR-(03)-ORESHKIN, P.T., BARYSHEV, V.G., PETROV, I.M. **B**  
COUNTRY OF INFO--USSR  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(2), 123-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--EXPLOSIVE BONDING, SEMICONDUCTING FILM, CHALCOGENIDE GLASS,  
VOLT AMPERE CHARACTERISTIC  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1993/0486 STEP NO--UR/0139/70/013/002/0123/0125  
CIRC ACCESSION NO--ATJ113377  
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--15OCT70

CIRC ACCESSION NO--ATO113377

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VARIATIONS WERE STUDIED FOR THE TECHNOLOGY OF PREPG. SWITCHES WITH S TYPE NEG. RESISTANCE. THE ELEMENTS WERE PREPD. BY USING THE "EXPLOSIVE" SPUTTERING OF O FREE COMPS. (CHALCOGENIDE GLASS CONTG. TE 47.7, AS 29.9, SI 12.64, AND GE 9.76PERCENT) OR A MECH. MIXT. OF GE AND SE. THE FILM THICKNESS WAS 4-7 MU AND THE V-A CHARACTERISTICS WERE STUDIED. THE USE OF MECH. MIXTS. IS OF INTEREST AS IT AVOIDS THE SYNTHESIS OF THE GLASS. FACILITY: RYAZAN. RADIOTEKH. INST., RYAZAN, USSR.

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139164

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS DESCRIBE A QUARTZ OSCILLATOR BASED ON MOS FIELD EFFECT TRANSISTORS AND A LOW-Q K-26 QUARTZ RESONATOR. THE OSCILLATOR WAS TESTED CONTINUOUSLY FOR 32 DAYS WITH A FREQUENCY DRIFT OF 1.2 TIMES 10 PRIME NEGATIVE8 IN THAT TIME. FREQUENCY WAS FOUND TO BE A NONMONOTONIC FUNCTION OF TIME. AVERAGE DAILY FREQUENCY STABILITY WAS FOUND TO BE ABOUT 3 TIMES 10 PRIME NEGATIVE9. THE THEORETICAL ASPECTS OF USING MOS FIELD EFFECT TRANSISTORS IN QUARTZ OSCILLATORS ARE DISCUSSED. FACILITY: INSTITUTE OF PHYSICS OF THE EARTH, ACADEMY OF SCIENCES OF THE USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC: 529.786.2

*B*  
KUZNETSOV, A. A., BARYSHEV, V. I., Institute of Physics of the Earth, Academy of Sciences of the USSR, Moscow

"A Quartz Oscillator Based on Field Effect Transistors"

Moscow, Pribory i Tekhnika Eksperimenta, No 2, Mar/Apr 70, pp 137-139

Abstract: The authors describe a quartz oscillator based on MOS field-effect transistors and a low-Q K-26 quartz resonator. The oscillator was tested continuously for 32 days with a frequency drift of  $1.2 \cdot 10^{-8}$  in that time. Frequency was found to be a nonmonotonic function of time. Average daily frequency stability was found to be about  $3 \cdot 10^{-9}$ . The theoretical aspects of using MOS field-effect transistors in quartz oscillators are discussed.

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USSR

UDC 621.373.2

ANDRIANOV, A. M., ALEKSEYEV, Yu. A., BAZILEVSKAYA, O. A., BARYSHEV, V. L., and KRABKOV, V. A.

"High-Voltage Pulse Oscillator"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No. 33, 1971, p 184

Abstract: The oscillator contains a nonuniform forming line with distributed parameters, a firing block, and a load. The line is made of two plane circular electrodes with a common axis of symmetry. Between them is a dielectric, with azimuthally symmetrical dischargers around the line's outer periphery; the load is connected through a ring insulator to the central region of the line. The dielectric constant is a function of the electric field intensity. High power and short rise time of the pulses are the features of the device. A sketch of the device is given.

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USSR

UDC: 532.596+551.46.06.8

NIKIFOROV, Ye. G., BLINOV, N. I., BARYSHEVA, G. B., KOCHETOV, S. V.

"Method of Calculating the Fields of Average Monthly and Average Seasonal Currents in Outlying Arctic Seas and the Adjacent Part of the Arctic Basin"

Tr. Arkt. i antarkt. NII (Works of the Arctic and Antarctic Scientific Research Institute), 1970, 293, pp 17-48 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4B474)

Translation: The development of the theory of wind currents is briefly surveyed. It is pointed out that development of a procedure for calculating the total current necessitates separate accounting for a number of factors and is complicated by lack of knowledge on the period of establishment of either the density or the barometric flows. Taking Eckman's equations of unsteady flow as a basis, the authors consider the problem of time of establishment of a drift current in a barotropic sea of constant depth. The problem is solved by sequential application of Laplace and Greenberg-Leichtmann transforms to the equations of motion. A Laplace

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NIKIFOROV, Ye. G., et al., Tr. Arkt. i antarkt. NII, 1970, 293, pp 17-48

transform is applied to the equation of continuity, and the result is then integrated with respect to the vertical coordinate  $z$  from the surface to the bottom. As a result, an equation is found for mapping the rise in the free surface. The original for the rise  $\zeta$  is found with the aid of the Cauchy theorem on residues (the computations are not given), and the problem for  $\zeta$  leads to an ordinary homogeneous first-order linear differential equation. Solution of the latter is sought for the case where the field of atmospheric pressure is given in the form  $P = P_0 \cos kx \cos ky$ . Eckman's equations for a steady-state wind over the surface of water are used for determining the tangential stresses  $\tau_x$  and  $\tau_y$ , and  $\zeta$  is sought in the form  $\zeta = \zeta_0(t) \cos kx \cos ky$ . The solution is found for  $\zeta_0$ . The results are tabulated, and it is concluded on the basis of an analysis of the tables that the time of establishment of barotropic currents is short compared with the time of reformation of density in outlying seas. On this basis, the authors propose a division of the current into density and barotropic components, taking Eckman's equations for steady-state current as a point of departure in both instances. A computational method is proposed. Projections of the complete flows on the  $x$ - and  $y$ -axes in the horizontal plane are compared for a barotropic and a nonhomogeneous sea, and formulas are found for the uncompensated part of the pressure gradient due to the slope

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NIKIFOROV, Ye. G. et al., Tr. Arkt. i antarkt. NII, 1970, 293, pp 17-48

of the free surface of the sea, which gives the authors the possibility for dividing the current into two components. A procedure for calculating drift currents in a barotropic sea is outlined in detail. Eckman's equations of motion are first solved, and the equation of continuity is used to determine the level of the sea. The non-overflow condition is set by the boundary condition on the shore, and from the liquid boundaries the conditions are extended to infinity without proper substantiation. The authors consider their method to be equally applicable to singly connected and multiply connected seas and to have an advantage over Veselbaum's method. A numerical method is proposed for computer calculation with coarser nets outside the region under consideration. A method is then considered for calculating the density component of the flow velocity, assuming that the density field is independent of the barotropic part of the current.

Abstractor's note: The work contains errors. Formula (19) is incorrectly differentiated, and therefore formula (20), derived from (19), is not valid, and consequently, so are the subsequent formulas (22), (23), (24), (25), etc. Equations of continuity (28) for a barotropic and a baroclinic sea (p 44) are incorrectly written (the term from integration of

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NIKIFOROV, Ye. G. et al., Tr. Arkt. i antarkt. NII, 1970, 293, pp 17-48

$\partial v_z / \partial z$  is left out) and contradict the properly written equation (9).  
Double integrals are incorrectly written in formulas (22)-(26), (26) [sic]  
(28) and (2). The formula

$$P = g \int_0^z \rho dz - \rho g \bar{z} = Q - G = -P$$

is written on page 42, and it is incorrectly stated that this formula is  
obtained by integrating formula (19) from the surface to the bottom ( $z=\bar{h}$ ).  
Principal equations (32) and (38) found by the authors are therefore  
incorrect. A. K. Nikitin.

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1/2 015 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--REACTIONS OF 4,TRIFLUOROMETHYLAZO,4 PRIME,AMINOBIIPHENYL -U-  
AUTHOR--(05)-ZIMIN, V.I., RYULINA, A.I., SULTANBEKOV, D.A., BARYSHEVA,  
I.I., STUDNEV, YU.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(4), 812-15  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--FLUORINATED ORGANIC COMPOUND, BENZENE DERIVATIVE, ORGANIC AZO  
COMPOUND, DYE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAHE--3006/1276 STEP NO--UR/0366/70/006/004/0812/0315  
CIRC ACCESSION NO--AP0134950  
UNCLASSIFIED

B

2/2 015

UNCLASSIFIED

PROCESSING DATE--20NDV70

CIRC ACCESSION NO--AP0134950

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. COUPLING DIAZOTIZED P,F SUB3 CN:NC  
 SUB6 H SUB4 C SUB6 NH SUB2 (I) WITH 2,C SUB10 H SUB7 NH SUB2, M,C SUB6 H  
 SUB4 (NH SUB2) SUB2, M,C SUB6 H SUB4 (OH) SUB2, 2,C SUB10 H SUB7 OH,  
 1,3,INDANDICNE, AZOTOL A, OR AZOTOL 11A, GAVE A SERIES OF LIGHT FAST  
 DYES. SIMILARLY I WAS CONDENSED WITH O,HOC SUB6 H SUB4 CHO, P,ME SUB2  
 NC SUB6 H SUB4 CHO, 5,2,CL(HO)C SUB6 H SUB3 CHO, 5,2,U SUB2 N(HO)C SUB6  
 H SUB3 CHO, 3,4,O SUB2 N(ME SUB2N)C SUB6 H SUB3 CHO, 2,L,HOC SUB10 H  
 SUB6 CHO, OR 4,2,PHIN:N, (HO)C SUB6 H SUB3 CHO TO GIVE AZOMETHINES.

UNCLASSIFIED

USSR

UDC 614.23:614.88]:612.821

BARYSHEVA, L. M. and VORONINA, L. A., Institute of Experimental and Clinical  
Medicine and Tallin First Aid Station

"Nature of the Work of Physicians of the Tallin First Aid Station and Changes  
in Some of Their Psychophysiological Functions"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 8, 1972, pp 10-15

Abstract: Physicians of the Tallin First Aid Station work a 24-hour shift, spending, according to time-motion studies, about half the time providing medical care, riding ambulances, collecting case histories, etc. and half the time sleeping, eating, reading, etc. To study the correlation between the physical and mental stress associated with the work and the degree of resulting fatigue, the following psychophysiological parameters were investigated in 10 physicians 5 times a day for 4 days: central and autonomic nervous systems, cardiovascular function, EKG, arterial pressure, leukocyte count, and blood sugar levels. The subjective sensation of fatigue was generally matched by corresponding changes in the physiological parameters studied. While fatigue in some systems decreased toward the end of the shift after rest, the sensation of overall fatigue steadily intensified.

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USSR

UDC 621.762:669.018.58

BARYSHEVA, T. B., and KANEVA, I. L.

"Ultrasonic Dispersion of Ferrite Powders"

Ul'trazvuk. metody intensifik. tekhnol. protsessov [Ultrasonic Methods of Intensification of Technological Processes -- collection of works] (Moscow Institute of Steels and Alloys, 60), Moscow, 1970, pp. 252-257, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No.1 G492 by the authors).

Translation: Results are presented from a study of the granulation of type YuS49 ferrite powders based on Li-Ti ferrite in an ultrasonic installation with excess static pressure using distilled water,  $CCl_4$ , and alcohol as working fluids with various exposure times. 3 tables.

1/1

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Acc. Nr: **AP0043770**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy  
Fiziki, 1970, Vol 58, Nr 3, pp 1086-1089

**SMALL ANGLE MAGNETIC *ne*-SCATTERING**

Baryshevskiy, V. G.; Korennaya, L. N.

Inelastic magnetic scattering of neutrons by electrons is considered. It is shown that for small angles and transfers deviations from the usual behavior of the scattered wave appear. As a consequence, the relation between the scattering differential cross section and magnetic susceptibility tensor of the substance appreciably changes.

///

REEL/F  
19770177

21 *hch*

1/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--NONDESTRUCTIVE CONTROL OF FERRITIC MALLEABLE CAST IRON CASTINGS -U-  
AUTHOR--(02)-BARYSHEVSKIY, L.M., SHEVCHUK, P.T. **B**  
COUNTRY OF INFO--USSR  
SOURCE--LITEINDE PROIZVOD. 1970, 2, 41  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, METHODS AND EQUIPMENT  
TOPIC TAGS--NONDESTRUCTIVE TEST, CAST IRON, TENSILE STRENGTH, METAL  
HARDNESS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1996/1737 STEP NO--UR/0128/70/002/000/0041/0041  
CIRC ACCESSION NO--AP0118715  
UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118715

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO DET. THE GENERAL DEPENDENCE OF SIGMA SUBB (TENSILE STRENGTH) ON H SUBB (BRINELL HARDNESS), FERRITIC CAST IRON CONTG. C 2.5-2.7; SI 1.2-1.45; MN 0.40-0.55PERCENT; S TO 0.20, AND CR TO 0.07PERCENT WAS INVESTIGATED. THE DEPENDENCES COULD BE EXPRESSED IN THE 1ST APPROXN. AS SIGMA SUBB EQUALS H SUBB TIMES 0.2 PLUS 12; DELTA EQUALS H SUBB TIMES 0.1 PLUS 0.2, DELTA EQUALS SIGMA SUBB TIMES 0.3 PLUS 1.8 (DELTA IS ELONGATION). WHEN THE HARDNESS AND STRUCTURE OF CAST IRON ARE KNOWN, IT IS THEN POSSIBLE TO DET. ITS QUALITY.

UNCLASSIFIED

USSR

UDC: 621.396.6-181.5

SHERMERGOR, T. D., BARYSHIKOV, V. G.

"Thermoelastic Constants of Heterogeneous Materials"

Sb. nauch. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collected Scientific Works on Problems of Microelectronics. Moscow Institute of Electronic Technology), 1970, vyp. 5, pp 19-26 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V183)

Translation: The authors calculate the effective coefficient of thermal stresses in heterogeneous materials. The method of repeated normalizations of the equations of thermoelasticity is used in the computation. A sum is found for a series in the theory of renormalizations in the approximation of localizability. A simple formula for the macroscopic coefficient of thermal stresses is found for a two-component medium. The formula may be used in engineering calculations for the design of microcircuits and large-scale integration, as well as for other microelectronic devices which contain elements differing in thermoelastic properties. Resumé.

1/1

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USSR

UDC 533.723

B  
BARYSHNIKOV, A. G., Department of Physics, Moscow State University

"Calculating the Probabilities of the Trajectories of a Brownian Particle by the Gibbs Method"

Moscow, Vestnik Moskovskogo Universiteta, No 3, 1970, pp 243-250

Abstract: A method of computing the probability of the trajectories of a Brownian particle in configuration space and in phase space is obtained on the basis of the general principles of Gibbs statistical mechanics. The method is free of the customary restrictions of the theory (the special form of the random process, the lack of correlation of the impact force, etc.) and is applicable to various physical systems, including also systems with secondary action. For the time being, the method is illustrated only on the basis of individual examples of linear systems.

1/1

- 62 -

USSR

UDC: 550.834

SHEKHTER, Z. Kh., OOKOLOV, G. S., PETROV, B. I., LERNER, B. L., DADERKO, Yu. R., BARYSHNIKOV, G. P., Special Design Office of Seismic Instrument Building

"A Device for Registration of Seismic Information in Digital Form"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratstsy, Tovarnyye Znaki, No 23, Aug 72, Author's Certificate No 346694, Division G, filed 20 Aug 71, published 28 Jul 72, p 188

Translation: This Author's Certificate introduces a device for registration of seismic information in digital form. The device contains amplifiers in accordance with the number of channels, a multiplexer, an analog code converter, a single-channel digital plotter, and a single-channel playback circuit. As a distinguishing feature of the patent, in order to simplify computer input of recorded seismic information, and to visualize recorded data by means of a single-channel playback device through sequential path-by-path representation of multichannel seismic data in serial digital code on a single track of the magnetic tape, a code converter and an intermediate memory module are added. The code converter

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USSR

SHEKHTER, Z. Kn. et al., USSR Author's Certificate No 346694

has a single input connected to the output of the analog code converter, and several outputs of demultiplexed signals in serial code to equal the number of seismic channels. In the registration mode, each of the converter outputs is connected through a commutator to its own section of the intermediate memory. In the mode of path-by-path transcription of signals from the intermediate memory to a single track of the magnetic tape and to the visible information medium, the sections of the intermediate memory which each have their own corresponding seismic recording path are connected to the main head of the digital plotter and to the input of the single-channel playback circuit through the same commutator used for sequential switching of these signal sections.

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USSR

UDC 621.382.2/3

BARYSHNIKOV, G. S., DYGAJ, I. V., FURMANSKIY, I. A.

"A Packaging Set for Semiconductor Devices"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 285115, class 21, filed 31 Dec 68, published 29 Oct 70, pp 58-59

Translation: This Author's Certificate introduces a packaging set for semiconductor devices with a flange. The device contains a box, a bushing with sockets, and a patch. As a distinguishing feature of the patent, packaging is simplified and productivity is increased by making the box in the form of a parallelepiped which is split parallel to one of its faces, and using a bushing of the same shape with sockets on both its larger faces, these sockets being staggered so that the axes of the sockets in the upper and lower faces of the bushing do not meet. The set includes two cover plates with holes whose diameter is less than that of the flanges on the semiconductor devices.

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BARYSHNIKOV, N.

*Gospplan*

INTERSECTORIAL BALANCE FOR 1970-75 DISCUSSED

Article by V. KONGOL, deputy department head, USSR Gosplan, N. Baryshnikov, department head, USSR Gosplan, and F. Kisevov, sector chief, Scientific Research Economics Institute, USSR Gosplan; Moscow, Plannovoye Khozyaystvo, Russian, No 2, February 1973, pp 64-67

The twenty-fourth congress of the CPSU raised the further improvement of planning as one of the decisive factors in the successful implementation of the ninth five-year plan's objectives and -- as an important trend in this field -- called for widespread application of mathematical-economic methods and electronic computing equipment.

The intersectorial balance system is one such method. It represents the logical extension and development of the national economic balance and affords maximum coordination of the individual sections of the plan, together with a more thorough analysis of the national economy's structural interrelations. With the use of electronic computing equipment, it also enables multi-variant planning calculations to be made in a short space of time, providing a basis for optimal planning decisions and therefore a substantially sounder foundation for the plan.

Considerable work on organization and methods is in progress at Gosplan USSR with a view to introducing the intersectorial balance method into planning practice. The Scientific Research Economics Institute and the Main Computer Center of USSR Gosplan, with the participation of USSR Gosplan departments, have carried out a series of experimental intersectorial balance calculations and refined questions on methods, computational schemes, estimates and extensive discussions have facilitated Gosplan's leading experts with this method. A substantiated working with intersectorial matters has been set up within the framework of the composite departmental plan for the economic plan. All this has made it possible for USSR Gosplan to calculate an intersectorial physical and value balance for 1970-1975 year by year and also a consolidated intersectorial value balance for this period (by dynamic model).

SPAS 5568 77357 April 7, 72

JPRS 55982  
15 May 72

COMMUNICATION-EMOTIONAL SIGNALS OF BLACK SEA DOLPHINS

(Article by A. A. Titov, A. G. Zamillo, N. S. Baryshnikov, L. I. Yurkevich and V. M. Lekomtsev, Sevastopol; Kiev, Bionika, Russian, No 5, 1971, 142-vo "Naukova Dumka", pp 67-72)

During 1966-1968 specialists at the base of the "Aradap"-stoye Division of the Institute of the Biology of Southern Seas investigated the communication-emotional signals of nine common dolphins, five bottle-nosed porpoises and five harbor porpoises. The animals were kept singly and in groups in a basin (18 x 13 x 2 m) and in a sea cage made of hapron net (10 x 6 x 10 m).

In registering the sounds of dolphins confined to a basin we used an instrument for measuring sonic pressure with a passband of 0.5-100 kc/sec and a magnetic recorder with a broadened frequency characteristic 1-100 kc/sec. The signals were analyzed using a SSM 1-24 spectrum analyzer and a M-102 oscillograph. The rate of sound reproduction was slowed down by factors of 16 and 32.

The lack of a classification of acoustic signals of cetaceans creates great difficulties in determining the biological importance of these sounds. In [7, 8] the acoustic signals are classified as echolocation, communication and complex, but we receive only echolocation and communication-emotional signals. The classification is complex because in behavioral situations it is common to detect sounds of all three groups [7, 8] and there is a considerable variety of signals even within one group. A group of communication-emotional signals includes pure chirping, banking, moaning, and also whistles mixed with pulsed clicks not having a location function. Under nonlocation conditions, when the dolphin is at rest and its location apparatus is not operating, pulsed clicks can have a high and low repetition rate.

BARYSHNIKOV, N. S.

D-1 BARYSHAVNIKOV, S.D.

UDC 612.821

USE OF A SKIN ANALYSOR AS A COMMUNICATION CHANNEL IN CONTROLLING ACTIVITY (REVIEW OF THE LITERATURE)

(Article by S.D. Baryshevnikov, Lieutenant colonel medical service; Moscow, Voenno-Meditsinskii Zhurnal, Russian, No 8, August 1972, submitted June 1970, pp 60-62)

During recent decades studies have been made of the possibility of using a skin analyzer for communication purposes, including for the perception of oral signals. A positive solution of this problem is particularly important for those types of activity in which the abundance of information exceeds the possibilities of an operator's visual and auditory analyzers.

Interesting investigations with the use of tactile and vibrational sensitivity in controlling activity have been made by Geldard (1962). In his experiments the operator of a tracking system was assigned the mission of overtaking a target, an aircraft. Instrument readings by means of special vibrators were transmitted to the skin. Accordingly, tracking of the target was accomplished by use of a skin analyzer. Then the operator performed the same mission, visually observing the instrument readings. It was found that vibration tracking of the instrument was more effective than visual tracking. The experiments of Geldard revealed that the skin can be the same competent communication channel as vision or hearing. It was only necessary to make a successful choice of the "skin language," that is, the code by means of which it was possible to transmit signals, and to arrange the vibrators correctly. In other experiments Geldard used five positions of vibrators on the chest skin, using three directions and three amplitudes. It was established that trained subjects, after studying a definite vibration code for letters and figures, could receive communications at the rate of 38 words per minute (the maximum rate of reception of communications transmitted by the Morse code is approximately 20 words per minute).

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15750722  
17 NOV 72

1/2 017 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--KINETICS OF THE SETTLING OF METALLIC INCLUSIONS IN SLAGS -U-  
AUTHOR-(04)-PANFILOV, M.I., BARYSHNIKOV, V.G., DERYABIN, A.A., POPEL, S.I.  
COUNTRY OF INFO--USSR  
SOURCE--IZVEST. AKAD. NAUK SSSR, METALLY, MAR.-APR. 1970, (2), 106-115  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS, PHYSICS  
TOPIC TAGS---REACTION KINETICS, DESULFURIZATION, STEEL, METAL INCLUSION  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3003/1446 STEP NO--UR/0370/70/000/002/0106/0115  
CIPC ACCESSION NO--AP0130379  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0130379

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF THE SETTLING OF METAL PARTICLES AND THE RISING OF GAS BUBBLES IN SLAGS DURING VARIOUS METALLURGICAL PROCESSES ARE DISCUSSED THEORETICALLY. ALLOWANCE IS MADE FOR THE COMBINED MOTION OF THE METAL PARTICLES AND THE GAS BUBBLES. IN THE DESULPHURIZATION OF STEEL, AS THE SIZE OF THE BUBBLES INCREASES THE RATE OF SETTLING OF THE METAL FALLS TO ZERO AND MAY EVEN CHANGE DIRECTION. THIS EFFECT WAS CONFIRMED EXPERIMENTALLY. THE FLOTATION OF METAL DROPS BY GAS BUBBLES GREATLY INCREASES THE PERIOD WHICH THEY SPEND IN THE SLAG AND TENDS TO INCREASE THE OVERALL LOSS OF METAL.

UNCLASSIFIED

USSR

UDG 621.352.3:621.317.799

VOROB'YEV, N.N., KREYNFEL'D, YU. S., BARYSHNIKOVA, I.A.

"Comparison Of Drift Of Principal Parameters Of Silicon Planar n-p-n Transistors With Various Biases On The p-n Junctions"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, Issue 2(52), pp 116-124 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2B519)

Translation: The regularity is experimentally investigated of the drift of the parameters:  $h_{21e}$ ,  $I_{CBO}$ , and  $I_{EBO}$  of type n-p-n silicon planar transistors, with the tests under conditions of various biases at the junctions. A comparison is conducted of the drift of the parameters in the case of tests in an active regime. It is shown that tests with reverse biases at the collector and emitter junctions can be a sufficiently effective technological test for rejecting non-stable type n-p-n planar transistors. 5 ref. Summary.

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1/2 009 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--AMMONIUM PERRHENATE AMMONIUM NITRATE WATER SYSTEM AT 0, 25, AND  
40 DEGREES -L-  
AUTHOR--(02)-BARYSHNIKOVA, S.M., BIBIKOVA, V.I.  
COUNTRY OF INFO--USSR *B*  
SOURCE--Zh. NEORG. KHIM. 1970, 15(3), 774-7  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--NITRATE, AMMONIUM COMPOUND, WATER, RHENIUM COMPOUND,  
SOLUBILITY, DISTRIBUTION COEFFICIENT  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/0454 STEP NO--UR/0078/70/015/003/0774/0777  
CIRC ACCESSION NO--AP0126206  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126206

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY. OF NH SUB4. REO SUB4-NH SUB4  
NO SUB3-H SUB2 O SYSTEM WAS DETD. AT 0, 25, AND 40DEGREES AND THE DATA  
ARE TABULATED. THIS IS A SIMPLE EUTONIC SYSTEM WITH EUTONIC POINTS AT  
(TEMP., WT. PERCENT NH SUB4 REO SUB4, WT. PERCENT NH SUB4 NO SUB3);  
0DEGREES, 0.55, 54.1; 25DEGREES, 1.50, 66.4; AND 40DEGREES, 2.00, 75.4.  
DISTRIBUTION COEFFS. (BETWEEN LIQ. AND SOLID PHASES) AND SALTING OUT  
COEFFS. OF NH SUB4 REO SUB4 ARE GIVEN.

UNCLASSIFIED



USSR

UDC 539.27

BARZDAYN, P. P., ALEKSEYEV, N. V., LEVKIN, N. P.

"Attachment for Direct Recording of Gas Electron-Diffraction Patterns"

Moscow, Pribery i Tekhnika Eksperimenta, No 5, 1972, pp 223-225

Abstract: An attachment is described for continuous recording of gas electron-diffraction patterns the sensitive element of which is a scintillation counter. The variations in density of the vapor jet from the investigated substance and the brightness of the primary electron beam are compensated for by application of a two-channel recording system at the output of which the ratio of the intensities of the scattered electron emission recorded by each channel is fixed. A special module permits measurement of the accelerating voltage (with an accuracy of ~1%) directly during the experiment. By using the described device the scattered electron emission intensity can be recorded as a function of the angle of dispersion for the low-volatile materials to the regions of the angles of dispersion corresponding to  $28-30 \text{ \AA}^{-1}$ .

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Automata

USSR

UDC: 519.95

TRAKHTENBROT, B. A. and BARZDIN', Ya. M.

Moscow, "Finite Automata (Behavior and Design)," 1970, front cover annotation and table of contents, pp 5-8

Translation: This book is devoted to the so-called behavioral theory of finite automata, in which the operation of the automaton is studied without regard to its structure. The principles of the automaton's behavior are interesting in themselves and are vital to the solution of the general problem of automaton design.

The book systematically presents the results recently published in periodic literature in our country and abroad. These results offer new methods of solving the design problem by using the formal language of mathematical logic and the methods based on polling (querying) the client. They also make it possible to explain tersely and from a single point of view the design methods already described in various studies. The book investigates in detail the most significant parameters of automaton behavior and considers idealized experiments with automata operating for infinitely long periods. Unrestricted use is made of the apparatus of mathematical logic, games, and linguistic interpretation.

1/8

USSR

TRAKHTENBROT, B. A. and BARZDIN', Ya. M., "Finite Automata (Behavior and Design)," 1970, front cover annotation and table of contents, pp 5-8

The book is aimed at scientific personnel working in the area of theoretical cybernetics and mathematical logic as well as engineers interested in enlarging their understanding of the mathematical bases of automaton theory. It can be recommended to post graduate and specialization students.

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USSR

TRAKHTENBROT, B. A. and BARZDIN', Ya. M., "Finite Automata (Behavior and Design)," 1970, front cover annotation and table of contents, pp 5-8

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USSR

TRAKHTENBROT, B. A. and BARZDIN', Ya. M., "Finite Automata (Behavior and Design)," 1970, front cover annotation and table of contents, pp 5-8

Chapter 2. Behavior of Automata With Outputs

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USSR

TRAKHTENBROT, B. A. and BARZDIN', Ya. M., "Finite Automata (Behavior and Design)," 1970, front cover annotation and table of contents, pp 5-8

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USSR

TRAKHTENBROT, B. A. and BARZDIN', Ya. M., "Finite Automata (Behavior and Design)," 1970, front cover annotation and table of contents, pp 5-8

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USSR

TRAKHTENBROT, B. A. and BARZDIN', Ya. M., "Finite Automata (Behavior and Design)," 1970, front cover annotation and table of contents, pp 5-8

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1/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--FINITE AUTOMATA. BEHAVIOR AND SYNTHESIS -U-  
AUTHOR--(02)-TRAKHTENBRET, B.A., BARZDIN, YA.M.  
COUNTRY OF INFO--USSR *B*  
SOURCE--(KONECHNYYE AVTOMATY. POVEDENIYE I SINTEZ) MOSCOW, NAUKA, 1970,  
400 PP  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MECH., IND., CIVIL AND  
MARINE ENGR  
TOPIC TAGS--FINITE AUTOMATON, SIGNAL DECODING, CIRCUIT PARAMETER  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/0273 STEP NO--UR/0000/70/000/000/0001/0400  
CIRC ACCESSION NO--AM0132527  
UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AM0132527  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 9. CHAPTER 0  
INTRODUCTION 13. CHAPTER I BEHAVIOR OF AUTOMATA WITHOUT OUTPUT 44.  
II BEHAVIOR OF AUTOMATA WITH OUTPUT 114. III META LANGUAGES 189.  
IV DECODING OF AUTOMATA 250. V STATISTICAL ESTIMATES OF PARAMETERS  
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SUBJECT INDEX 396.

UNCLASSIFIED

USSR

UDC 577.4

BARZDIN', YA. M., KALNIN'SH, YA. YA.

"General Concepts of the Algorithm and Automaton"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir (Language Theory and Methods of Constructing Programming Systems--collection of works), Kiev-Alushta, 1972, pp 43-47 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V244)

Translation: A definition is proposed for algorithms which process finite signature models  $\sigma_{m,k} = \langle S_1, \dots, S_m; R_1, \dots, R_k \rangle$ , where  $S_1, \dots, S_m$  are single-place predicate symbols, and  $R_1, \dots, R_k$  are two-place predicate symbols. These models are depicted in the form of oriented graphs with tagged arcs and vertices. Elementary transformations and predicates in the models are defined, and with their help, the unconditional and conditional commands of conversion of the extremities of the apex of the graph are defined. The signature program  $\sigma_{m,k}$  is a graph-chart of the algorithm compiled from the above-mentioned commands. It is proved that for each signature  $\sigma_{m,k}$  ( $m \geq 0, k \geq 2$ ) there is a finite universal system of commands  $U_{m,k}$  such that any command (conditional and unconditional) of the signature  $\sigma_{m,k}$  can be replaced by the equivalent program without loops in the system of commands  $U_{m,k}$ . It is also proved that any

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USSR

BARZDIN', YA. M., et al., Teoriya yazykov i metody postroyeniya sistem programir, Kiev-Alushta, 1972, pp 43-47

function converting the models of the signature  $\sigma_{m,k}$  in the models of the same signature and calculated by the program  $\mathcal{M}$  of any signature can be calculated using the program  $\mathcal{N}$  of the signature  $\sigma_{m,k}$ . Here, the calculation time increases by no more than a constant number of times. The possibility of defining the concept of parallel application of a program to all elements of the model is stated. The growing automaton is defined as the model all elements of which execute the same command. The authors investigate the problem of block simulation of certain growing automata by others.

2/2

Controls

USSR-

VALITOV, R. A., NAYDEROV, V. Z., BARZHIN, V. YA., KULIK, A. A.

Generatory Stimuliruyushchikh Signalov dlya Avtomaticheskikh Sistem Kontrolya (Stimulating Signal Generators for Automated Monitoring and Control Systems), Moscow, ENERGIYA, Biblioteka po Avtomatike, No 461, 1972, 65 pp

Translation: A classification of stimulating signal generators and the requirements imposed on them are presented in this booklet. The principles of constructing stimulating signal generators for controlling the characteristics of radiotechnical channels are discussed.

The booklet is designed for engineers working in the field of automation of control of the operation of radioelectronic devices.

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       Controlled by Stimulating Signal Generators ..... 5

    2. Classification of Stimulating Signal Generators ..... 6

    3. Characteristics of Stimulating Signal Generators and Basic  
       Requirements on Them ..... 9

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USSR

VALITOV, R. A., et al., Generatory Stimuliruyushchikh Signalov dlya Avtomaticheskikh Sistem Kontrolya, Moscow, ENERGIYA, Biblioteka po Avtomatike, No 461, 1972, 65 pp

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USSR

UDC 621.373.421.13

BARZHIN, V.YA., BAKLANOV, G.D., KOSHARNOVSKIY, G.V., RASSKAZOV, I.E.,  
VERBITSKAYA, T.N.

"Small-Size Crystal Oscillators, Efficient In A Wide Range Of Temperatures"

V sb. Radioelektronika letatel'n. apparatov (Aircraft Radio Electronics--  
Collection Of Works), No 3, Kar'kov, Kar'kov Aviation Institute, 1971, pp 49-55  
(from RZh:Radiotekhnika, No 2, Feb 72, Abstract No 2D367)

Translation: Problems are considered of thermostabilization of crystal oscillators by ferroelectric materials which possess the effect of temperature auto-stabilization. The results are presented of an experimental investigation of a crystal oscillator at 25 MHz, thermostabilized by Type V<sub>0</sub>-2 ferroelectrics. The possibility is shown of the construction of such an oscillator with a buffer stage, with the dimensions of a bantam tube. 5 ill. 3 ref. Summary.

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USSR

UDC: 621.376.2

BARZHIN, V. Ya., KRUTOFALOV, E. B., PETROV, A. F., ROWDIN, Yu. P., KOSHAR-  
NOVSKIY, G. V.

"A Device for Increasing Depth of Modulation"

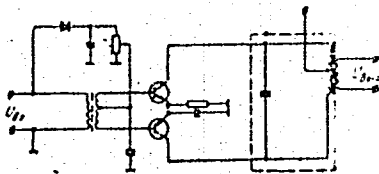
Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
No 12, Apr 71, Author's Certificate No 299936, Division H, filed 11 Aug 69,  
published 26 Mar 71, p 204

Translation: This Author's Certificate introduces a device for increasing depth of modulation containing a push-pull amplifier with transformer input, and an amplitude detector. In the collector circuit of the amplifier is a tank circuit tuned to the carrier signal frequency. As a distinguishing feature of the patent, depth of modulation is increased with simultaneous signal amplification, and the depth coefficient is made independent of the amplitude of the input signal by connecting the above-mentioned amplitude detector between the primary winding and the centertap of the secondary winding of the input transformer of the push-pull amplifier.

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BARZHIN, V. Ya. et al., USSR Author's Certificate No 299936



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USSR

UDC 621.373.421.13

BARZHIN, V. YA., KOSHKAREV, YE. A., KUL'KIN, G. A., SHKLYAR, A. N.

"Superhigh Frequency Quartz Oscillator"

Elektron. tekhnika. Nauchno-tekhn. sb. (Electronic Engineering. Scientific and Technical Collection), 1970, ser. 9, vyp. 2, pp 62-63 (from RZh-Radio-tekhnika, No 9, Sep 70, Abstract No 9D270)

Translation: This article contains a description of a quartz oscillator assembled from a transistor and elements with lumped parameters according to the "capacitive Hartley oscillator circuit."

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UDC 577.4

USSR

BARZDIN', Ya. M. and KALNIN'SH, Ya. Ya.

"General Conceptions of Algorithms and Automata"

Kiev-Alushta, V sb. Teoriya Yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems--collection of works) 1972, pp 43-47 (from RZh--Matematika, No 12, 1972, Abstract No 12V244)

Translation: The determination of algorithms processing finite models of signature  $\sigma_{m,k} = \langle S_1, \dots, S_m; R_1, \dots, R_k \rangle$  is proposed, where  $S_1, \dots, S_m$  are one-place and  $R_1, \dots, R_k$  are two-place predicate symbols. Such models are represented as oriented graphs with marked arcs and vertices. Elementary transformations and predicates are obtained with the models as well as unconditional and conditional commands for the transformation of the neighborhood of the graph vertices. The program for the signature  $\sigma_{m,k}$  is the graph system of the algorithm made up of the commands already mentioned. It is proved that for each signature  $\sigma_{m,k}$  ( $m \geq 0, k \geq 2$ ) there exists a finite universal system of commands  $U_{m,k}$  such that

USSR

BARZDIN', Ya. M. and KALNIN'SH, Ya. Ya., Teoriya yazykov i metody postroyeniya sistem programmir. 1972, pp 43-47

every command (conditional and unconditional) of the signature  $\sigma_{m,k}$  can be replaced by an equivalent program without cycles in the system of commands  $U_{m,k}$ . It is also proved that any function transforming models of signature  $\sigma_{m,k}$  into models of this same signature, and capable of computation by a program  $\mathcal{M}$  of some signature, may be computed by a program  $\mathcal{N}$  of signature  $\sigma_{m,k}$ , for which the time of the computation increases no more than a constant number of times. It is asserted that it is possible to define the idea of parallel application of the program to all elements of the model. The increasing automaton is defined as a model all of whose elements execute the same command. The authors investigate the problem of block modeling for several increasing automata by others.

A. Muchnik

2/2

- 4 -

1/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--EFFECT OF VISCOUS FRICTION FORCE MOMENTS ON THE DRIFT OF A  
GYROSCOPE IN A GIMBAL SUSPENSION DURING VIBRATIONS OF THE BASE -U-

AUTHOR--BARZOV, V.I.

COUNTRY OF INFO--USSR

*B*

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA TVERDOGO TELA, MAR. APR.  
1970, P. 32,33

DATE PUBLISHED-----70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--GYROSCOPE MOTION EQUATION, DRIFT MOBILITY, FORCED VIBRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0269

STEP NO--UR/0484/70/000/000/0032/0033

CIRC ACCESSION NO--AP0124030

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124030

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE MOTION OF AN  
ASTATIC GYROSCOPE IN A GIMBAL SUSPENSION ON A BASE UNDERGOING ANGULAR  
VIBRATIONS. IT IS ASSUMED THAT VISCOUS FRICTION FORCE MOMENTS ARE  
ACTING ALONG THE AXES OF THE GIMBAL SUSPENSION AND THAT DURING ANGULAR  
VIBRATIONS OF THE BASE THESE MOMENTS ARE PROPORTIONAL TO THE RELATIVE  
ANGULAR VELOCITIES OF THE GIMBALS. A FORMULA GIVING THE SYSTEMATIC  
DRIFT VELOCITY IN A SECOND APPROXIMATION, IRRESPECTIVE OF THE NATURE OF  
THE FORCES EXCITING THE VIBRATIONS OF THE GIMBALS, IS PRESENTED. IT IS  
SHOWN THAT THE DIRECTION OF THE SYSTEMATIC DRIFT VELOCITY IS DETERMINED  
BY THE FREQUENCY OF THE FORCED VIBRATIONS AND BY THE INITIAL VALUE OF  
THE ANGLE OF ROTATION OF THE INNER GIMBAL RELATIVE TO THE OUTER.

UNCLASSIFIED

USSR

UDC 531.36

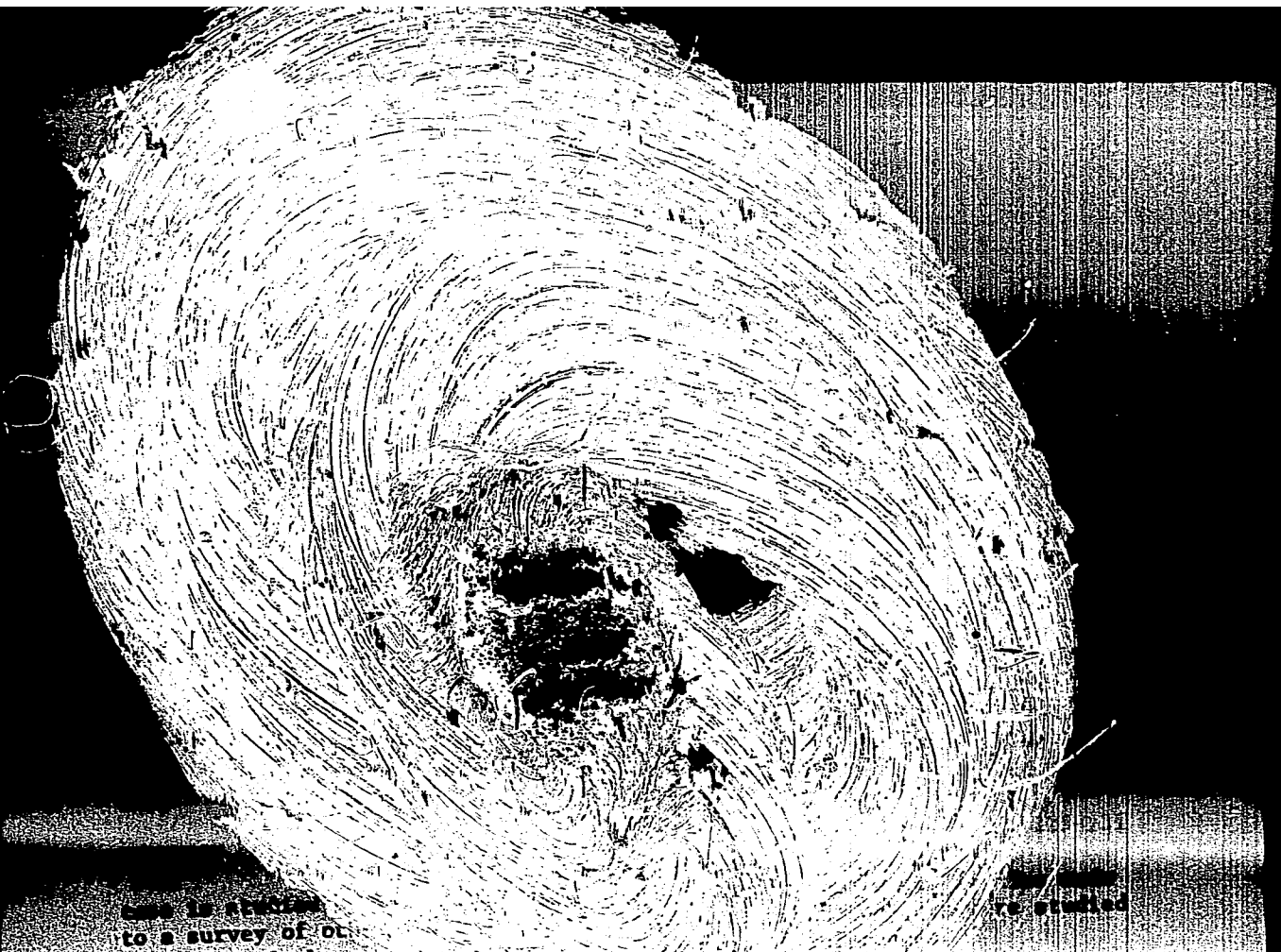
BARZUKOV, O. P.

"Multiple Synchronization in a System of Weakly Connected Objects With One Degree of Freedom"

Moscow, Prikladnaya Matematika i Mekhanika, No 2, 1972, pp 225-231

Abstract: An investigation is made of the periodic conditions of motion in a system of objects with one degree of freedom, which interact by means of weak connections, and in the absence of connections the objects perform periodic movements with frequencies that are multiples of some value, on other words, the case of multiple synchronization. Consideration is given to a system with a multidimensional rapidly rotating phase, which describes the interaction of nonlinear almost conservative objects. A study is made of a "nonsimple" case, in which the first-approximation conditions of periodicity determine only the connection among the engendering phases of objects moving with equal frequencies, while the connection among the phases of groups of objects having unequal frequencies is determined from the second-approximation conditions of periodicity. The necessary and sufficient conditions of stability of the obtained regimes are presented. Reference is made to a work in which multiple synchronization of mechanical vibrators in the "simple"

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to a survey of ...

... started



USSR

UDC: 621.376.2

BARZHIN, V. Ya., KRUTOFALOV, E. B., PETROV, A. F., RONDIN, Yu. P., KOSHAR-  
NOVSKIY, G. V.

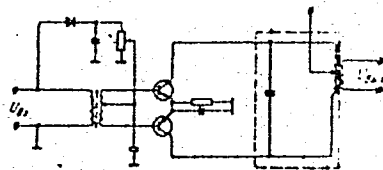
"A Device for Increasing Depth of Modulation"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
No 12, Apr 71, Author's Certificate No 299936, Division H, filed 11 Aug 69,  
published 26 Mar 71, p 204

Translation: This Author's Certificate introduces a device for increasing  
depth of modulation containing a push-pull amplifier with transformer input,  
and an amplitude detector. In the collector circuit of the amplifier is a  
tank circuit tuned to the carrier signal frequency. As a distinguishing  
feature of the patent, depth of modulation is increased with simultaneous  
signal amplification, and the depth coefficient is made independent of the  
amplitude of the input signal by connecting the above-mentioned amplitude  
detector between the primary winding and the centertap of the secondary  
winding of the input transformer of the push-pull amplifier.

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BARZHIN, V. Ya. et al., USSR Author's Certificate No 299936



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USSR

UDC 621.373.421.13

BARZHIN, V. YA., KOSHKAREV, YE. A., KUL'KIN, G. A., SHKLYAR, A. N.

"Superhigh Frequency Quartz Oscillator"

Elektron. tekhnika. Nauchno-tekhn. sb. (Electronic Engineering. Scientific and Technical Collection), 1970, ser. 9, vyp. 2, pp 62-63 (from RZh-Radio-tekhnika, No 9, Sep 70, Abstract No 9D270)

Translation: This article contains a description of a quartz oscillator assembled from a transistor and elements with lumped parameters according to the "capacitive Hartley oscillator circuit."

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USSR

UDC 577.4

BARZDIN', Ya. M. and KALNIN'SH, Ya. Ya.

"General Conceptions of Algorithms and Automats"

Kiev-Alushta, V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems--collection of works) 1972, pp 43-47 (from RZh--Matematika, No 12, 1972, Abstract No 12V244)

Translation: The determination of algorithms processing finite models of signature  $\sigma_{m,k} = \langle S_1, \dots, S_m; R_1, \dots, R_k \rangle$  is proposed, where  $S_1, \dots, S_m$  are one-place and  $R_1, \dots, R_k$  are two-place predicate symbols. Such models are represented as oriented graphs with marked arcs and vertices. Elementary transformations and predicates are obtained with the models as well as unconditional and conditional commands for the transformation of the neighborhoods of the graph vertices. The program for the signature  $\sigma_{m,k}$  is the graph system of the algorithm made up of the commands already mentioned. It is proved that for each signature  $\sigma_{m,k}$  ( $m \geq 0, k \geq 2$ ) there exists a finite universal system of commands  $U_{m,k}$  such that

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USSR

BARZDIN', Ya. M. and KALNIN'SH, Ya. Ya., Teoriya yazykov i metody postroyeniya sistem programmir. 1972, pp 43-47

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A. Muchnik

2/2

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1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EFFECT OF VISCOUS FRICTION FORCE MOMENTS ON THE DRIFT OF A  
GYROSCOPE IN A GIMBAL SUSPENSION DURING VIBRATIONS OF THE BASE -U-  
AUTHOR--BARZOV, V.I.  
COUNTRY OF INFO--USSR *B*  
SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA TVERDOGO TELA, MAR. APR.  
1970, P. 32,33  
DATE PUBLISHED--70  
  
SUBJECT AREAS--NAVIGATION  
TOPIC TAGS--GYROSCOPE MOTION EQUATION, DRIFT MOBILITY, FORCED VIBRATION  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/0269 STEP NO--UR/0484/70/000/000/0032/0033  
CIRC ACCESSION NO--AP0124030  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124030

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE MOTION OF AN ASTATIC GYROSCOPE IN A GIMBAL SUSPENSION ON A BASE UNDERGOING ANGULAR VIBRATIONS. IT IS ASSUMED THAT VISCOUS FRICTION FORCE MOMENTS ARE ACTING ALONG THE AXES OF THE GIMBAL SUSPENSION AND THAT DURING ANGULAR VIBRATIONS OF THE BASE THESE MOMENTS ARE PROPORTIONAL TO THE RELATIVE ANGULAR VELOCITIES OF THE GIMBALS. A FORMULA GIVING THE SYSTEMATIC DRIFT VELOCITY IN A SECOND APPROXIMATION, IRRESPECTIVE OF THE NATURE OF THE FORCES EXCITING THE VIBRATIONS OF THE GIMBALS, IS PRESENTED. IT IS SHOWN THAT THE DIRECTION OF THE SYSTEMATIC DRIFT VELOCITY IS DETERMINED BY THE FREQUENCY OF THE FORCED VIBRATIONS AND BY THE INITIAL VALUE OF THE ANGLE OF ROTATION OF THE INNER GIMBAL RELATIVE TO THE OUTER.

UNCLASSIFIED

USSR

UDC 531.36

BARZUKOV, O. P.

"Multiple Synchronization in a System of Weakly Connected Objects With One Degree of Freedom"

Moscow, Prikladnaya Matematika i Mekhanika, No 2, 1972, pp 225-231

Abstract: An investigation is made of the periodic conditions of motion in a system of objects with one degree of freedom, which interact by means of weak connections, and in the absence of connections the objects perform periodic movements with frequencies that are multiples of some value, on other words, the case of multiple synchronization. Consideration is given to a system with a multidimensional rapidly rotating phase, which describes the interaction of nonlinear almost conservative objects. A study is made of a "nonsimple" case, in which the first-approximation conditions of periodicity determine only the connection among the engendering phases of objects moving with equal frequencies, while the connection among the phases of groups of objects having unequal frequencies is determined from the second-approximation conditions of periodicity. The necessary and sufficient conditions of stability of the obtained regimes are presented. Reference is made to a work in which multiple synchronization of mechanical vibrators in the "simple"

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USSR

BARZUKOV, O. P., Prikladnaya Matematika i Mekhanika, No 2, 1972, pp 225-231

case is studied by the method of a small parameter; reference is also made to a survey of other works in which specific technical objects were studied predominantly by asymptotic methods. 1 figure. 6 references.

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BARZYKIN, V.V.

RAN / 11-160 / S-1111-13  
15/01/1973

(4)

Barzykin, V. V., V. A. Veretenikov,  
Yu. M. Grigor'yan, and A. S. Rozenberg.  
Results of Third All-Union Symposium on  
Combustion and Explosions. FGIV, no. 4,  
1971, 616-618.

The Symposium, which took place July 5-10, 1971 in Leningrad, was attended by 730 representatives from 210 organizations. There were three sections: on combustion, detonation, and kinetics. Three plenary reports and 154 section reports were presented. The plenary sessions reports were presented by Yu. B. Zel'dovich, (The contribution of D. A. Frank-Kamenetskii to the theory of combustion), V. V. Pomerantsev (Atomization, evaporation, and combustion of liquid fuel), and A. D. Margolin (The present status and some problems of the combustion theory of condensed systems).

At the section on combustion, 79 reports were presented in 9 subject areas: ignition in condensed systems, steady combustion of condensed systems, combustion stability and non-steady combustion of limits in gases, laminar combustion of gases, combustion of organic fuels, turbulent combustion of gases, and combustion in supersonic flow. The problem of supersonic combustion was included for the first time in the program of the All-Union Symposia.

At the section on detonation, 36 reports were presented in 4 subject areas: detonation of condensed explosives, detonation in gaseous and heterogeneous systems, sensitivity of explosives to mechanical interactions, and physico-chemical transformations of materials from shock wave effects. In addition to reports on the continuation of theoretical and experimental research on shock wave propagation in condensed media, other reports in this section dealt with

USSR

UDC: 536.46

GOL'DSHLEGER, U. I., BARZYKIN, V. V., MERZHANOV, A. G., Moscow

"Mechanism and Regularities of Ignition of Condensed Systems By a Disperse Flow"

Novosibirsk, Fizika Goreniya i Vzryva, No 3, 1971, pp 319-332

Abstract: This work is dedicated to investigation of the process of ignition of condensed substances under complex heat exchange conditions - ignition of the substance by a disperse flow (gas-solid particles). New experimental data are used and quantitative processing of the regularities established is performed on the basis of the simplest model of solid phase ignition. The process of ignition of nitrocellulose, polyvinyl nitrate and other explosives by a disperse stream is studied. The characteristics of the stream and softening point of the substances are found to influence the nature of the process significantly. An approximate theoretical model of the process is suggested. The results of numerical analysis based on this model agree well with experimental data.

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1/2 046 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--IGNITION OF CONDENSED SUBSTANCES BY A DISPERSED FLOW -U-  
AUTHOR--(03)-BARZYKIN, V.V., GOLDSHLEGER, U.I., MERZHANOV, A.G.  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 111-14  
DATE PUBLISHED-----70  
SUBJECT AREAS--ORDNANCE, PROPULSION AND FUELS  
TOPIC TAGS--NITROCELLULOSE, IGNITION LAG, POROSITY, EXPLOSIVE, HEAT  
TRANSFER RATE, POLYVINYL NITRATE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/2128 STEP NO--UR/0020/70/191/001/0111/0114  
CIRC ACCESSION NO--AT0127497  
UNCLASSIFIED

2/2 046

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0127497

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NITROCELLULOSE OR POLY (VINYL NITRATE) TABLETS WERE INJECTED INTO A STREAM OF AIR, MOVING AT 1-3 M-SEC AND CARRYING ALUMINOSILICATE (I) PARTICLES 60-300 MU IN DIAM. THE TIME (T) REQUIRED BY THESE EXPLOSIVES TO IGNITE WAS DETD. THE TEMP. OF THE GAS SOLID STREAM VARIED FROM 250 TO 650DEGREES. THE CHANGES IN T DEPENDED ON THE HEAT TRANSFER RATES BETWEEN THE EXPLOSIVES AND THE STREAM. THIS IN TURN DEPENDED ON THE SURFACE POROSITY AND SOFTNESS OF THE EXPLOSIVES WHICH COULD CAPTURE I PARTICLES AND THUS INCREASE THE HEAT TRANSFER RATE. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 8.74

AL'PEROVICH, E. Ye., BATISHCHEV, D. I., BASALIN, P. D., BEDNAYA, R. I.,  
KOROTCHENKO, A. G., KONYUGINA, L. A., KOLDORKINA, L. R., SERGEYEVA, N. M.,  
SUKHAREVA, V. A.

"SAPPOR -- a System for Automating the Process of Making Optimum Decisions"

Moscow, Kibernetich. sistemy avtomatiz. proyektir.--sbornik (Cybernetic  
Automated Design Systems--collection of works), 1973, pp 29-35 (from RZh-  
-Kibernetika, No 7, Jul 73, abstract No 7V633 by A. Doroshenko)

Translation: SAPPOR is a dialog system oriented for making optimum de-  
cisions in the process of designing technical devices. The system is  
realized on the BESM-3M computer with two memory arrays, the second  
being designed for operation of a screen panel. The software of the  
system is based on the modular principle and has the following modules:  
1) "Model" -- for constructing the mathematical model of the object  
being designed. This block is replaceable and varies depending on the  
class of the object of optimization. In developing the SAPPOR, RLC cir-  
cuits were taken as models. 2) "Formulation of the Problem" -- a com-  
piler which prepares classes of problems formulated by the designer for

1/2

USSR

AL'PEROVICH, E. Ye. et al., Kibernetich. sistemy avtomatiz. proyektir., 1973, pp 29-35

solution (calculating the characteristics of the object, optimizing the mathematical expectation in satisfying probability limitations, etc.). 3) "Method of Solution" -- a set of programs for finding the global minimum of an arbitrary curve, minimizing multiparameter functions and numerically solving problems in nonlinear programming. 4) "Check" -- enables following and controlling the process of finding the optimum with respect to information which may appear at the output (alphanumeric printer, screen panel) as ordered by the operator. 5) "Output of Results" -- gives the results of optimization in the form of graphs and tables on a screen panel or on paper with the use of an alphanumeric printer or a "Konsul" typewriter. The last four modules are universal and do not depend on the type of optimization object. An advantage of the SAPPOR is the possibility for operative search for the optimum decision and the combination of the designer's experience and intuition with rigorous mathematical methods. In this connection, the design process can be carried out without knowledge of computer programming and the corresponding methods of search optimization.

2/2

USSR

UDC 621.372.057

BATISHCHEV, D. I., ~~BASALIN, P. D.~~

"Automated Calculation of the Frequency Responses of Passive Two-Terminal Pair Networks"

Avtomatiz. proyektir. v elektron. Resp. mezhved. nauch.-tekhn. sb. (Design Automation in Electronics. Republic Interdepartmental Scientific and Technical Collection), vyp. 2, Kiev, "Tekhnika", 1970, pp 69-78

Abstract: The authors consider the problem of digital computer construction of a frequency mathematical model of passive RLC-networks. A special language and translator are worked out which make it possible to automate calculations of the frequency responses of complex two-terminal pair networks. Numerical examples are presented. Two tables, three illustrations, bibliography of five titles.

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USSR

UDC 632.95

SVISHCHUK, A. A., BASALKEVICH, Ye. D., VYSOTSKIY, N. N., SHAPOVALENKO, V. F.

"Insecticidal Properties of Methylated Quinones, Hydroquinones and 6-oxychroman Derivatives"

Fiziol. aktivn. veshchestva. Resp. mezhved. sb. (Physiologically Active Substances. Republic Interdepartmental Collection), 1972, No 4, pp 85-87 (from RZh-Khimiya, No 2 (II), Feb 73, Abstract No 2N471)

Translation: Results are presented from tests under laboratory conditions run on greenbug, red spider mites, rice weevils and flies using methylated hydroquinones, their products of condensation with tertiary isoprenoidal carbinols and the products of their oxidation. Against greenbugs, 2,5,6-Me<sub>3</sub>-1,4-(HO)<sub>2</sub>C<sub>6</sub>H<sub>2</sub> (contact effect) and 2,5-Me<sub>2</sub>-1,4-(HO)<sub>2</sub>C<sub>6</sub>H<sub>2</sub> (systemic effect) and 2,5-dimethylbenzoquinone, 5-methyltolcol have an expressed selective effect. The given compounds do not have phytotoxicity. The results of the study indicate the possibility of the occurrence of natural self-protection of grass crops against their pests.

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USSR

UDC 621.396.962

BASALOV, F. A., KUCHERYAVYY, V. YA.

"Ultrasonic Modelling Of Radar Bearing"

Izv. VUZ SSSR: Radioelektronika, Kiyev, Vol. XV, No. 11, Nov. 1972, pp. 1388-1390

Abstract: This brief report discusses the over-all functional diagram of an ultrasonic simulator which makes it possible to perform phase (bearing) measurements. The simulator which operates in a pulse regime contains: 1) A water bath; 2) Model of a target with suspension filaments; 3) Receiving antenna; 4) Transmitting antenna made of piezoceramic 12.55 mm in diameter for  $\lambda = 1$  mm; 5) HF amplifier; 6) Phase shifter; 7) Phase discriminator; 8) Differential amplifier; 9) Oscillograph; 10) Power amplifier; 11) Pulse modulator; 12) Gate forming circuit; and 13) Standard signal generator. 4 fig. 1 ref. Received, 11 October 1971.

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USSR

BASHALEYSHVILI, D. I.

"Mathematical Models of Conversion of the Dimensions of Cell Nuclei"

Tr. Tbilis. Un-ta. [Works of Tbilisi University], 1972, A5 (147), pp 41-45 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V320 by the author).

Translation: The nuclei of cells change their dimensions under the influence of various diseases: in some cases, they grow, while in other cases they shrink. This article describes models of these changes and suggests a procedure for estimating the characteristics of the models.

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USSR

UDC 681.327

BASALYGA, V. F.

"A Memory Device"

USSR Author's Certificate No 270814, filed 6/06/66, published 26/08/70  
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i  
Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B329P)

Translation: Memory devices are known which are made as series-connected circuits of memory elements with delay elements connected between them. The device suggested differs from such devices in its increased speed. This is achieved by including a TD [sic] connected to the delay elements, while the circuit formed by the diodes and delay elements are connected to a bias source. 3 figs.

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1/2 028 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--VARIANTS OF VIBRATION DISEASE IN DRIFTERS OF THE DONBASS COAL MINES  
-U-  
AUTHOR--(05)-BASAMYGINA, L.YA., BONDARENKO, G.A., ZHILKO, S.M.,  
LYUBCMUDROV, V.YE., SUKHARSKAYA, L.M.  
COUNTRY OF INFO--USSR  
SOURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 137-140  
DATE PUBLISHED-----70

B

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BIOLOGIC VIBRATION EFFECT, NERVOUS SYSTEM DISEASE, INDUSTRIAL  
HYGIENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3002/1747 STEP NO--UR/0475/70/000/005/0137/0140

CIRC ACCESSION NO--AP0129115

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129115

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANALYSIS OF VIBRATION DISEASE IN DRIFTERS OF COAL MINES INDICATES THAT THE CLINICAL PICTURE OF THE DISEASE IN DRIFTERS OF HORIZONTAL SHAFTES IS DOMINATED BY PHENOMENA OF VEGETATIVE POLYNEURITIS, MAINLY IN THE UPPER EXTREMITIES; IN COAL MINE BUILDING WORKERS VEGETATIVE POLYNEURITIS IS MARKED BOTH IN THE UPPER AND LOWER EXTREMITIES AND IS DETECTED AT THE BACKGROUND OF DISORDERS OF THE NERVOUS ACTIVITY AND ORGANIC LESIONS OF THE NERVOUS SYSTEM.  
FACILITY: DCNETSKIY MEDITSINSKIY INSTITUT.

UNCLASSIFIED

Acc. Nr.: AP0029821

Ref. Code: UR 0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 1, pp 102-105

ON THE THERAPEUTIC EFFICIENCY OF ELEUTHEROCOCCUS  
Lyubomudrov, V.Ye.; Basamygina, L.Ya.; Bikezina, V.G.;  
Mukhina, M.S.; Mikhaylova, T.I.; Osadchuk, V.S.;  
Shidlovskiy, Ye.F.; Bondarenko, G.A.; Demkovich, O.A. (Donetsk)

Eleutherococcus improves abnormal pulmonary ventilation, favours normalization of the arterial pressure, positively influences cardiac rhythm and His bundle conduction. It proved rather efficient in the treatment of patients with initial stages of vibration disease. It is promising in the treatment of chronic lead intoxication. The preparation favours more rapid acclimatization of pneumoconiosis involved miners.

It is concluded that eleutherococcus may be recommended for the complex treatment of patients with some professional diseases and more rapid acclimatization of patients to sanatorium conditions.

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REEL/FRAME

19681507

USSR

UDC 621.382

BASAN, A.R., GERASIMOV, A.B., DOLIDZE, N.D., KAKHIDZE, N.G., KONOVALENKO, B.M.,  
SHILLO, A.G.

"Isothermic Annealing Of Radiation Defects In Ge Irradiated By Fast Electrons  
At 77° K"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic  
Crystals--Collection Of Works), Vol 5, Part 1, Kiev, "Nauk.dumka," 1971, pp  
207-210 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract  
No 10E404)

Translation: The results are presented of an investigation of the processes of isothermic annealing of Ge at certain stages of reinsertion of the initial concentration of current carriers. It is shown, for example, that at the stage of abrupt reinsertion of the concentration of electrons during annealing of specimens with a resistivity of 1--10 ohm. cm., doped with antimony, after irradiation by fast electrons, a complex process of change of the complexes of defects takes place. For the process of reinsertion of the concentration at  $T = 77^{\circ} \text{C}$  an activation energy of 1.1 plus or minus 0.1 ev is obtained and for the process of forming a level, 1.7 plus or minus 0.2. During annealing after irradiation at a  $240^{\circ} \text{C}$  temperature on p-type specimens with a resistivity of 5 ohm.cm, the activation energy equals 0.95 plus or minus 0.1 ev at the stage of reinsertion of holes. Here a simple bimolecular process takes place. 4 ref. I.M.  
1/1



1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--TERNARY STRATIFYING SYSTEMS CONTAINING THREE CHEMICAL COMPOUNDS -U-  
AUTHOR--(02)-KRUPATKIN, I.L., BASANOV, A.N. *B*  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 793-6  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--BENZENE DERIVATIVE, CRESOL, DECANE, PHASE DIAGRAM, ISOTHERM  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/0721 STEP NO--UR/0076/70/044/003/0793/0796  
CIRC ACCESSION NO--AP0119628  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119628

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TERNARY SYSTEM  
BZME-M-CRESOL-N-DECANE CONTG. 3 COMPDS. IN THE BINARY PREDOMINANT SYSTEM  
BZME-M-CRESOL WAS STUDIED BY STRATIFICATION. THE EQUIL. ISOTHERMS OF  
LIQ. PHASES OF SYSTEM WITH N-DECANE SHOWED FORMATION OF 1:2  
BZME-M-CRESOL ADDUCT. A TRIANGLE PHASE DIAGRAM OF THE ROOZEBOOM GIBBS  
TYPE IS GIVEN. FACILITY: KALININ. POLITEKH. INST., KALININ,  
USSR.

UNCLASSIFIED

USSR

UDC: 621.791.7:621.387.143

BASANSKIY, V. V., BALITSKIY, V. M., SAMILOV, V. N., and SUKHENKO, I. V.,  
Electric Welding Institute imeni Ye. O. Paton, Academy of Sciences  
Ukrainian SSR

"Some Characteristics of Microplasma-Arc Welding of Sheet Materials"

Kiev, Avtomaticheskaya svarka, Sept 71, no 9, pp 40-42

Abstract: A paper on the possibility of controlling the volume of the weldpool using highly concentrated plasma heat sources is presented and the technology of microplasma pulsed-arc welding is detailed. The pulsed arc makes it possible to proportion the heat energy supply to the part being welded. The protective gas is selected so as to afford optimum ionization and maximum plasma jet reduction at the exit from the plasma forming duct and at the anode. Experiments conducted with a specially designed MPU-M microplasma unit on metal with  $\delta > 0.3$  mm indicates the possibility of maintaining the welding current component constant. The use of modulated current in the arc enhances the latter's stability with

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USSR

BASANSKIY, V. V., et al, Avtomaticheskaya svarka, Sept 71, no 9, pp 40-42

each repeated pulse. The crystallization conditions of the weldpool are practically unaffected. Modulated current specifications are cited in a table. Tests conducted on both the welds and the parent metal of VT1-OM alloy show the same mechanical properties in both.

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