

USSR

UDC 669.141.241.2:621.746.5

BURDONOV, B. A., ANOKHINA, A. I., RYZHKOV, V. P., VAL'TER, V. A., and  
BRONFENMAKHER, A. M., Kazakh Metallurgical Plant

"The Quality of Small Ingots of Killed Steel"

Moscow, Metallurg, No 12, Dec 70, pp 17-19 .

Abstract: The optimum consumption of aluminum (300-400 g/ton) for the deoxidation of St.3 and St.6 steels poured to small ingots was determined. With an aluminum consumption of 300-400 g/ton and a pouring rate of 0.4 m/min or less, cracks do not generate and hairline cracks are not observed on the final rolled metal. An increase in the number of deoxidizers in the foundry ladle results in a greater concentration of oxide impurities. A linear dependence was established between the depth of the shrink hole and the bailing period. The possibility of using calcium carbide for desulfurization of steel in the ladle is demonstrated.

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UNCLASSIFIED

PROCESSING DATE--20NOV70

...A SERIES OF CONTACTLESS SYNCHRONOUS POWER GENERATORS UP TO 100 KW  
FOR WIND DRIVEN ELECTRIC POWER UNITS -U-  
AUTHOR--(U.S.)--ORUSOV, I.D., RYZHKOV, V.S., ZILBERSHTEYN, L.A., VOLCHKOV,  
V.K.

R

COUNTRY OF INFO--USSR

SOURCE--ELEKTROTEKHNIKA (ELECTRICAL ENGINEERING), 1970, NO 1, PP 56-58  
DATE PUBLISHED-----70

SUBJECT AREAS--ENERGY CONVERSION (NON-PROPULSIVE)

TOPIC TAGS--SYNCHRONOUS GENERATOR, WIND POWERED MOTOR, MAGNETIC CIRCUIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0252

STEP NO--UR/0292/70/000/001/0056/0058

CIRC ACCESSION NO--AP0130988

UNCLASSIFIED

CIRC ACCESSION NO--A0130928  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT. THE SPECIFIC OPERATING CONDITIONS OF GENERATORS IN WIND DRIVEN POWER PLANTS ARE ANALYZED. THE REQUIREMENT FOR DESIGNING A SPECIALIZED SERIES OF CONTACTLESS SYNCHRONOUS GENERATORS OPERATING AT THE INDUSTRIAL FREQUENCY IS PROVED. THE FOLLOWING SERIES OF NOMINAL POWERS IS ADOPTED: 1, 2, 4, 8, 16, 30 KW (ROTATIONAL SPEED 1500 RPM), 60, AND 200 KW (SPEED 1000 RPM). THE TYPE OF MACHINE WITH CLAW SHAPED ROTOR AND EXTERNAL MAGNETIC CIRCUIT IS SELECTED AS BEING OPTIMAL WITH REGARD TO A COMPLEX OF TECHNICAL AND ECONOMIC CRITERIA. THE CONFIGURATION IS ENCLOSED WITH NATURAL EXTERNAL COOLING. THE BASIC TECHNICAL SPECIFICATIONS OF THE GENERATOR SERIES IS PRESENTED (FROM THE RESULTS OF PROTOTYPE TESTS). A DESCRIPTION OF THE MACHINE CONSTRUCTION IS GIVEN. THE GENERATORS OF THIS SERIES ARE AT THE LEVEL OF THE MACHINES OF THE VERY BEST CONTEMPORARY SERIES WITH REGARD TO ENERGY, WEIGHT, AND SIZE CRITERIA AND HAVE VERY HIGH RELIABILITY.

UNCLASSIFIED

USSR

UDC 619:616.9-022.7+636.2+636.3+636.4+636.52/.58

SELIVANOV, A. V.; MARINKOVA, V. V.; RYZHKOVA, L. P.

"Comparative Study of the Immunity and Vaccinal Reaction of Cattle Immunized With Vaccine from Brucella Strain No 19 by Aerosol and Subcutaneous Methods"

V sb. Sb. nauchn. rabot. Sib. n.-i. vet. in-t (Siberian Scientific Research Veterinary Institute -- Collection of Scientific Works), No 17, 1970, pp 22-28 (from RZh-58. Zhivotnovodstvo i Veterinariya, No 4, Apr 71, Abstract No 4.58.630)

Translation: The level of immunity in animals vaccinated via aerosol 6-16 months after inoculation (upon infection in the conjunctiva with two and twenty times the infective dose of virulent Brucella) was not lower than in animals immunized subcutaneously with strain No 19 in a dose of 60 billion cells. Tests were conducted in an infection during the normal duration and development of brucellosis. Aerosol immunization of cattle with strain 19 vaccine is harmless and produces shifts in organs and tissues rich in lymphoid elements indicating an active immunological process.

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USSR

UDC: 621.396.677

VENDIK, O. G., RYZHKOVA, L. V.

"Matching of a Linear Phase Array of Waveguide Radiators in the Case of Wide-Angle Scanning in the E-Plane"

V sb. Antenny (Antennas--collection of works), v. 10, Moscow, "Svyaz", 1971, pp 3-11 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5B34)

Translation: The authors discuss a diagram of a linear antenna array of waveguide radiators in which the change in the reflection coefficient is compensated at the input of the system in the oscillatory sector of the radiation pattern. Circuit parameters are determined. Calculation of the reflection coefficient at the input as a function of the oscillatory angle of the radiation pattern shows that compensation improves matching considerably in a broad sector of oscillatory angles of the radiation pattern. Six illustrations, two tables, bibliography of four titles. Resumé.

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USSR

UDC: 621.396.677.4

RKZHKOVA, L. V. *R*

"Compensation of Forward and Reverse Mutual Coupling in an Infinite Straight Line of Radiators"

V sb. Antenny (Antennas--collection of works), Vyp. 8, Moscow, "Svyaz'", 1970, pp 28-39 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7B34)

Translation: An infinite straight line of radiators is represented as a network whose input terminals coincide with the inputs of real radiators, while the output terminals coincide with the outputs of the individual radiators. This makes it possible to express all elements of the scattering matrix of the line of radiators in terms of the coefficients of coupling between the input terminals. An investigation is made into the possibility of compensating the leakage of energy from some channels into the inputs of other channels, and of re-emission by apertures of the energy incident on them from other apertures. Three illustrations, bibliography of three titles. Resumé.

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USSR

UDC: 621.396.677.4

*R*  
RYZHKOVA, L. V.

"Simultaneous Compensation of Forward and Reverse Mutual Coupling in an Infinite Array of Radiators"

V sb. Antenny (Antennas--collection of works), Vyp. 8, Moscow, "Svyaz'", 1970, pp 40-46 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7B35)

Translation: A method is proposed for calculating the scheme of compensation for mutual coupling of the radiators in a flat array in the form of a system of openings interconnecting the supply inputs of all radiators in the array. It is shown that in a two-dimensional array it is possible to compensate simultaneously for the energy leakage from some channels into the inputs of others (reverse mutual coupling) and re-emission by apertures of the energy incident on them from other apertures (forward mutual coupling). One illustration, bibliography of four titles. Resumé.

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UDC 539.27:546.3

SIROTA, N. N., Academician of the Academy of Sciences Belorussian SSR, and  
RYZHKOVSKEY, V. M., Institute of Solid-State and Semiconductor Physics, Academy of Sciences Belorussian SSR, Minsk

"Neutron Diffraction Study of Magnetic Transformations in  $Mn_2As-Mn_2Sb$  System"

Moscow, Doklady Akademii Nauk SSSR, Vol 203, No 6, 1972, pp 1275-1278

Abstract: The article describes results of a neutron diffraction study of the structure and magnetic transformations in the quasibinary  $Mn_2As-Mn_2Sb$  system at temperatures of 78 to 650° K. The neutron diffractometer mounted on the research reactor of the Academy of Sciences Belorussian SSR, using an effective neutron wavelength of  $\lambda = 1.24 \text{ \AA}$ , was used for the neutron diffraction analysis. The magnetic state of the specimens was studied from the behavior of mixed nuclear-magnetic (001), (110), (101) reflexes in the case of ferrimagnetic ordering and magnetic (003), (101), (111) reflexes in the case of antiferromagnetic ordering. An analysis was also made of variations in

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SIROTA, N. N., and RYZHKOVSKIY, V. M., Doklady Akademii Nauk SSSR, Vol 203, No 6, 1972, pp 1275-1278

diffuse neutron scattering in the transition from a magnetic ordered to a disordered state. A phase diagram of magnetic transformations was constructed from the neutron diffraction data.

The magnetic-state diagram indicates that the formation of solid solutions leads to a drop in the magnetic transformation temperature at both edges of the quasibinary system. This drop is due to the difference in the types of magnetic ordering of the components. The system contains both ferrimagnetic and antiferromagnetic domains of two types: a) with the direction of the magnetic moments parallel to the axis C ( $F_i^+$ ,  $AF^+$ ); b) with magnetic moments situated in the basal plane ( $F_i^-$ ,  $AF^-$ ).

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UDC 541.67:535.34:542.943

VALITOVA, F. G., RYZHMANOV, Yu. M., and GAZETDINOVA, N. G., Kazan' Physical-Chemical Institute, Academy of Sciences, USSR

"Study of the Formation of Free Radicals in the Phosphonehydrazyl Series During an Oxidation Process by the EPR Method"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 7, Jul 73, pp 1491-1494

Abstract: Kinetics of the oxidation processes were studied by the method of EPR spectroscopy on a series of phosphonehydrazine derivatives; the first stage of the oxidation of the products has been recorded. The conclusion was reached that the phosphonehydrazine molecules are bound by a hydrogen bond into associated chains. The calculations carried out showed that the reason for the absence of the super fine structure split due to the  $31p$  nucleus is the fact that only about 1% of the spin density of  $sp^3$  hybridized orbital in  $31p$  phosphonehydrazyl radicals have s character.

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UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--INTERACTION OF LIQUID OXIDE PHASES WITH A CARBON MELT -U-  
AUTHOR--(03)-MAZHENOV, M.A., RYZHONIKOV, D.I., FILIPPOV, S.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(1) 13-17  
DATE PUBLISHED-----70

R

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MOLTEN METAL, IRON OXIDE, CARBON, SLAG

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/0949

STEP NO--UR/0148/70/013/001/0013/0017

CIRC ACCESSION NO--AT0105818

UNCLASSIFIED

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CIRC ACCESSION NO--AT0105818

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE ROTARY CRUCIBLE METHOD WAS USED TO DET. THE INTERACTION OF MOLTEN OXIDE PHASES WITH FeO AT HIGH TEMPS. THE ROTATION VELOCITY OF THE CRUCIBLE WAS 380-570 RPM. THE PRESSURE CHANGES IN THE SYSTEM DURING THE INTERACTION OF A C MELT WITH THE SLAG CHARGE CONTG. 55.5-83.5PERCENT FeO ARE GIVEN, AS WELL AS THE EFFECTS OF TEMP. AND OF THE ROTATION OF THE CRUCIBLE.

UNCLASSIFIED

USSR

UDC 621.777.07 <sup>4</sup>

GUN, G. Ya., POLUKHIN, P. I., YAKOVLEV, V. I., GOLOVINOV, M. F., PRUDKAVSKIY,  
B. A., KORSETSKIY, G. M., RYZHOV, A. F., and BRUNILIN, A. I.

"Optimal Die Designing for Pressing Aluminum Alloys"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya,"  
1970, pp 139-199

Translation: Questions of optimal die designing are considered using a  
computer. On the basis of statistical processing of a number of existing  
dies and theoretical and experimental research, a method is proposed for  
calculating the working belts and location of the center of gravity of a  
section on the die. Five figures and three tables.

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Aluminum and Its Alloys

USSR

UDC 669.71.018.9.4

GOROKHOV, V. P., GUSEV, A. F., OSADCHIY, V. A., RYZHOV, I. V.,  
and ZHALNIN, I. A.

"Special Machine for Manufacture of Large -Area Power Switch-  
boards With a Considerable Number of Holes"

Rekhnol. legkikh splavov. Nauchno-tekhn. byul. VILSa (Technology  
of Light Alloys -- Scientific and Technical Bulletin of All-Union  
Institute of Light Alloys), 1970, No 5, pp 130-131 (from RZh-  
Metallurgiya, No 3, Mar 71, Abstract No 3 G166 by G. SVOYTSEVA)

Translation: A table-model special machine for the manufacture  
of perforated power switchboards used in the refining of aluminum  
alloys by the injection of nitrogen and argon has been manufac-  
tured and put into production. The machine makes possible the  
high-efficiency drilling of holes 0.3 to 0.5 mm in diameter in  
graphite, steel, and titanium up to 5 mm in thickness.

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Radiobiology

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USSR

UDC 577.15.016

DROZHENNIKOV, V. A., GUBERNIYEV, M. A., RYBAKOV, N. I., RYZHOV, N. I., and MASHINSKAYA, T. Ye., Scientific Research Laboratory of Experimental Immunobiology, Academy of Medical Sciences USSR

"Effect of Ultraviolet and Ionizing Radiation on E. coli K12 ( $\lambda$ ) Nuclease Activity"

Moscow, Biokhimiya, No 5, 1971, pp 883-888

Abstract: The intensity of activity of endonuclease I, exonuclease III, and phage-specific exonuclease of E. coli K12 ( $\lambda$ ) was studied after exposure to different doses of ultraviolet radiation and high-energy protons. The activity of the first two enzymes was not affected by ultraviolet radiation or high-energy protons at doses causing maximum induction of vegetative phage. The absence of an effect is attributed to the fact that these agents, unlike a chemical mutagen, such as mitomycin C, do not result in degradation of the ribosomes of the bacterial cell. The activity of exonuclease specific for phage  $\lambda$  was related to the degree of induction of vegetative phage, reaching a peak at the time of lysis of irradiated cells. Exonuclease activity at this time was much lower after the use of high-energy protons than after ultraviolet radiation. Analysis of the concentration of intracellular DNA

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DROZHENNIKOV, V. A., et al., Biokhimiya, No 5, 1971, pp 883-888

and total protein in material not incubated after exposure to the inducing agents showed no change in these indexes.

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UDC 577.15.016

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DROZHENNIKOV, V. A., GUBERNIYEV, M. A., RYBAKOV, N. I., RYZHOV, N. I., and MASHINSKAYA, T. YE., Scientific Research Laboratory of Experimental Immunobiology, Academy of Medical Sciences USSR, Moscow

"Investigation of Nuclease Activity of E. Coli (λ) After Exposure to Ultraviolet Light and Ionizing Radiation"

Moscow, Biokhimiya, Vol 36, No 5, 1971, pp 883-888

Abstract: The activities of endonuclease I, exonuclease III, and the phage-specific exonuclease of the lysogenic E. Coli K12 (gamma) strain were studied. After exposure to various doses of ultraviolet light 6.46 erg/mm<sup>2</sup>/sec) and 645 MeV protons 60 rad/sec), induction of bacteriophages under these conditions was also investigated. Doses which evoke maximum induction of bacteriophages do not change the activity of either endonuclease I or endonuclease III. On the other hand, the activity of the phage-specific exonuclease is proportional to the induction of bacteriophages, reaching its maximum just prior to lysis of the irradiated cells. As a result, curves representing the lethal effects and bacteriophage induction caused by irradiation with ultraviolet light and with high energy protons have different shapes. After exposure to ultraviolet light, a spike-shaped maximum induction occurs at a dose of 250 erg/mm<sup>2</sup>. After exposure to high energy protons, the induction

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DROZHENNIKOV, V. A., et al., *Biokhimiya*, Vol 36, No 5, 1971, pp 883-888  
curve has a plateau extending from 50 to 100 Krad.

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UDC 621.316.1.017.2.001.24:681.3

USSR

LEDYANKIN, L. P., AGEYEV, A. I., PRAKHIN, B. YA., RYZHOV, O. I.

"Calculating Electric Power Losses in High-Voltage Municipal Networks on the Ural-2 Computer"

V sb. Tekhn. progress v elektrosnabzh. gorodov (Technical Progress in Electric Power Supply of the Cities -- collection of works), Leningrad, Energiya Press, 1970, pp 20-23 (from RZh-Elektrotehnika i Energetika, No 4, Apr 71, Abstract No 4 Ye 285)

Translation: A method and algorithm for a program to calculate the electric power losses in the open high-voltage municipal networks on the Ural-2 digital computer are described. The electric power losses are determined by the load charts taken for groups of consumers with the same type of load. Calculations were performed by means of this program for the Ivanovo Underground Municipal Network. The calculations make it possible to offer recommendations for reduction of electric power losses. There is 1 illustration and a 2-entry bibliography.

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RYZHOV, O. S., Moscow

"The Nonlinear Acoustics of Chemically Active Media"

Prikladnaya Matematika i Mekhanika, Vol 35, No 6, 1971, pp 1,023-1,037.

ABSTRACT: A study is made of the nonlinear propagation of perturbations in reacting mixtures, the change in composition of which is determined by the occurrence of a unique chemical reaction. Two basic types of processes are distinguished, depending on the ratio of the macroscopic time to the relaxation time: quasifrozen and quasiequilibrium processes. Media are also studied in which the frozen and equilibrium speeds of sound are similar. Solutions are constructed for asymptotic equations describing the parameters of the flow behind shockwaves and in rarefaction waves. A mathematical analogy is formulated concerning the influence of the rates of chemical conversions and the "longitudinal viscosity" and heat conductivity on the structure of the perturbed field.

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1/2 017 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--NEW REAGENTS FOR THE PHOTOMETRIC DETERMINATION OF MERCURY -U-

AUTHOR--(04)--CHERKESOV, A.I., TONKOSHKUROV, V.S., POSTORDNKO, A.I., RYZHOV,

V.N.  
COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 466-73

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOTOMETRIC ANALYSIS, CHEMICAL ANALYSIS, MERCURY

CONTROL MARKING--NO RESTRICTIONS

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STEP NO--UR/0075/70/025/003/0466/0473

CIRC ACCESSION NO--AP0126135

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126135

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TWO NEW REAGENTS ARE SUGGESTED FOR DETN. OF HG(II) IN ACID MEDIA: AZOXINE ASH (4, (8, HYDROXY, 7, QUINOLYLAZO), 5, HYDROXY, 2, 7, NAPHTHALENEDISULFONIC ACID) (I) AND AZOXINE TS (DI, K 3, (8, HYDROXY, 7, QUINOLYLAZO), 1, 5, NAPHTHALENEDISULFONATE) (II). THEIR SYNTHESIS IS DESCRIBED. I IS SOL. IN H SUB2 O AND ALC., LESS IN ME SUB2 CO. THE ACID SOLN. HAS A CINNAMON COLOR. II IS WELL SOL. IN H SUB2 O AND ALC. AN ACID SOLN. HAS YELLOW COLOR. THEIR ACID DISSOCN. CONSTS. OF THE OH GROUPS WERE DETD. SPECTROPHOTOMETRICALLY FOR I AS K SUB1 EQUALS 2.01 TIMES 10 PRIME NEGATIVE9, K SUB2 EQUALS 1.65 TIMES 10 PRIME NEGATIVE13, FOR II K SUB1 3.8 TIMES 10 PRIME9. HG REACTS WITH BOTH REAGENTS IN A 1:2 RATIO. THE MOLAR ABSORPTIVITIES FOR THE COMPLEXES ARE 3.54 TIMES 10 PRIME4 AND 4.38 TIMES 10 PRIME4 AT 540 NM, RESP. THE TOTAL INSTABILITY CONSTS. ARE, RESP., FOR I 2.37 TIMES 10 PRIME NEGATIVE12 AND FOR II 4.27 TIMES 10 PRIME NEGATIVE10. BEER'S LAW IS OBEYED FOR 1-6 MU G HG-ML NO SUB3 PRIME NEGATIVE, SO SUB4 PRIME2 NEGATIVE, ALK. EARTH AND ALKALI METALS, PB, AL, BE, ZN, CD, SC, IN, GA AND NOT VERY LARGE AMTS. OF FE(III), BI, CU, NI, AND CO DO NOT INTERFERE WITH THE PHOTOMETRIC DETN. OF HG; BOTH REAGENTS CAN BE ALSO USED FOR THE MERCURIMETRIC DETN. OF CHLORIDES. A PHOTOMETRIC METHOD IS SUGGESTED FOR THE DETN. OF SMALL AMTS. OF HG, WITH II AT PH 1.6 IN PURE SOLNS. AND IN ARTIFICIAL MIXTS. FE, CU, AND NI ARE MASKED WITH K OXALATE.

FACILITY: SARATOV PEDAGOG. INST., SARATOV, USSR.

UNCLASSIFIED

USSR

UDC 621.317.757

RYZHOV, V. P., CHERNYSHEV, V. M., and TSVETKOV, F. A.

"Analysis of the Spectra of Signals With Respect to Khaar's Functions"

Tr. Taganrog. radiotekhn. in-ta (Works of the Taganrog Radio-Engineering Institute), 1972, vyp.28, pp 15-21 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 A286)

Translation: The authors note the advantages of the orthogonal expansion of signals which are realized by a unit based on pulse technology elements, for example according to Khaar's functions, in comparison to the known orthogonal expansions according to the functions of Laguerre, Legendre, and Bessel. It is shown that the technique for the realization of orthogonal analyzers operating according to Khaar's functions is accomplished on the basis of electronic keys which are controlled by rectangular voltages. The use of high-speed, pulsed units and careful execution of electronic keys, integrators, and readout circuit makes it possible to obtain an error which has been brought close to that of the value for the maximum coefficient of expansion and does not exceed a percentage fraction in the frequency range up to hundreds of kilocycles. The possibility of electronic re-tuning of the studied analyzers makes it possible to utilize them in the production of adaptive systems for measurement, control, and automatic control. A.K.

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USSR

UDC: 621.391.8

ZAVADOVSKIY, A. Z., KOZHUKHAR', S. V., and RYZHOV, V. P.

"Optimal Bandwidth for FM Pulse Reception on a Reverberational Noise Background"

Kiev, Izvestiya VUZ -- Radioelektronika, Vol. 13, No. 9, 1970, pp 1156-1158

Abstract: Since the realization of optimal filters is technically difficult, nonoptimal systems for processing complex signals in the form of a "band filter, detector, and low-frequency filter" strip are often used. The width of the band filter is then usually chosen equal to the width of the signal spectrum. This article, however, demonstrates that in this type of receiver, the optimal bandwidth should be less than the signal spectrum width. The authors take, as the index of the noise immunity, the improvement in signal-to-noise ratio with the passage of signal and noise through the band filter. The signal at the receiver input is taken to be

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a pulse of rectangular envelope with a definite amplitude, duration, and a linearly varying filling frequency having a specified deviation. For a signal in which the product of the pulse duration and the frequency deviation is greater than one, it may be assumed that the envelope of the signal spectrum is square-shaped and the spectral width is equal to the frequency deviation. It is assumed also that the band filter is in the form of a single oscillatory circuit. The authors derive an expression for the change in the ratio of the maximum signal amplitude to the effective noise value when the signal and noise pass through the filter circuit. Since this expression is also the value of the improvement in the signal-to-noise ratio noted above, it is investigated for an extremum and found to have a maximum. The optimum band width is thus derived. This result was experimentally verified using an FM pulse oscillator with a pulse duration of about 1 to 20 microseconds and a frequency deviation of up to 10 kHz for an average filling frequency of 50 kHz. The FM nonlinearity was no more than 5%, and the band filter oscillatory circuit had a resonant frequency of 50 kHz and a Q of 120.

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Receivers and Transmitters

USSR

ZAVADOVSKIY, A. Z., KOZHUKHAR', S. V., RYZHOV, V. P.

"Optimal Passband of a Linear-FM Pulse Receiver in the Presence of Reverberation Noise"

Kiev, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

Translation: The use of complex signals not only improves the resolution capacity of a system but also increases its immunity to reverberation noise [1]. However, great technical difficulties are involved in the use of optimal filters for complex signals. Nonoptimal systems, in the form of a band-filter--detector--LF-filter channel, are hence often used for processing complex signals. The passband of the band filter is then selected usually equal to the width of the signal spectrum [2]. We will show that with this receiver structure and with the use of linear-FM pulses, the optimal passband must be narrower than the width of the signal spectrum.

We will take an improved signal-to-noise ratio as the means of noise suppression in the passage of a signal and noise through a band filter.

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ZAVADOVSKIY, A. Z., et al, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

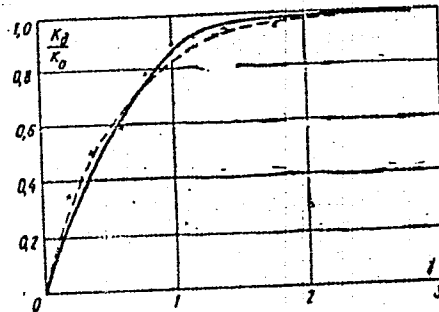


Fig.1

We will examine the signal at the receiver output in the form of a pulse with a rectangular envelope with an amplitude  $U_c$ , duration  $T$ , and a linearly varying occupant frequency with deviation  $F$ . With a signal base  $m = FT \gg 1$ ; we may consider that the signal spectrum envelope is rectangular and that the width of the spectrum is equal to the frequency deviation.

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ZAVADOVSKIY, A. Z., et al, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

We will assume that the band filter is in the form of a single oscillation network with an energy bandpass  $\Delta f$ . To determine the maximum amplitude value of the signal at the filter output, we will use the dependency of the maximum of the network dynamic transfer factor  $K_A$  on the value  $\gamma = \frac{2}{\sqrt{\pi}} \frac{\Delta f}{F} \sqrt{m}$ , cited in [3].

Because the function  $K_A(\gamma)$  is very complex, we will approximate it with the following expression:

$$K_A = K_0(1 - e^{-1.7\gamma}), \quad (1)$$

The function  $K_A(\gamma)$  computed with precise formulas [3] and its approximate curve are given in figure 1.

If we regard reverberation interference as the result of superimposition of signals reflected from a multitude of diffusers, we can consider [1] its random process with a distribution close to the normal and with a power spectral density of practically rectangular shape (with  $m \gg 1$ ) and equal to:

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ZAVADOVSKIY, A. Z., et al, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

$$S = \frac{\rho U_c^2}{F}, \quad (2)$$

where  $\rho$  - const.

Problems connected with the instability of reverberation noise are not discussed in this article.

We will use the following formula to determine the noise voltage at the network output:

$$U_w = K_0 \sqrt{S \Delta f} = K_0 U_c \sqrt{\rho \frac{\Delta f}{F}}. \quad (3)$$

Using (1), (2), and (3), we will find the change in the relationship of the maximum signal amplitude to the effective value of the noise during the passage of the signal and the noise through the circuit (bettering of the signal-to-noise ratio)

$$n = \sqrt{\frac{F}{\Delta f}} \left( 1 - e^{-1.9 \frac{\Delta f}{F} \sqrt{m}} \right). \quad (4)$$

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ZAVADOVSKIY, A. Z., et al, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

The results of calculation with formula (4) are shown in figure 2 for  $m = 50$ , 100, and 200.

Investigating expression (4) at the extremum reveals that  $n$  has a maximum in the region

$$\Delta f_{\text{opt}} = \frac{0.66 F}{\sqrt{m}} \quad (5)$$

equal to

$$n_{\text{max}} = 0.88 \sqrt[4]{m} \quad (6)$$

Let us compare the signal-to-noise ratio at the circuit output with the corresponding ratio at the output of the optimal filter

$$\frac{n}{n_{\text{opt}}} = \frac{n}{\sqrt{m}} = \left(1 - 0.19 \frac{\Delta f}{F} \sqrt{m}\right) \sqrt{\frac{F}{\Delta f m}} \quad (7)$$

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USSR

ZAVADOVSKIY, A. Z., et al, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

We will now determine the relation between the duration of the signal at the input of the circuit using the principle of frequency equivalency and the time changes in the signal as it passes through the linear circuit. [4]

$$t_n = T \frac{\Delta f_d}{F} \quad (8)$$

where  $\Delta f_d$  is the dynamic passband of the circuit;  $t_n$  is the output pulse duration determined at the same level (0.707) as the passband.

In determining  $\Delta f_d$  we will use the dependencies  $\frac{\Delta f_d}{\Delta f_{\text{МНН}}} = \varphi(\gamma)$  adduced in [3],

where 
$$\Delta f_{\text{МНН}} = 0,8 \frac{\sqrt{m}}{T} \quad (9)$$

Calculated with formulas (8) and (9), the dependency of  $\frac{F}{\Delta f}$  on  $\frac{t_n}{T}$  is demonstrated in figure 3 for  $m = 50, 100, \text{ and } 200$ . The minimum value for the duration of the output pulse is equal to  $t_{\text{МНН}} = \frac{T}{\sqrt{m}}$  and is located in the

region of the maximum of the curves  $n \left( \frac{F}{\Delta f} \right)$ .

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USSR

ZAVADOVSKIY, A. Z., et al, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

For an experimental check of the derived relation, a linear-FM pulse generator was used with controlled pulse duration (from one to 20 msec) and with a frequency deviation of up to 10 kHz, with the center frequency occupying 50 kHz, and with FM nonlinearity not exceeding 5%. The investigated oscillating circuit had a resonance frequency of 50 kHz and a Q factor of 120. The dynamic transfer factor of the network and the duration of the pulse at the output with a constant passband (for  $m = 100$ ) was investigated. An oscilloscope was used to do the measurements. The experimental values are shown in figures 1 and 3 with crosses.

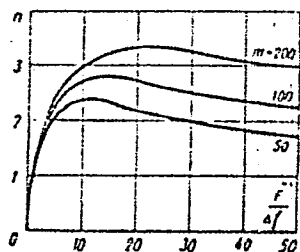


Fig. 2

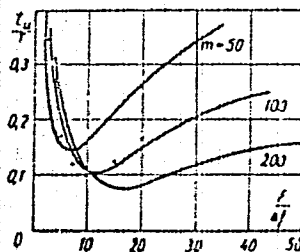


Fig. 3

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USSR

ZAVADOVSKIY, A. Z., et al, Izvestiya VUZ Radioelektronika, No 9, Sep 70, pp 1156-1158

Thus, using formula (5) to select the circuit passband, minimal duration of the output pulse and a maximum signal-to-noise ratio are provided. In this case, the signal-to-noise ratio and the duration of the output pulse are worse than when using the optimal filter approximating the factor  $\sqrt{m}$ . However, the discussed system is designed considerably simpler than the optimal.

Bibliography:

1. Ol'shevskiy, V. V., Statistical Properties of Sea Reverberation. Izd-vo "Nauka," 1966.
2. Malyarevskiy, N. M., Krukovskiy-Sinevich, K. B., Comparative Noise Immunity of a Nonoptimal Detection System in the Presence of Signals with Noise and FM Content, Izvestiya VUZ SSSR Radioelektronika, 1969, Vol 12, No 1, p 51
3. Martynov, V. A., Selikhov, Yu. I., Panoramic Receivers and Spectrum Analyzers, Izd-vo, "Sovetskoye radio," 1964.
4. Tikhonov, V. I., Statistical Radio Engineering, Izd-vo "Sovetskoye radio," 1966.

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AUTHOR-- RYZHOV, YU. CORRESPONDENT

TITLE-- A SEA-GOING CATAMARAN

NEWSPAPER-- VODNYI TRANSPORT, FEBRUARY 3, 1970, P 2, COLS 1-5

ABSTRACT-- THE "EXPERIMENT", A SEA-GOING FISHING CATAMARAN, HAS PASSED ITS TRIAL TESTS IN THE BALTIC AND NORTHERN ATLANTIC HAVING SAILED MORE THAN 21,000 MILES. THE CONSTRUCTION OF THE SHIP WAS PROPOSED IN 1964 BY DOCTOR OF TECHNICAL SCIENCES BY A. ARKHANGORODSKIY, PROFESSOR AT THE KALINGRAD TECHNICAL INSTITUTE OF THE MINISTRY OF FISHERIES, U.S.S.R., YU. KADILNIKOV, CHIEF OF THE SPECIAL EXPERIMENTAL-DESIGN BUREAU OF THE ATLANTNIRO, S. STUDENETSKIY, DIRECTOR OF THE ATLANTNIRO, N. SADIN, I. SEMENOV, DOCENT E. EYTVID, YE. GRINKO AND B. GRUDNEV.

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ACCORDING TO A. FERIN, ASSOCIATE OF THE KALININGRAD TECHNICAL INSTITUTE, THE CATAMARAN BRIDGE WAS RATED FOR LOADS UP TO 900 KM PER SQUARE CM.

SPECIALISTS WHO CONDUCTED THE TEST OF THE "EXPERIMENT" ARE OF THE OPINION THAT THE CATAMARAN DESIGN MUST BE EMPLOYED IN THE CONSTRUCTION NOT ONLY OF FISHING VESSELS BUT SALVAGING VESSELS, HYDROGRAPHIC AND WEATHER VESSELS, AS WELL AS RESEARCH VESSELS.

THE MINISTER OF THE FISHERIES HAS SIGNED THE ORDER FOR THE CONSTRUCTION OF THE "EXPERIMENT-2" AT THE SVETLOVSKIY SHIP REPAIR PLANT.

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UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--EMISSION AND PROPAGATION OF ELECTROMAGNETIC WAVES IN CHAOTICALLY

INHOMOGENEOUS MEDIA -U-

AUTHOR--(02)--RYZHOV, YU.A., TAMOYKIN, V.V.

*R*

COUNTRY OF INFO--USSR

SOURCE--IZVUZ RADIGFIZIKA, VGL. 13, NO. 3, 1970, P. 356-387

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTROMAGNETIC WAVE, RADIO EMISSION, WAVE PROPAGATION,  
ANTENNA, PERTABATION METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1991/0146

STEP NO--UR/0141/70/013/003/0366/0387

CIRC ACCESSION NO--AP0110112

UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--02DCT70

CIRC ACCESSION NO--AP0110112

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. SURVEY OF PROBLEMS CONCERNING THE ELECTRODYNAMICS OF RANDOMLY INHOMOGENEOUS MEDIA, WITH EMPHASIS ON ASPECTS RELATED TO THE MEAN FIELD AND TO THE CONCEPT OF THE EFFECTIVE PERMITTIVITY TENSOR. THE MEAN FIELD AND THE EFFECTIVE PERMITTIVITY TENSOR ARE ANALYZED FOR ISOTROPIC AND ANISOTROPIC RANDOMLY INHOMOGENEOUS MEDIA. THE PERTURBATION METHOD IS APPLIED, AND THE LIMITING CASES OF SMALL AND LARGE SCALE INHOMOGENEITIES ARE TREATED. AN ISOTROPIC MEDIUM WITH ANISOTROPIC INHOMOGENEITIES IS ANALYZED, AND ATTENTION IS GIVEN TO THE RADIATION FROM AN ELEMENTARY ELECTRIC DIPOLE IN AN INHOMOGENEOUS MEDIUM. THE RADIATION FROM A THIN METALLIC ANTENNA IS ALSO EXAMINED, TOGETHER WITH THERMAL EMISSION AND THE EMISSION FROM A UNIFORMLY MOVING CHARGE IN A MEDIUM WITH INHOMOGENEITIES.

FACILITY: GOR'KOVSKII

GOSUDARSTVENNYI UNIVERSITET, GORKI, USSR.

UNCLASSIFIED

USSR

UDC: None

RYZHOV, Yu. A. and TAMOYKIN, V. V.

"Electromagnetic Wave Radiation and Propagation in Chaotic Nonhomogeneous Media"

Gorkiy, Izvestiya VUZov SSSR Radiofizika Vol 13, No 3, 1970, pp 356-387

Abstract: This is a review article dealing with a subject directly related to many problems in astronomy, radio astronomy, radio navigation, radar, sonar, communications, solar physics, the interplanetary medium, the earth's ionosphere, acoustics, optics, etc. The review concentrates on problems in the electrodynamics of randomly nonhomogeneous media. It is divided into three sections: the first concerns the average field in an isotropic medium with random nonhomogeneities; the second relates to anisotropic chaotically nonhomogeneous media; the third concerns electromagnetic radiation in a medium with random nonhomogeneities. Some of the items discussed are: the tensor of the medium's

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USSR

RYZHOV, Yu. A., et al, Izvestiya VUZov SSSR Radiofizika Vol 13,  
No 3, 1970, pp 356-387

dielectric permeability; an approximation of the perturbation  
method; the magnetoactive plasma; and heat radiation in a chao-  
tically nonhomogeneous medium.

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USSR

RYZHOV, Yu. M.

"Spectral Conditions of Orthogonality of Gaussian Measures Corresponding to Stable Processes"

Teoriya Veroyatnostey i Mat. Stat. Mezhd. Nauch. sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], 1972, No 7, pp 128-131 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V150 by the author).

Translation: Suppose  $\xi_1(t)$  and  $\xi_2(t)$ ,  $t \in [0, T]$  are stable, mean-square continuous Gaussian processes,  $\mu_{\xi_1}$  and  $\mu_{\xi_2}$  are measures in the functional space corresponding to these processes,  $R_1(\tau)$  and  $R_2(\tau)$  are their correlation functions. If the limit

$$\lim_{\tau \downarrow 0} \frac{R_1(0) - R_1(\tau)}{R_2(0) - R_2(\tau)}$$

does not exist, or exists but is not equal to 1, measures  $\mu_{\xi_1}$  and  $\mu_{\xi_2}$  will be orthogonal. Considering this condition, this work produces conditions for singularity of measures  $\mu_{\xi_1}$  and  $\mu_{\xi_2}$  in terms of spectral characteristics 1/2



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RYZHOV, Yu. M., Teoriya Veroyatnostey i Mat. Stat. Mezhd. Nauch. sb.  
1972, No 7, pp 128-131.

teristics of the processes  $\xi_1(t)$  and  $\xi_2(t)$ .

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USSR

RYZHOV, Yu. M.

"One Theorem of Existence and Uniqueness for Stochastic Differential Equations"

Teoriya Veroyatnostey i Mat. Stat. Mezhd. Nauch. sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], 1972, No 7, pp 122-127 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V128 by the author).

Translation: The existence and uniqueness of the solution of a stochastic differential equation

$$d\zeta(t) = a(t, \zeta(t)) dt + \sigma(t, \zeta(t)) d\eta(t),$$

are proven, where the coefficients  $a(t, x)$  and  $\sigma(t, x)$  satisfy the condition

$$|a(t, x) - a(t, y)|^2 + |\sigma(t, x) - \sigma(t, y)|^2 < C(t) |x - y|^2,$$

$C(t)$  is a random function, continuous with probability 1, while  $\eta(t)$  is the process of Brownian motion or a D-martingale.

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USSR

UDC: 519.21

RYZHOV, Yu. M.

"On the Existence and Uniqueness of the Solution of a Stochastic Differential Equation With Gaussian Process Differential"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1971, vyp. 5, pp 107-115 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V114)

Translation: The author proves a theorem on the existence and uniqueness of the solution of the stochastic differential equation

$$d\zeta(t) = a(t, \zeta(t)) dt + \sigma(t, \zeta(t)) d\xi(t),$$

where  $\xi(t)$ ,  $t \in [0, T]$  is some Gaussian process from the class containing such processes as those which are stationary with rational-fraction spectral density. Author's abstract.

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USSR

UDC: None

YERMOLOV, I. N., VOPIKIN, A. Kh., and RYZHOV-NIKONOV, V. I.

"A Device for Ultrasonic Defectoscopy"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obrastysy, tovarnye znaki, No 4, 1973, p 98, No 363911

Abstract: The distinctive feature of this device for use in defect-locating equipment is a second oscillograph indicator with scanning proportional to the change in frequency of the pulse signal filling. This has the effect of improving the accuracy of determining the form and dimensions of the defects. No illustration of the circuit is given.

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USSR

UDC: 681.327

BOCHKIN, Yu. Ya., ZHIVOV, N. P., KUBANIK, Yu. Z., MOROZOV, V. Ye., RYZI-KOV, M. I., Central Scientific Research Institute of Large-Scale Automation

"Pneumoelectronic Accumulator of Statistical Information"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 13, May 72, Author's Certificate No 335705, Division G, filed 29 Jun 70, published 11 Apr 72, p 211

Translation: This Author's Certificate introduces a pneumoelectronic accumulator of statistical information. Connected to the input channels is a pneumocommutator controlled by an address selection module. This commutator is connected in series to a normalizer. The accumulator also contains an analog-digital converter connected through a counter to a data output module whose output is connected to a printer and a puncher. The accumulator also includes a control unit connected to a timer, to the analog-digital converter, and to the data output module. As a distinguishing feature of the device, it is characterized by the range of signals which can be received and processed. The device is an electric input circuit commutator, pneumoelectronic accumulator in the device. The con-

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BOCHKIN, Yu. Ya. et al., USSR Author's Certificate No 335705

rolling input of the electric signal commutator is connected to the address selection module, and the output is connected through the extra normalizer to the adder. The output of the adder is connected to the analog-digital converter, and a second input of the adder is connected through the main normalizer to the pneumocommutator.

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USSR

UDC 536.243

GORLOV, I. G. and RZAYEV, A. I.

"Hydrodynamic and Heat Transfer Characteristics of Flow of Liquids Through Tube Coils"

Moscow, Teplo-Massopernos v Odn-i Dvukhfaznykh Sredakh, 1971, pp. 71-77

Abstract: The review of literature on the hydrodynamics and heat transfer with flow of liquid-vapor mixtures through the steam generator tube coils is made.

It is pointed out that the liquid phase is concentrated on the inner side of the bend rather than on the outer one where it would be moved by centrifugal action. Flow visualization experiments indicated that the liquid is moved to the inner side of the bend by the action of secondary flows which are directed away from the axis of the bend at the center of the tube section, toward the axis of the bend near the walls (see fig. 1).

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GORLOV, I. G. and RZAYEV, A. I., *Teplo-Massopernos v Odnno-i Dvukhfaznykh Sredakh*, 1971, pp 71-77

Pressure losses for two phase flow through tube coils are given (fig. 2 and 3).

Graphs of heat transfer for two regimes are shown. One regime refers to steam generation from a liquid film; the other one to steam bubbling through the liquid.

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USSR

UDC: 621.396.945

EZAYEV, G. I., KENGERLINSKIY, Yu. S., KULESHOV, V. N.

"On Some Characteristics of an Interference-Free Receiver for a Wireless Electrical Communications Channel with Erasure"

Za tekhn. progress (Toward Technical Progress), 1970, No 5, pp 1-3 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11A251)

Translation: The paper gives a report on a theoretical study of an optimum receiver designed for isolating a signal from noises in the case of transmission over a wireless communications channel with erasure. Use of optimum phase AFC synthesized on the criterion of minimum mean square measurement error makes it possible to improve interference killing for reception of a signal which contains information on the rotational speed of a turbodrill. A receiver based on this principle is optimum only at the rated signal-to-noise ratio. The optimum receiver is a narrow-band high-speed unit with transient processes lasting no more than 2.5 seconds. Expressions are given for the variances of the phase and frequency errors of the receiver as a function of its parameters. The requirements for precision in realizing the optimum parameters are determined. Four illustrations, one table, bibliography of four titles. A. I.

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USSR

UDC: None

RZAYEV, K. I. and CRUDZHEVA, Sh. O.

"Temperature Dependences of TlSe and GaSe Monocrystal Elastic Constants"

Baku, Izvestiya Akademii Nauk Azerbaydzhanskoy SSR--Seriya fiziko-tekhnicheskikh i matematicheskikh nauk 1970, No. 3, pp 76-78

Abstract: The determination of the behavior of monocrystal elastic constants as functions of temperature is important because of the light it may shed on the nature of the atomic forces in solid bodies. This article investigates this behavior on the basis of data the authors gathered on the velocity of propagation of ultrasonic waves and from the density computed from data on expansion due to heat. The temperature dependences of TlSe and GaSe monocrystals are given in the forms of equations and curves, which show the dependences to be linear. The curves furnish additional proof of the anharmonicity theory, which states that the weaker the connection between atoms and the lower their mass, the stronger the anharmonic effect.

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UDC 621.315.592

USSR.  
BLASHKU, A. I., VOLTAKS, B. I., BURDIYAN, I. I., DZHAFAROV, T. D., BZAYEV, M. A.

"Temperature and Concentration Dependencies of the Diffusion Coefficient of Zinc in Gallium Antimonide"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 467-472

Abstract: In order to exclude the concentration dependence of the diffusion coefficient in each separate sample and discover the migration mechanism of zinc in gallium antimonide, a study was made of diffusion by the isoconcentration diffusion method. The chemical diffusion of zinc in GaSb specimens alloyed with tellurium with different concentrations was also investigated.

Radioactive isotopes were used to investigate the chemical and isoconcentration diffusions of <sup>65</sup>Zn in n-type and p-type gallium antimonide alloyed with tellurium or zinc in the temperature range of 510-660° C. During chemical diffusion, the effective diffusion coefficient ( $D_{eff}$ ) depends linearly on the concentration. As follows from experiments in electron transfer, zinc in gallium antimonide is shifted in the form of positive ions with an effective charge close to +1. A model is proposed for explaining the observed behavior of zinc in gallium antimonide.

During chemical diffusion, the values of  $D_{eff}$  are less than during

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BLASHKU, A. I., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 467-472

isococoncentration diffusion, and with an increase in temperature, the difference in the values of  $D_{\text{eff}}$  decreases. It was proposed that the observed decrease in  $D_{\text{eff}}$  during chemical diffusion may be the result of the effect of braking internal electric fields occurring during diffusion of zinc in n-type gallium antimonide. The effect of the zinc vapor pressure on diffusion was also investigated. The diffusion mechanism is of a dissociative nature. The decrease in the effective diffusion coefficient in n-type GaSb heavily alloyed with tellurium can be connected with the effect of both electron-hole interaction and complex formation between the zinc and tellurium on diffusion [A. I. Blashku, et al., FIP, No 5, 755, 1971].

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USSR

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UDC 616-001.17-07:[616.423+616.42-008.839.6]-07

RZAYEV, N. A. and FARMANOV, R. T., Azerbaydzhan Research Institute of Hematology and Blood Transfusion

"Rate of Lymph Flow and Total Protein Content of Lymph From the Thoracic Duct in Thermal Burns"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 6, 1969, pp 31-35

Abstract: Experiments were performed on dogs using a vacuum apparatus designed by the authors to obtain lymph from the thoracic duct while simultaneously recording the rate of lymph flow. Soon after the burn was inflicted, the general condition of the animals deteriorated as the lymph flow accelerated from the thoracic duct and the total protein content of the lymph increased. Thereafter the rate of flow tended to become normal but the protein content remained high. It was not until 15-20 days later, when the animals' general condition improved and the wound healed, that the rate of lymph flow and protein content returned to normal. The two phenomena are thought to be a protective-compensatory reaction to the trauma, aimed at restoring the regular quantitative relationships between body fluids, especially in the lymphatic system, which evidently plays a major role in the pathogenesis of burn disease.

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1/2 018 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--ALKYLATION OF PHENOL BY A PETROLEUM DISTILLATE OBTAINED FROM BAKU  
RAW MATERIAL IN THE PRESENCE OF A KU-2 ION EXCHANGE RESIN -U-  
AUTHOR-(04)-FATULLAYEV, A.N., GADZHIYEVA, Z.K., GSANDV, D.G., RZAYEV, R.G.

COUNTRY OF INFO--USSR

SOURCE--AZERB. NEFT. KHOZ. 1970, (1), 35-6

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--LUBRICATING OIL, LUBRICANT ADDITIVE, PHENOL, ALKYLATION, CRUDE  
OIL, PETROLEUM DEPOSIT, GEOGRAPHIC LOCATION, ION EXCHANGE RESIN/(U)KU2  
ION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/2070

STEP NO--UR/0487/70/000/001/0035/0036

CIRC ACCESSION NO--AP0127443

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--APO127443

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPTIMUM ALKYLPHENOL YIELDS (45PERCENT) WERE OBTAINED WHEN CRUDE PHENOL (I) WAS CONTINUOUSLY ALKYLATED AT 140DEGREES WITH 2 VOLS. (BASED ON I) OF A S FREE PETROLEUM DISTILLATE (INITIAL B.P. 75DEGREES, 75PERCENT DISTD. AT 127DEGREES, FINAL B.P. 180DEGREES, D. 0.7420) ON A COLUMN OF ION EXCHANGE RESIN KU-2 IN NA FORM. THE UNREACTED PETROLEUM DISTILLATE WAS RECOVERED PRACTICALLY UNCHANGED. THE ALKYLPHENOL HAD SIMILAR PROPERTIES TO THE STD. LUBRICATING OIL ADDITIVE PRODUCED BY ALKYLATING I IN THE PRESENCE OF PHSO SUB3 H.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--20NOV70  
 TITLE--CONDENSATION OF ALKYLPHENOLS WITH FORMALDEHYDE IN THE PRESENCE OF  
 OXALIC ACID DURING THE PREPARATION OF A BENZOFURAN CARBOXYLIC ACID  
 AUTHOR--(04)--ALLAKHVERDIYEV, G.A., RZAYEV, R.G., NAMAZOV, I.I., GASANOV,  
 D.G.  
 COUNTRY OF INFO--USSR  
 SOURCE--AZERB. NEFT. KHOZ. 1970, (3), 34-5  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--MATERIALS, CHEMISTRY  
 TOPIC TAGS--CONDENSATION REACTION, PHENOL, FORMALDEHYDE, OXALIC ACID,  
 FURAN, AROMATIC CARBOXYLIC ACID, CORROSION RATE  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--3006/1796  
 CIRC ACCESSION NO--AP0135361  
 UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0135361

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPTIMUM CONDITIONS FOR  
CONDENSING ALKYLPHENOLS WITH CH SUB2 O (RATIO 100:25) WERE IN THE  
PRESENCE OF 0.5 PARTS HC SUB2 COO SUB2 H AT 98DEGREES. CONDENSATION IN  
THE PRESENCE OF HCL WAS MORE EFFECTIVE BUT THE CORROSION RATE WAS 10  
TIMES THAT WITH HO SUB2 COO SUB2 H. THE PRODUCTS OF THE 2 METHODS WERE  
SIMILAR.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70  
 TITLE--SYNTHESIS AND REACTIONS OF UNSATURATED ORGANOSILICON AND  
 ORGANOGERMANIUM COMPOUNDS. SYNTHESIS OF DIMETHYL,P,TOLYLHYDRIDOSILANE  
 AUTHOR--(G4)--SHIKHIYEV, I.A., GASANOVA, R.YU., ASKEROV, G.F., RZAYEVA, S.A.  
 COUNTRY OF INFO--USSR  
 SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 817-19  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--CHEMISTRY  
 TOPIC TAGS--ORGANIC SYNTHESIS, ORGANOSILICON COMPOUND, ORGANOGERMANIUM  
 COMPOUND, ORGANIC SILANE, ACETYLENE, ALCOHOL  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--3002/1199 STEP NO--UR/0079/70/040/004/0817/0819  
 CIRC ACCESSION NO--AP0128617  
 UNCLASSIFIED

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2/2 011  
CIRC ACCESSION NO--AP0128617 UNCLASSIFIED PROCESSING DATE--20NOV70  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ME SUB2 SICLH (94.5 G) AND RMGBE  
FROM 24 G MG REFLUXED 2 DAYS GAVE AS SHOWN ON MICROFICHE.  
FACILITY: INST. NEFTI KHIM. IM. AZIZBEKOVA, BAKU, USSR.

UNCLASSIFIED

RZHANOV, A.V.

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XIII-4. NEW METHOD OF OBTAINING MONOCRYSTALLINE LAYERS OF SILICON ON NONORIENTING SUBSTRATES

Article by A. A. Klymenko, A. G. Klymenko, A. V. Rzhanov, R. Sh. Akhmedov, L. M. Alifanov, M. V. Abishev, N. M. Kiselev, I. I. Shadrin, N. P. Korovin, N. A. Reva, P. 183

A new procedure has been developed for connecting monocrySTALLINE plates of silicon to nonorienting substrates (ceramic) via an intermediate layer of solid solutions (Ge + Si). The characteristic feature of the process is that the transient layer (the solid solution of germanium with silicon) is monocrySTALLINE. It has electrophysical and chemical properties close to the surface of the connected plate of silicon. The crystallization begins with the orienting substrate. This involves the monocrySTALLINE nature of the silicon layer obtained in this way on the nonorienting substrate with cooling and heating from liquid helium to ordinary diffusion temperatures. The enthalpy made demonstrated that the transient layer can have a thickness on the order of several microns. Thicknesses of the solid established that obviously the dislocation density in the silicon itself increases from the difference in coefficients of thermal expansion of the substrate and the silicon. The silicon layers were obtained on substrates of quartz ceramic with a dislocation density of  $5 \cdot 10^4 - 1 \cdot 10^5 \text{ cm}^{-2}$ . On the basis of the experiments performed, the heating and cooling rate conditions of the layers were selected which do not lead to a noticeable variation of their electrical resistance to  $1,500 \text{ ohm-cm}$  and electron mobility to  $1,500 \text{ cm}^2/\text{par second}$  at room temperature. For all of the specimens, the particular sectorism of the carriers and the absence of deep levels are characteristic.

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--FAST SURFACE STATES IN SILANIZED GERMANIUM -U-  
AUTHOR--(02)-RZHANOV, A.V., KOVALEVSKAYA, T.I.  
COUNTRY OF INFO--USSR R  
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 321-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--GERMANIUM, SILANE, SURFACE AREA, CHLORIDE, GAS ABSORPTION,  
METAL ETCHING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FAME--1997/1476 STEP NO--UR/0449/70/004/002/0321/0324  
CIRC ACCESSION NO--AP0120263  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120263

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. SINGLE CRYSTAL (111) ORIENTED N-GE SAMPLES WERE ETCHED AND THEN TREATED WITH A DIOXANE SOLN. OF ME SUB2 SICL SUB2, WHEREBY A HYDROPHOBIC POLYSILOXANE FILM OF 100-500 ANGSTROM IS FORMED. THE IR SPECTRA OF TREATED SAMPLES REVEAL A NEW ABSORPTION PEAK AT 975 CM PRIME NEGATIVE1 IN THE VICINITY OF THE SI-O BOND ABSORPTION PEAKS (1020 AND 1120 CM PRIME NEGATIVE1). THE NEW PEAK IS ASSIGNED TO THE GE-O-SI FORMS AND IS FORMED FROM BOND. SAMPLES WITH VARIOUS INTENSITIES OF THIS PEAK WERE STUDIED BY THE FIELD EFFECT METHOD COMBINED WITH STATIONARY PHOTOCOND. MEASUREMENTS. THE SURFACE POTENTIAL Y SUBSIGMA DEPENDENCE OF THE RECOMBINATION RATE S AND OF THE CHARGE OF TRAPPED SURFACE PLOTTED. THE Q SUBSS Y SUBS PLOTS ARE EXPONENTIAL FUNCTIONS WITH SIMILAR EXPONENTIAL COEFF. BUT WITH SIGNIFICANTLY DIFFERENT PREEXPONENTIAL TERMS FOR THE SAMPLES OF VARIOUS INTENSITY IOTA OF THE 975 CM PRIME NEGATIVE1 PEAK. IT IS ASSUMED THAT THE PREEXPONENTIAL TERM IS PROPORTIONAL TO THE CONCN. OF SURFACE STATES N SUBSIGMASIGMA. THE N SUBSIGMASIGMA IOTA PLOT IS LINEAR AND JUSTIFIES THIS ASSUMPTION. SILANE TREATMENT OF GE SURFACES INVOLVES A SUBSTITUTION OF PART OF THE UNSTABLE O, OH, AND H SUB2 O BONDS WITH THE MORE STABLE GE-O-SI BOND. THE TREATMENT IS ESP. EFFECTIVE WHEN CARRIED OUT IMMEDIATELY AFTER ETCHING.

FACILITY: INST. FIZ. POLUPROY., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

UDC [537.226+537.311.33]:[537+535]

PAN'KIN, V. G., RZHANOV, A. V., and SVITASHEV, K. K.

"Photoelectric Phenomena on Boundary Between Two Single-Crystal Germanium Blocks"

V sb. Tonkiye plenki sovedineniy tellura s metallami podgrupp tsinka i galliya (Thin Films of Tellurium Compounds with Metals of Zinc and Gallium Subgroups -- Collection of Works), Vil'nyus, 1970, pp 216-227 (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE807 by V. B. SANDOMIRSKIY)

Translation: The authors investigated the photovoltage (PV) and photoconductivity (PC) of the contact of two n-Ge single crystals at 300 and 77° K. Dimensions of specimens: 17x12x3 mm; specific resistances at 300° K: of the order of 40 ohm·cm. The PV distribution along the specimen has two maxima of opposite signs on both sides around the interface. The PV sign corresponds to the blocking band bending around the interface (IF). Contact is nonsymmetrical. The form of the current-voltage characteristic agrees with that reported in the literature. The PV spectral dependence indicates a change of charge in the surface states of the IF on illumination. The conclusion was drawn that each block has its own system of surface states. PC also increases sharply as the "signal probe" approaches the IF. The PC localized at the IF is

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USSR

PAN'KIN, V. G., et al., Tonkiye plenki soyedineniy tellura s metallami podgrupp tsinka i galliya (Thin Films of Tellurium Compounds With Metals of Zinc and Gallium Subgroups -- Collection of Works), Vil'nyus, 1970, pp 216-227 (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE807 by V. B. SANDOMIRSKIY)

observed when excited by light in the region of impurity absorption. It can be positive or negative and varies with the superposition of voltage.

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Microelectronics

USSR

UDC 621.383.52.072.1

VARLAMOV, I.V., KALADZE, M.K., PETRUSEVICH, V.A., RZHANOV, A.YE.

"Spectral Characteristics Of Silicon Photoresistors And The Parameters Of An Optoelectronic Switch"

Sb. nauch.tr. po probl. mikroelektron. Mosk. in-t elektron.tekhn.(fiz.-mat seriya) [Collection Of Scientific Works On Problems Of Microelectronics.Moscow Institute Of Electronics Technology. (Physico-Mathematical Series)],1972,Issue 9,pp 109-114 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972,Abstract No 10B243)

Translation: The dependence was studied of the photo emf of a photoresistor operating in an optoelectron switch paired with a GaAs light-emitting diode. The photoresistor was produced by building up of an epitaxial layer of n-Si with a resistivity of 1 ohm.cm and a thickness of 13 micron on a p-Si wafer with a resistivity of 10 ohm.cm and a thickness of 200 micron. The upper emitter and the collector of the junction were fulfilled by planar technology with the method of diffusion of P and B. The depth of occurrence of the junctions amounted to 1.5 and 3 microns, respectively. The spectral characteristics of each p-n junction were measured at light intensities corresponding to the linear section of the lux-voltage characteristics of each junction. During illumination of the

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USSR

VARLAMOV, I.V., et al. Sb.nauch.tr. po probl.mikroelektron. Mosk.in-t elektron tekhn. (fiz.-mat. seriya), 1972, Issue 9, pp 109-114

structure by light with  $\lambda = 0.93$  micron, corresponding to the maximum of the radiation spectrum of the GaAs light-emitting diode, the process of generation of the free carriers involves the entire volume of the crystal including all three junctions; however, the maximum response of all the structure is found in the region of the shorter waves. Oscillograms were taken of the transient processes during connection of the photoresistor, and the voltage characteristics with various currents across the emitter and at various temperatures. 4 ill. 4 ref. I.V.

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USSR .

UDC 621.383.52.072.1

VARLAMOV, I.V., DESHEVOY, A.S., KALADZE, M.K., PETRUSEVICH, V.A., RZHANOV, A.YE.

"Measurement Of The Impedance Of Photoresistors In The Pinch-Off Region And At The Section Of Negative Differential Resistance"

Sb.nauch.tr.po probl.mikroelektron. Mosk. in-t elektron.tekhn. (fiz.-mat.seriya) [Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology. (Physico-Mathematical Series)], 1972, Issue 9, pp 100-108 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972, Abstract No 10B242)

Translation: A device for measurement of impedance which uses the method of phase detection is described, and some of the measured parameters of the 4-layer structures at the section with negative resistance of the volt-ampere characteristics are presented. 4 ill. 5 ref. I.V.

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USSR

UDC 621.791.754.011:669.715

CHERNYSH, V. P., SYROVATKA, V. V., Kiev Polytechnic : Institute, GRITSENKO, A. F., RZHANOV, B. P., Dnepropetrovsk

"Structure and Properties of Seam Metal in AMg6 Alloy Welded with Electromagnetic Mixing"

Kiev, Avtomaticheskaya Svarka, No 11, Nov 72, pp 16-19.

Abstract: An aluminum alloy was welded by argon-arc welding using a tungsten electrode at a rate of 10 m/hr. Mixing was achieved by an axial discrete magnetic field by a coil attached to the welder. Electromagnetic mixing of the welding bath was found to produce a finer primary structure and complete suppression of zones of columnar crystals. The increased fineness of the structure was accompanied by an increase in total length of crystal boundaries by more than a factor of 3. The orientation of the structure was decreased from 28% to 21%. The mobile state of the arc during mixing helps to intensify removal of the oxide film from the bath, decreasing the porosity of the welded seams. The use of the electromagnetic mixing method helps to increase the yield of defect-free joints by more than 4 times. Induction of the controlled magnetic field has a decisive influence on the results of mixing. The reversing frequency influences primarily the surface relief of the seam.

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USSR

UDC 621.38.002

GARYAINOV, S.A., RZHANOV, V.G., SHERGOL'D, YE.K.

"Problems Of Protection Of Unhoused Semiconductor Devices And Integrated Circuits"

V sb. Mikroelektronika (Microelectronics--Collection Of Works), Moscow, Izd-vo  
"Sovetskoye Radio," No 4, 1971, pp 141-151

**Abstract:** The over-all problem is considered of the protection of non-housed semiconductor devices used in hybrid microcircuits from the effect of the environment. The significant shortcomings are shown of compounds of epoxy resins, various varnishes, etc., used at present for protection of such devices. A method is described for creation of a protective covering based on thin glass films. 4 fig. 4 tab. 7 ref.

1/1

USSR

UDC 621.382.322

SOPOV, G.V., ABRAMOVA, L.I., MINHEYEV, A.D., NIKONOV, A.S., RZHANOVA, T.R.

"Stabilization Of MOS Transistor By Phosphorous Silicate Glass"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, Issue 2(52), pp 169-186 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B215)

Translation: The problems are considered of the stabilization of a MOS transistor with an induced p-channel by phosphorous silicate [fosfornosilikatnyy] glass. An investigation is conducted of the effect of the conditions of formation of phosphorous silicate glass on the stability of the device. The existence of optimum conditions for the stabilization process is established. It is possible with the aid of stabilization by phosphorous silicate glass to assure high stability of a MOS transistor during the long-term action of an electrical load and increased temperature of the environment. Summary.

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USSR

UDC 539.4

PANTELEYEV, A. K., RZHAVIN, L. N., GL SECHENKO, N. I., KONVALOV, V. I., and TRIPOL'SKIY, S. S. (Zaporoz'ye)

"Investigation of Combined Vibrations of the Disk-Blade System of the Impeller of a Turboprop-Engine Turbine"

Kiev, Problemy Prochnosti, No 11, Nov 73, pp 78-81

Abstract: In order to study the nature and modes of the vibrations of a turboprop-engine turbine, as well as the distribution of the stresses, a tensometric investigation was conducted of the entire set of the 82 blades and the disk of the turbine impeller. Results of the conducted tests show that the cause of the high stresses occurring in the blades is to be found in the critical impeller rotation rates, at which combined vibrations of the disk-blade system occur in accordance with a mode with five node diameters. Frequency adjustment of the disk-blade system was conducted via variation of the system components. A correlation was established between the critical rotation rates and the average frequency during the axial mode of vibrations of the blade set. On the basis of this correlation, control over the average vibration frequency of the blade set during the axial vibration mode has been introduced into the process of blade production. 5 figures.

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USSR

UDC:534.282

MATVEYEV, V. V., CHAYKOVSKIY, B. S., KOVALEV, M. S., RZHAVIN, L. N., Kiev

"Influence of Design Peculiarities and Loading Conditions on the Damping Ability of a Herringbone Lock Joint of a Turbine Blade"

Kiev, Problemy Prochnosti, No 10, Oct 73, pp 66-70

Abstract: Results are presented from an experimental and theoretical study of design damping in the herringbone lock joints of turbine blades. The influence of a number of design and technological factors is studied, as well as the influence of loading parameters on the damping ability of lock joints.

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TITLE--STUDY OF THE VIBRATION STRESS OF SHROUDED AIRCRAFT ENGINE TURBINE  
BLADES -U-

UNCLASSIFIED

PROCESSING DATE--17JUL70

AUTHOR--RZHAVIN, L.A., CPALIKHIA, N.I., MATVEYEV, V.V.

COUNTRY OF INFO--USSR

SOURCE--PROBLEMY PROCHNSTI, VOL. 2, FEB. 1970, P. 3-7

DATE PUBLISHED-----70

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35

SUBJECT AREAS--PROPULSION AND FUELS, AERONAUTICS, ENERGY CONVERSION  
(NON-PROPULSIVE)

TOPIC TAGS--VIBRATION STRESS, AIRCRAFT ENGINE, TURBINE SHROUD, TURBINE  
BLADE, GAS TURBINE ENGINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1978/1841

STEP NO--UR/3663/70/002/000/0003/0007

CIRC ACCESSION NO--AP0046577

UNCLASSIFIED

Acc. Nr:  
AP 0046577

Abstracting Service:  
INTERNAT. AEROSPACE ABST

Ref. Code:  
5-70 ZIR 3663

A70-25288 # Study of the vibration stress of shrouded aircraft engine turbine blades (Issledovanie vibratsionnoi napriazhenosti bandazhirovannykh turbinykh lopatok aviatsionnykh dvigatelei). L. N. Rzhavin, N. I. Opalikhin, and V. V. Marveev (Akademiia Nauk Ukrainskoi SSR, Institut Problem Prochnosti, Kiev, Ukrainian SSR). *Problemy Prochnosti*, vol. 2, Feb. 1970, p. 3-7. In Russian.

Results of an experimental study of the vibration stress of a new type of construction of shrouded aircraft engine turbine blades, using various methods of joining the shrouds. On the basis of a tensometric analysis of these blades on a working engine, it is found that setting up paired blades with a fixed tension along the shrouds ensures minimum vibration stress on the blades during vibrations in the first flexural mode under all conditions of operation of the engine. A.B.K.

REEL / FRAME  
19781841

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USSR

UDC: 681.326.35

RZHAVSKIY, V. A., MOVCHAN, A. P., LEDVIN, Ye. K.

"A Pneumatic Pulsar"

USSR Author's Certificate No 251918, filed 29 May 68, published 12 Feb 70  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11,  
Nov 70, Abstract No 11A69 P)

Translation: This Author's Certificate introduces a pneumatic pulser. The device contains two three-diaphragm relays, the first of them connected in an OR circuit, while the second is connected in an AND circuit. The device also contains a follower with displacement, a choke-capacitance link, a comparison element, and a valve. The units of the device are interconnected in a special way which improves the characteristics of the device in comparison with conventional pulsers. When an input command signal is received, the device produces a pulse of a definite length at the output. One illustration. N. S.

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USSR

UDC 534.1

RZHEVKIN, S. N., Chair of Acoustics

"Vibrations of Bodies Immersed in a Liquid Under the Action of a Sound Wave"

Moscow, Vestnik Moskovskogo University, Seriya III -- Fizika, Astronomiya, Vol 12, No 1, Jan-Feb 71, pp 52-61

Abstract: The article considers different methods for solving the problem of vibrations of a sphere or cylinder immersed in a liquid under the action of a plane sound wave with the velocity amplitude  $v_0$ . Graphs are obtained for the velocity amplitude and phase of the body  $v(\alpha)$  as a function of the wave parameter  $\alpha = ka = \frac{2\pi a}{\lambda}$ , where  $a$  is the radius of the sphere or cylinder. This wave parameter is also denoted as  $\alpha$  ( $\alpha = \frac{\omega a}{c}$ ). Results are given of an experimental verification of the theory to a value of  $\alpha = 2.5$  ( $a \approx 0.4 \lambda$ ).

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1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--3,4,BENZOPYRENE LEVEL IN SUNFLOWER AND COTTONSEED OILS --U--  
AUTHOR--(05)-GRIGORENKO, L.T., DIKUN, P.P., KALININA, I.A., MIRONOVA, A.N.,  
RZHEKHIN, V.P.  
COUNTRY OF INFO--USSR  
SOURCE--PRIKL. BIOKHM. MIKROBIOL. 1970, 6(2), 142-50  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BENZENE DERIVATIVE, AROMATIC POLYCYCLIC HYDROCARBON,  
CARCINOGEN, VEGETABLE OIL, SMOKE, FOOD TECHNOLOGY, FOOD ANALYSIS, THIN  
LAYER CHROMATOGRAPHY, FLUORESCENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3007/0109

STEP NO--UR/0411/70/006/002/0142/0150

CIRC ACCESSION NO--AP0135606

UNCLASSIFIED

2/2 026

CIRC ACCESSION NO--A0135606  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. POLYCYCLIC HYDROCARBONS WERE DETD. BY MODIFICATION OF A METHOD USED IN THE ANAL. OF SMOKED AND OTHER KINDS OF FOODS, CONSISTING OF SAPON. OF 50 G OIL WITH 25 G KOH AND 100 ML 96PERCENT ETOH 1-2 HR OVER BOILING, SEPN. OF THE NONSAPOND. FRACTION BY THIN LAYER CHROMATOG. ON AL SUB2 O SUB3 IN AN ASCENDING CURRENT OF ET SUB2 O, FOLLOWED BY QUANT. AND QUAL. FLUDRESCENCE ANAL. THE 3,4-BENZOPYRENE CONTENT IN SUNFLOWER OIL OF VARIOUS ORIGINS VARIED WIDELY, BUT WAS MOSTLY 1-5 MU G-KG OIL. IT WAS ALSO FOUND IN COTTONSEED OILS.  
FACILITY: ALL UNION RES. INST. FATS, USSR.

UNCLASSIFIED

USSR

UDC: 620.18.539.4.019.3:621.791

MALAN'IN, Yu. M., KAVERINA, S. N., RZHEVSKAYA, I. Ya., SHULEPOV, V. I.,  
YUDKOVSKIY, S. I., Moscow

"Study of Various Zones in a Welded Joint in Molybdenum by Methods of Internal  
Friction and Electron Microscopy"

Moscow, Fizika i Khimiya Obrabotki Materialov [The Physics and Chemistry of  
Materials Processing], No 6, Nov-Dec 73, pp 123-126.

Abstract: It is demonstrated that the high probability of formation of  
cracks in the zone around a welded seam in molybdenum results from the  
disappearance of the cellular structure of the metal during welding, the  
sharp drop in solubility of interstitial impurities and the separation of  
carbide particles, around which significant local phase hardening occurs.

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USSR

UDC 539.67

VERNER, V. D., FIGUZOV, Yu. V., and RZHEVSKAYA, I. Ya.

"Relaxation Spectrum of Molybdenum. Governed by Incorporation Impurities"

Sb. "Vnutrenneye treniye v metallicheskih materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka", 1970, pp 61-65

Abstract: Results of an investigation are presented which make it possible to explain the complex relaxation spectrum in molybdenum with a substantial content of impurities.

A graphic resolution of a complex 220-degree peak, obtained in molybdenum with oxygen, nitrogen, and carbon additions, is presented.

The shape of the oxygen and carbon solubility lines in a solid molybdenum-based solution is refined and the true diffusion coefficients of these elements are determined. 2 tables, 5 figures, 3 references.

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UDC: 539.4:624.011

USSR

RZHEVSKIY, V. A. and TSIPENYUK, I. F.

"Comparing the Reactions of Elastic and Elastoplastic Systems to Seismic Actions"

Tr. Kishinev. politekhn. in-t (Transactions of the Kishinev Poly-technical Institute) 1970, No. 21, pp 186-191 (from RZh-Mekhanika, No. 2, Feb 71, Abstract No. 2V954)

Translation: Results are given of investigations of the motion of elastic-plastic single-mass oscillators. The dependence between the mass displacements and the restoring force is given in the form of a Prandtl diagram. The external action is specified in the form of a stationary harmonic acceleration applied to the base of the oscillator. A numerical solution of the differential equations of motion was realized with the M-20 computer for a large number of variants of the oscillator parameters. The fre-

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USSR

RZHEVSKIY, V.A., et al, Tr. Kishinev. politekhn. in-t, 1970, No 21, pp 186-191 (from RZh-Mekhanika, No 2, Feb 71, Abstract No 2V954)

quencies of small linear oscillations were varied relative to the plastic deformation and the yield point. The conclusion was drawn that the maximum deformations of the elastic-plastic and elastic oscillator differ substantially from each other in a narrow range of frequencies close to the resonance zone, responding to the equality of frequencies of the external action and the natural oscillations of the oscillator in the elastic region. On the basis of some logical discussion, the conclusion is drawn that the seismic load on a reinforced concrete structure can be determined without considering the plastic deformations; i.e., as in elastic systems. Ya. M. Ayzenberg

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EQUIPMENT  
Aeronautical

USSR

UDC: 621.822.5

BELOUSOV, A. I., RZHEVSKIY, V. P., KASHIN, B. M., RUBINCHIK, Yu. G., Kuybyshev "Order of the Red Banner of Labor" Aviation Institute imeni Academician S. P. Korolev

"A Throttle for a Hydrostatic Bearing"

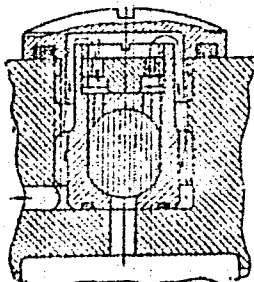
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 5, Feb 73, Author's Certificate No 364773, Division F, filed 18 Dec 70, published 28 Dec 72, p 107

Translation: This Author's Certificate introduces a throttle for a hydrostatic bearing. The device contains an insert of MR porous material accommodated in a housing. As a distinguishing feature of the patent, provision is made for regulating hydraulic characteristics and improving operational properties. The throttle is equipped with a control device made in the form of a washer with channels for passage of lubricant which rests on the porous insert and is compressed by a nut mounted in the housing.

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USSR

BELOUSOV, A. I. et al., USSR Author's Certificate No 364773



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USSR

UDC 621.371.029.6

RZHEVSKIY, V. V., KORENBERG, Ye. B., ORLOVSKAYA, E. D., and  
AZBEL', M. D.

"Experimental Investigation of the Propagation of UHF Radio Waves  
in Tunnels and Mine Shafts"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.  
Sekts. 6 (Tenth All-Union Conference on the Propagation of Radio  
Waves; Report Theses; Section 6--collection of works) "Nauka,"  
1972, pp 68-72 (from RZh--Radiotekhnika, No 10, 1972, Abstract No  
10A393)

Translation: The investigation was conducted in tunnels of the sub-  
way, lined with tubing (circular cross section) and in mine shafts  
(rectangular cross section), sunk in gypsum strata. Results of the  
measurements showed that in rectilinear paths, the attenuation is  
comparatively low; this permits use of UHF waves for the transmis-  
sion of information along shafts. In paths with turns, there is a  
substantial addition to the weakening of the field, and retransla-  
tors are needed for the transmission of information. Four illus-  
trations. N. S.

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USSR

UDC 621.371.029.6

RZHEVSKIY, V. V., KORENBERG, Ye. B., ORLOVSKAYA, E. D., and  
AZBEL', M. D.

"Propagation of Broad-Band UHF Signals in Tunnels and Shafts"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 6 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 6--collection of works) "Nauka," 1972, pp 64-67 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A392)

Translation: Experiments investigating the passage of pulse signals in the tunnels of the Moscow subway are described. Triangular radio pulses 0.08  $\mu$ s wide at half value were used, with a period of repetition at 200  $\mu$ s, on a carrier frequency of 2200 MHz. To detect distortions of broad-band signals, television images were transmitted along shafts and in the tunnel of the subway. Results of the experiments showed that the distortion of the pulse fronts did not exceed 0.02  $\mu$ s; the multibeam nature of the propagation has no effect on the accuracy of TM signal transmission; the quality of the TV transmission is good. Three illustrations, bibliography of one. N. S.

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USSR

RZHEVSKIY, V. V., Editor

UDC: 621.396.945

"Mining Communication"

Nauchn. tr. Mosk. gorn. in-t (Scientific Transactions of the Moscow Mining Institute) Moscow, 1970, 95 pp, illustrated, 25 kopeks (from RSh-Radiotekhnika, No. 3, March 71, Abstract No. 3A294K)

Translation: This collection is devoted to problems in the choice of frequency range and the form of modulation, transmission conditions of radio waves through a medium and along shafts, the choice of optimal transmission characteristics for mining radio communications under conditions of normal operation, and emergency work.  
V. Ch.

1/1

1/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--ALCOHOLATE CATALYZED DECONJUGATION OF ESTRA,4,9,DIEN,3,ONES -U-

AUTHOR--(03)-SHISHKINA, A.A., RZHEZNIKOV, V.M., PIVNITSKIY, K.K.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PRIR. SOEDIN. 1970, 6(11), 138-9

DATE PUBLISHED-----70

*R*

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--ANDROGEN, ALCOHOLYSIS, CHROMATOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3004/0552

STEP NO--UR/0393/70/006/001/0138/0139

CIRC ACCESSION NO--AP0131175

UNCLASSIFIED



2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131175

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DECONJUGATION OF I AND II BY  
TERT-BUOK IN TERT-BUOH (0.9M, 16 HR, 20DEGREES) WAS OBSO. FROM THE  
CRUDE PRODUCTS, III OR IV WERE OBTAINED BY CHROMATOG. ON SIG SUB2  
(82PERCENT); IV IS RAPIDLY OXIDIZED TO V FROM WHICH VI WAS OBTAINED  
(59PERCENT) BY CHROMATOG. ON AL SUB2 O SUB3. ANABOLIC ACTIVITY IN THE  
HERSCHBERGER TEST (1953) OF THE HYDROXY DIKETONES (VI) AND DIHYDROXY  
KETONES (VII) WAS FOUND TO BE 20PERCENT OF THE ANABOLIC AND ANDROGEN  
EFFECT OF TESTOSTERONE PROPIONATE. FACILITY: INST. EKSP.  
ENDOKRINOL. KHIM. GORMONOV, MOSCOW, USSR.

UNCLASSIFIED

GAZHEZNIKOV, YU. V.

Atomic Reactors

GAZHEZNIKOV YU.V.

Atomic Reactors

JPRS 54767  
23 December 1971

UDC 621.311.25.62.075.558.001.5  
RELEASE VALUE FOR PROTECTING HERETICALLY SEALED  
AREAS OF ATOMIC POWER STATIONS

Article by B. K. Kallitov, Yu. V. Gazonnikov, candidates of technical sciences; L. N. Puzryev, and A. G. Gyzdov, engineers, All-Union Thermotechnical Institute, Moscow, *Teplotekhnika*, Moscow, No. 8, 1971, pp. 62-65]

Radioactive materials are formed and accumulated in the reactor and coolant during the operation of an atomic power station. The possibility of their leakage and spread throughout the neighborhood of the station presents a danger. Leakage of radioactive products from the station occurs under normal operation through leaks in the primary loop, evaporators, and, what is most dangerous, through accidents with a break in the radioactive coolant loop. Methods for preventing contamination of the environment are determined by the concept of maximum accident. Heat widespread of instantaneous rupture of the line of greatest diameter (0.5-0.8 m). This has led to the development of shielding shell-containers intended to contain all the coolant considering the energy of residual heat release and the energy of exothermal reactions which may occur at high temperatures between the core materials and the coolant.

Another, less widespread concept of the maximum accident is based on experience in using pipelines in ordinary thermal power stations. Analysis of statistical data on ruptures of lines showed that the probability of their damage for reasons of an operational nature is very small and increases with an increase in the diameter of the line. Since corrosion and fissures with develop slowly, they may be observed and prevented in time under correct control.

In ruptures of lines of small diameter, sealing of the reactor core or damage to it in a large scale can be prevented in general or at least in the initial stage of the accident. These considerations have led to the

acc. Nr:

AP0049309

Abstracting Service:  
CHEMICAL ABST. 5-70

Ref. Code:

UR0226

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103984q Calculation of the bond energy in metals. Ryzanin, B. F. (USSR). *Porosh. Met.* 1970, 10(1), 66-8 (Russ). This is a continuation of the previous work on the bond energy and equil. interaf. distances in metals K, Ca, Sc, Rb, Sr, Y, Zr, Nb, Cs, Ba, and La, by means of the application of the model of the "free" electrons and "impenetrable" ionic cores. The calcd. data are in good agreement with the exptl. data. The compressibility was calcd. for a majority of the enumerated metals. The theoretical compressibility values corresponding to the single crystals differ by 20-35% from the exptl. data obtained on semi-  
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SAAD EL'DIN, M., DUBININA, YE. M., SPIVAK, G. V., VOLKOVA, T. V.

"Using Polymer Films for Studying Microfields With a Transmission-Type Electron Microscope"

Moscow, Izvestiya Akademii Nauk, Seriya Fizicheskaya, Vol 34,  
No 7, 1970, pp 1567-1569

Abstract: This paper investigates films formed on the surface of specimens under electron bombardment of condensing monomer vapor. These polymer films are used for investigating the structure of surface microfields at superoptical magnification. A curve is given showing the thicknesses of the films investigated as a function of the power of the electron beam causing the polymerization. The films were obtained both in a high vacuum and under glow discharge conditions, and the objects of the research were p-n silicon diodes. The electron beam was generated by a three-electrode gun, and the electron energy was kept at the level of tens of electron volts to increase their sensitivity to the microfields and reduce the number of secondary electrons with high velocity dispersions. Images of the cobalt domain structure were also obtained. This and other photomicrographs illustrate 1/1 the article.

- 110 -

1/2 021 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--ORGANOSILICON AMINES USED AS CORROSION INHIBITORS. -U-  
AUTHOR--(05)-SHREYBER, G.K., SAAKIYAN, L.S., LOSEV, V.B., ALKHAMEDAN, KH.,  
SKRIPCHENKO, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(1) 200-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--CORROSION INHIBITOR, ORGANOSILICON COMPOUND, AMINE DERIVATIVE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1983/0300 STEP NO--UR/0080/70/043/001/0200/0201  
CIRC ACCESSION NO--AP0053285

UNCLASSIFIED

2/2 021

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PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0053285

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CORROSION INHIBITING ACTIVITIES OF THE TITLE COMPS., RSI(OET) SUB3 (I), WHERE R EQUALS H SUB2 N(CH SUB2) SUB3 PRIME NEGATIVE, ET SUB2 N(CH SUB2) SUB3 PRIME NEGATIVE, ET SUB2 NCH SUB2 PRIME NEGATIVE, PHNHCH SUB2 PRIME NEGATIVE, H SUB2 N(CH SUB2) SUB6 NHCH SUB2 PRIME NEGATIVE, H SUB2 NIC SUB2 H SUB4 NH) SUB2 (CH SUB2) SUB3 PRIME NEGATIVE, AND H SUB2 NIC SUB2 H SUB4 NH) SUB2 CH SUB2 PRIME NEGATIVE, WERE DETD. (THE RESULTS ARE GIVEN IN TABULAR FORM AS PERCENT PROTECTIVE ACTION) AT VARIOUS TEMPS. AND CONCNS. OF I. I CONTG. POLYAMINE GROUPS WERE MOST EFFECTIVE.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--A PLANE CONTACT PROBLEM OF THE THEORY OF ELASTICITY FOR A CIRCULAR  
RING -U-  
AUTHOR-(02)-BABLOYAN, A.A., SAKIAN, V.G. S  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIIA NAUK ARMIANSKOI SSR, IZVESTIIA, MEKHANIKA, VOL. 23, NO.  
1, 1970, P. 3-17  
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, PHYSICS  
TOPIC TAGS--ELASTICITY THEORY, METAL RING, BIBLIOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1997/1491 STEP NO--UR/0430/70/023/001/0003/0017

CIRC ACCESSION NO--AP0120278

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120278

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLUTION OF THE PLANE STRAIN PROBLEM FOR A CIRCULAR RING WHOSE INNER AND OUTER BOUNDARIES ARE LOADED BY MORE THAN ONE IDENTICAL SYMMETRICALLY POSITIONED RIGID PUNCHES WITH EQUAL DIMENSIONS ON EACH OF THE BOUNDARIES. ATTENTION IS GIVEN TO CASES WHERE THE INTERNAL AND EXTERNAL PUNCHES ARE OPPOSITE EACH OTHER AND WHERE THEY ARE STAGGERED. THE PROBLEM IS REDUCED TO THE SOLUTION OF A DUAL TRIGONOMETRIC SERIES SYSTEM WHICH IN TURN IS REDUCED TO TWO INFINITE SYSTEMS OF LINEAR ALGEBRAIC EQUATIONS. CONVENIENT FORMULAS ARE GIVEN FOR CALCULATING THE CONTACT STRESSES AND RADIAL DISPLACEMENTS.

FACILITY: AKADEMIIA NAUK ARMIANSKOI SSR, INSTITUT MATEMATIKI I MEKhanIKI, YEREVAN, ARMENIAN SSR.

UNCLASSIFIED



USSR

UDC 612.13-088.4

SAAKOV, B. A., LUBE, V. M., SHEPOTINOVSKIY, V. I., and TITKOV, B. P., Rostov  
Medical Institute

"The Regional Blood Circulation Studied by the Ultrasound Method"

Moscow, Byulleten' Eksperimental'noy Biologii Meditsiny, No 5, 1971, pp  
116-119

Abstract: A bloodless method of deep zonal ultrasonic sphygmography based on the principles of acoustic bioecholocation is described. It yields specific information about the state of any part of the vascular system regardless of its site (in bone canals, skull, soft tissues, etc.) or the amount of ultrasound absorbed by the tissues surrounding a blood vessel. An ultrasonic sensor using a reverse and direct piezo effect emits short acoustic impulses toward a blood vessel under study and receives a signal reflected from it. If there is an increase in the volume of blood entering the vessel, its diameter widens, thereby increasing the area of the lateral reflecting surface. The amplitude of the reflected signal grows at the same time. If there is a decrease in the volume of blood entering the vessel, its diameter narrows and the amplitude of the reflected signal decreases accordingly.

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SAAKOV, B. A., et al., Byulleten' Eksperimental'noy Biologii Meditsiny,  
No 5, 1971, pp 116-119

Thus, changes in the amplitude of the signal are proportional to the degree  
of blood supply of the vessel. These changes are recorded on an ink-writing  
device.

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1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--SULFHYDRYL GROUPS IN THE WATER SOLUBLE PROTEINS OF THE BRAIN IN THE  
COURSE OF EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS -U-  
AUTHOR-(02)-SAAKOV, B.A., TRAPEZONTSEVA, R.A.  
COUNTRY OF INFO--USSR  
SOURCE--PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA, 1970,  
VOL 14, NR 3, PP 59-61  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ENCEPHALOMYELITIS, PROTEIN, SOLUBILITY, WATER

CONTROL MARKING--NO RESTRICTIONS.

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/0506 STEP NO--UR/0396/70/014/003/0059/0061  
CIRC ACCESSION NO--AP0126254  
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0126254

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEVELOPMENT OF EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS IN DOGS WAS ACCOMPANIED BY REDUCTION OF CONTENT OF SULFHYDRYL GROUPS IN THE WATER SOLUBLE PROTEINS OF THE CORTEX AND OF THE WHITE MATTER OF THE GREAT HEMISPHERES. WARMING OF THE EXTRACTS OF WATER SOLUBLE PROTEINS AT 40DEGREESC FOR 20 MINUTES CAUSED AN INCREASE IN THE AMOUNT OF SULFHYDRYL GROUPS IN THE PROTEINS OF THE BRAIN OF CONTROL ANIMALS, AND A FALL IN THEIR CONTENT IN THE PROTEINS OBTAINED FROM THE BRAIN OF ANIMALS SUFFERING FROM ENECPHALOMYELITIS.  
FACILITY: TSENTRAL'NAYA NAUCHNO ISSLED. LABORATORIYA ROSTOVSKOGO MEDITSINSKOGO INSTITUTA.

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