

UDC 621.391.19

USSR

ZHURAVLEV, V. F., KIRKOROV, N. I., and MOROZ, S. M., Minsk Radio Engineering Institute

"Method of Forming Similarity Measures in Pattern Recognition"

USSR Authors' Certificate No 363105, Cl. G 06k 9/00, filed 9 Mar 71, published 20 Dec 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 3, 1973, p 101)

Abstract: The method.-- based on the conversion of physical characteristics into electric signals, a comparison of them with reference signals, and the accumulation of the difference signals obtained from a comparison of them with a threshold signal-- is unique in that to reduce the recognition error probability, after the signals are compared with the reference signals, the difference signals are compared with each other, the resultant signals of the excess are summed according to the K-th attribute for the reference signals of each class, and the resultant sums are accumulated for a subsequent comparison of them with the threshold signal.

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Welding

UDC 621.791.052:620.1.001.4:669.788

USSR

MAKSIMOV, P. K., Engineer, MATKHANOV, V. N., MOROZ, V. G., Candidates of
Technical Sciences, and ROSSINEVICH, L. I., Engineer

"Study of the Efficiency of Welded Joints Between Dissimilar Steels (12Kh1MF
and Kh5ML) in a Medium of Hydrogen"

Moscow, Khimicheskoye i Neftyanoye Mashinostroyeniye, No 11, Nov 70, pp 25-27

Abstract: This article presents the results of an investigation of the effects of hydrogen on the metal in the area of a welded joint between 12Kh1MF and Kh5ML steels. The investigations were performed using specimens which were held in an autoclave at 570°C under a hydrostatic pressure of technical hydrogen from 100 to 300 kg/cm². The temperature used in the experiments was 570 ± 10°C. The experiments showed that whereas holding under a 90 kg/cm² hydrogen pressure at 570°C for various times up to 4,000 hours had little effect on mechanical properties, holding at 273 kg/cm² hydrogen pressure resulted in the development of a tendency to brittle rupture, primarily along the line of the welded seam. Notch-sensitivity of the metal was increased in all cases. No noticeable changes in the structure of the metal were discovered. However, in all cases the exposure to hydrogen resulted in slight surface decarburization along the seam.

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Radar

M

UDC 621.396.963

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USSR

BARANOV, I. M., DYMovich, N. D., SKVORTSOV, S. M., SOKOLOV, P. M., MOROZ, V. G.,
POGORELOV, B. P.

"Radar Display for Determining the Parameters of Atmospheric Inhomogeneities"

USSR Author's Certificate No 253178, Filed 11 Dec 67, Published 24 Feb 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G51P)

Translation: A radar display containing a video amplifier and a plan position indicator has been patented for determining the parameters of atmospheric inhomogeneities. In order to represent the radar image of atmospheric inhomogeneities in the form of a series of concentric black and white rings, a coding tube is included between the video amplifier and the plan position indicator via a pulse amplifier. This coding tube converts the video signals from the atmospheric inhomogeneities into a train of pulses equal with respect to magnitude and different with respect to width and duty factor depending on the distribution of the instantaneous values of the video signal voltage. The joint effect of radial-circular scanning of the plan position indicator and rectangular pulse voltage create concentric black and white circles on the screen. The width of each circle corresponds to a defined interval of atmospheric inhomogeneity intensity. This facilitates determination of the inner structure of the inhomogeneity at the given point in time, and it permits

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BARANOV, I. M., et al., USSR Author's Certificate No 253178, Filed 11 Dec 67,
Published 24 Feb 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G51P).

information about the intensity of precipitation with respect to area to be
obtained and zones safe for aircraft flights to be determined. There are
two illustrations.

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USSR

UDC: 539.128.2

BALDIN, A. M., BEZNOGIKH, Yu. D., ZINOV'YEV, L. P., ISSINSKIY, I. B., KAZANSKIY, G. S., MIKHAYLOV, A. I., MOROZ, V. I., PAVLOV, N. I., and FUCHKOV, G. P.

"Acceleration and Removal of Deuteron Beams from the OIYaI Synchro-
phasotron"

Moscow, Pribory i Tekhnika Eksperimenta, No. 3, 1971, pp 29-31

Abstract: This article describes the realization of a proposal for accelerating and extracting deuterons with existing synchro-phasotron systems made in an earlier article (Beznozhikh, Yu. D., et al, Reprint OIYaI, 1968, No. R9-4214, Dubna). The basic idea of the proposal was to multiply the linear acceleration by two through halving the velocity of the deuterons going into and coming out of the linear accelerator compared to the velocity of the protons. The acceleration in the synchrotron is done in two steps: first, doubling the acceleration; second, reaching the limiting frequency of the accelerating system and then making the transi-

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USSR

UDC 621.73.06

SOGRISHIN, YU. P., TISHAKOV, V. A., MOROZ, V. YA.

"The Effect of Loading Rate on the Resistance to Deformation of Metals During Cold Upsetting"

Abstract: Cylindrical samples 20 and 30 mm in diameter were subjected to cold upsetting by polished hammering blocks with a loading rate of 12-100 m/sec. Results obtained with an hydraulic dynamometer and oscillograph indicate that the deformation resistance is affected by the loading rate at all stages of deformation. This effect can be described by the dynamic coefficients K_D and K_D^i , which were determined from the ratio of yield stresses for dynamic and stationary loading and from the ratio of specific strength, respectively. Namely $K_D = \sigma_S \text{ dyn}/\sigma \text{ st}$ and $K_D^i = p \text{ dyn}/p \text{ st}$. The specific strength of 30KhGSA, 1Kh13, 1Kh18G2 steels and E1437B nickel alloy increased by 10-60% with increasing loading rate during deformation. In contrast, the specific strength of AK6 and B96 aluminum alloys decreased with increasing loading rate. Common to these two groups of metals was an intensive strengthening during the initial stages of deformation. The dynamic coefficients of steels and nickel alloy were higher than unity at all stages of deformation, but it was less than unity for aluminum alloys deformed by 0.1%. A decrease in deformation resistance of aluminum alloys during high loading rate can be attributed to the mechanism of hot deformation because of the thermal effect.

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USSR

UDC 53.07/.08+53.001.5

MOROZ, YE. M., MOLCHANOV, S. S., PYSHKIN, B. N., SOLOV'YEV, N. S., Physics Institute imeni P. N. Lebedev

"A Method for the Stabilization of Synchrotron Radiation Intensity"

USSR Author's Certificate No. 256117, Filed 26 Jun 68, published 31 Mar 70
(from RZh-Fizika, No 1, Jan 71, Abstract No 1A453 P)

Translation: Precise (or programmed) switching on of accelerating field voltage is necessary to stabilize and raise the level of beam intensity in a synchrotron. It is proposed that the time of switching on be controlled with the aid of a pulse of a current of particles circulating in orbit at the time of injection in each acceleration cycle. This made it possible to increase intensity by 20% as compared with circuits connecting the switching on to the level of the magnetic field. V. Papadichev.

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USSR

GLADYSHEV, V. A., KATSAUROV, L. N., MOROZ, Ye. M., NECHAYEVA, L. P.

"The Focusing of a Beam of Ions with Drift in a Heterogeneous Magnetic Field"

Moscow, Tr. Fiz. Instituta imeni P. N. Lebedev. Vol 53, 1971, pp 226-238.

Abstract: The drift of ions across the gradient of a magnetic field can be used in the performance of external injection into a cyclotron by directing the ions so that the beam drifts along the boundary of one of the sectors of the cyclotron to the central area. This work clarifies the nature of the trajectories of ions in this drift and studies problems related to the focusing of the beam. The motion of particles in the median plane of a magnet is studied, and it is considered that the system of coordinates is rectangular, and the field is a function of one coordinate only. In spite of these simplifying assumptions, a good deal of necessary information is produced concerning the nature of the trajectories during drift.

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USSR

UDC 669.295.053.24

DENISOV, S. I., MOROZ, YU. A., and ROSTOVISEV, S. T.

"Electric Conductivity of Iron-Titanium-Containing Materials in the Solid Phase"

Sb. Tr. Vses. n.-i i proyekt. in-t titana (Collection of Works of the All-Union Scientific Research and Design Institute of Titanium), 1970, 2, pp 14-22 (from RZH-Metallurgiya, No 11, Nov 70, Abstract No 11G154)

Translation: Laboratory experiments for the determination of the specific electric conductivity of oxides, chemical compounds of the system $Fe_2O_3-FeO-TiO_2$, and charge materials, used for smelting Ti-slag, are conducted. The electric conductivity of all the materials studied increases considerably with increasing temperature; at room temperature their magnitudes are variable, at 1300° they approach each other while reaching high magnitudes of $\sim 10 \text{ ohm}^{-1} \cdot \text{cm}^{-1}$. 7 ill., 4 tables, 7 bibl. entries. Authors' abstract

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USSR

UDC 669.295.053.24

MOROZ, YU. A., and DENISOV, S. I.

"Technological Features of Single-Stage Continuous Melting of Titanium Slag"

Sb. tr. Vses. n.-i. i proyekt. in-t titana (Collected works of All-Union Scientific-Research and Planning Institute for Titanium), 6 1970, 15-17, (from Referativnyy Zhurnal-Metallurgiya, No 1, 1971, Abstract No 1 G185 by the authors)

Translation: The reasons for disruption of the continuous process of melting of titanium slag in one stage, such as bubbling of the slag, movement of processes of charge melting ahead of processes of reduction, rapid melting through the space around the electrodes, sintering of charge on the furnace top, and formation of refractory "chills" in the furnace charge, are studied. These technological difficulties are eliminated when high ratios of furnace power to charge mass are provided, as when melting is performed in single-phase, single-electrode furnaces or when wood waste is used in the charge during melting in the ordinary three-phase, three-electrode electric furnaces. 8 biblio. refs. \surd

USSR

UDC 669.295.04

MOROZ, Yu. A., and DENISOV, S. I.

"Technological Specifics of Carrying Out a Single-Stage, Continuous Process of Melting Titanium Slags"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya Publishing House, Vol 6, 1970, pp 15-17

Translation: The article reviews causes of disruption in the one-stage continuous process of smelting titanium slag, such as: slag blistering, the processes of melting down the charge in advance of the processes of restoration, rapid melting near the electrode spaces, charge caking on top of the furnace, and the formation of refractory "salamanders" in the furnace charge. These technological difficulties are eliminated where large ratios of furnace capacity to the mass of charge in the furnace are ensured, which takes place during smelting in one-phase, one-electrode furnaces or where wood by-products are used in the charge during smelting in the ordinary three-phase, three-electrode electric furnaces. Eight bibliographic entries.

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USSR

UDC 669.295.051

DENISOV, S. I., MOROZ, YU. A., and BLINOV, B. S.

"Technological Sampling of Iron-Titanium Concentrate of the Obukhovskiy Deposit"

Sb. tr. Vses. n.-i. i proyekt. in-t titana (Collection of Works of the All-Union Scientific Research and Design Institute of Titanium), 1970, 5, pp 7-14 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G144)

Translation: According to its mineralogical composition, the kinetics of reduction of Fe oxides, and other properties, the concentrate of the Obukhovskiy deposit basically resembles that of the Samotkanskiy deposit. Much more solid briquettes can be prepared from the Obukhovskiy concentrate than from the Samotkanskiy, although, a large quantity of sulfide pulp alkali is needed for this (14-15% as compared to 9-11% for the Samotkanskiy concentrate). Standard Ti-slugs (TiO_2 80%) can be produced from the studied concentrate. However, slag smelted from the concentrate of the Obukhovskiy deposit contains large quantities of impurities (by 4.2%), and in addition, it is leaner in TiO_2 (by 4.4%) content as compared to slag smelted from the Samotkanskiy concentrate. 6 ill., 5 tables. Author's abstract.

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UDC 669.295.054.79

MOROZ, YU. A., and SIDORENKO, A. P.

"Two-Stage Titanium Slag Production Procedure"

Moscow, Tsvetnyye Metally, No 2, Feb 70, pp 47-49

Abstract: A description is given of an experiment in obtaining titanium slags from a concentrate with the composition 26.16% Fe_2O_3 , 65.20% TiO_2 , 1.65% SiO_2 , 2.50% Al_2O_3 , 0.11% CaO , 0.43% MgO , 1.02% MnO , and 1.51% Cr_2O_3 . The advantages and disadvantages of using the two-stage procedure to produce the slags are discussed. It is shown that in order to obtain low-iron titanium slag it is also necessary to reduce the titanium oxides. The idea of a mandatory and regular increase in the FeO content in the charge when melting the concentrate (which is reduced in advance) is stated and experimentally confirmed. The results of microscopic analysis and x-ray micrography of the initial reduced concentrate, after two hours of holding at 1200°C and at 1400°C, are presented and discussed. The characteristics of the reduced concentrate and the electrical conductivity of the solid charge materials at various temperatures are tabulated. The redistribution of oxygen between Fe_{met} and TiO_2 at a temperature above 1200°C indicates the necessity of reexamining the energy consumption during two-stage melting of titanium slag in 1/2

USSR

MOROZ, YU. A., and SIDORENKO, A. P., *Tsvetnyye Metally*, No 2, Feb 70, pp 47-49

comparison with the existing technological process. From the data presented it is obvious that 17% of all the expended energy goes to the reduction of oxides, of which only 6.5% is expended on the reduction of iron oxides and 10.5% on the reduction of titanium oxides. In the case of preliminary reduction of iron oxides the energy expenditures for the production of slag in the second step of two-stage smelting drop by a large amount (6.5%). When charging the smelting furnace (the second step of the two-stage smelting) with hot reduced concentrate, the energy expenditures on heating it will be the same as in the smelting furnace by the existing process. The heat balance in this furnace is discussed and factors are mentioned which lower the efficiency of making titanium slag from rich titanium concentrates by the two-stage method.

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USSR

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UDC 621.791.85.037

GRAKUN, V. F., KRAVCHUK, L. A., MOROZENKO, L. N., KRYSHTAB, G. S.
(deceased)

"Electron Gun for Microwelding and Micromachining"

Kiev, Avtomaticeskaya Svarka, No 4, Apr 70, pp 72-73

Abstract: The article describes an electron gun developed at the Institute of Electric Welding imeni Ye. O. Paton for electron-beam microwelding and micromachining with a ~50-kv accelerating voltage and a beam current of up to 5 mA. The gun is comparatively simple, inexpensive, and reliable, and is suitable for both laboratory research and industrial use. An electron optic system is used with a triode electron projector, one electromagnetic lens, and a deflection system. The electron projector has an all-soldered case with a glass insulator. The electron optic system is protected by a case, which assures firm attachment of the high-voltage cable and its flexible connection with the projector, biological shielding of the operator, electro-interlocks, and convenient access to the cathode assembly of

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GRAKUN, V. F., et al., Avtomaticheskaya Svarka, No 4, Apr 70,
pp 72-73

the electron projector. Such a gun design makes it possible
to dispense with additional adjusting devices, bushings, and
a vacuum-tight metal case. The article includes a drawing of
the electron gun.

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CSO: 1842-W (97 pages)

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2

Acc. Nr.: AM 0106713

Ref. Code: UR0000

Chizhikov, A. I.; Perminov, V. P.; Lokhimovich, V. L.; Girshikov, N. Ye.; Morozovskiy, E. I.; Grigor'yev, E. P.

Continuous Casting of Steel Into Billets of a Large Cross-Section (Nepreryvnaya razlivka stali v zagotovki krupnogo secheniya) Moscow, Metallurgiya, 1970, 135 pp (SL:2047)

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19890037

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Acc. Nr.: AM 0106713

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Given are results of investigations of conditions in formation of large continuous ingots.

Given are results of the development and adoption of techniques for continuous steel casting into slabs with a width up to 1500 mm and shaped castings with a cross-section up to 280 X 420 mm.

Reel/Frame
19890038

USSR

UDC: 621.9.048.4

MOROZENKO, V. N., ONUFRIYENKO, I. P., GASIK, L. N., ZHURA, V. I., MOLCHANOVA,
~~L. V.~~

"Electrospark Production of Polymetallic Compositions"

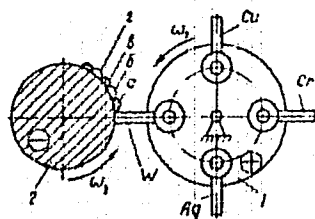
Kishinev, Elektronnaya Obrabotka Materialov, No 4(46), Aug/Sep 72, pp 8-12

Abstract: The paper gives the results of experimental studies of electrospark formation of polymetallic compositions produced by the set-up shown in the figure. Hinged to rotor 1 are anode rods of tungsten, copper, chromium and silver. Swinging out as the rotor turns, the anodes periodically approach the surface of cathode 2. By properly combining the rotational velocities ω_1 and ω_2 on the one hand, and velocity ω_1 and the pulse repetition frequency of the spark oscillator on the other hand, the transfer of anode material can be regulated so as to form overlapping alloyed zones a, b, v, r. Experimental studies show that this method of alloying can be used to produce intermetallic compounds in surfacing which cannot be made in any conventional metallurgical process. By proper selection of parameters, surfaces with any desired physical properties can be produced.

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MOROZENKO, V. N. et al., Elektronnaya Obrabotka Materialov, No 4(46),
Aug/Sep 72, pp 8-12



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AA0040721

MOROZENSKIY

I.
UR 0482

1-70

Soviet Inventions Illustrated, Section I Chemical, Derwent,

242214 METAL VACUUMING ROUTINE utilises variable rarefication in the feed funnel and high residual pressure in the treatment chamber itself. Varying the residual pressure above the meniscus in the funnel and maintaining the residual pressure inside the chamber ensures smooth control of metal feed and at the same time keeps a constant metal level. Electron ring or vortex pumps are suitable, sealed to the upper lip of the funnel. This allows metal to be poured into the funnel without disturbing the residual pressure control.

13.5.66 as 1078001/22-2. GRANAT.I.YA et al(11.9.69)
Bul 15/25.4.69. Class 18b, 31b2. Int.Cl.C 21c, B 22d.

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AA0040721

AUTHORS: Granat, I. Ya.; Gorskiy, V. B.; Zhuravlev, P. Ya.;
Skul'skiy, V. I.; and Morozenskiy, L. I.

19750365

USSR

UDC 518.9

MOROZEV, V. V.

"One Principle of Selection of Strategies"

Kibernetiku -- na Zluzhbu Kommunizmu. T. 6 [Cybernetics in the Service of Communism, Vol 6 -- Collection of Works], Moscow, Energiya Press, 1971, pp 185-189, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V665 by A. Mikhaylova).

Translation: The game Γ^k is studied, consisting of repetition k times of the antagonistic game Γ with compact sets of strategies of players and continuous win function. The win function of game Γ^k is defined as the sum of the wins of player I in k realization of game Γ . The asymptotic behavior of the maximum guaranteed probability of success of player I (i.e. production of winnings no less than the guaranteed winning of player I in one realization) is studied. Two examples are presented.

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USSR

UDC 620.193.1:669.295

TOMASHOV, N. D., ANOSHKIN, N. F., MOROZNIKOVA, S. V., OGINSKAYA, YE. I.,
RUSKOL, YU. S., and CHERNOVA, G. P., Institute of Physical Chemistry, Academy
of Sciences USSR

"Investigation of the Effect of Palladium on the Engineering, Mechanical and
Corrosion Properties of Titanium Alloys OT4 and VT14"

Moscow, Zashchita Metallov, Vol 9, No 6, 1973, pp 672-675

Abstract: The possibility of increasing the corrosion resistance of titanium
alloys OT4 and VT14 by means of alloying with 0.2% Pd was studied. The alloys
were produced in a vacuum-arc furnace with the palladium added in the form of
powder. Structure of OT4 and OT4+0.2% Pd was the alpha-solid solution, and
VT14 and VT14+0.2% Pd--fine grains of the alpha- and alpha"-phases inside a
beta-matrix. Strength properties of the titanium alloys were improved somewhat
with the addition of palladium while ductility was lowered. The add tion of
2.0% Pd significantly lowered the oxidation tendency of the alloys at 600 and
800°C, and especially at 1000°C. 3 figures, 4 tables, 6 bibliographic refer-
ences.

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USSR

UDC 621.771-216.5 :621.
.7.011:539.4.014.1

ROZORENOV, V. A., Engineer, MOROZOV, Doctor of Technical Sciences,
LEONOV, V. F., Engineer, and SOFRONOV, Ye. I., Candidate of Tech-
nical Sciences

"Deformation and Stresses in Mounts of Roll Stands of Four-High
Rolling Mills"

Moscow, Vestnik Mashinostroyeniya, No 9, Sep 73, pp 16-21

Abstract: The strength conditions in the mount of a roll stand
of the four-high rolling mill 5000 of the All-Union Scientific
Research, Planning, and Design Institute of Metallurgical Machi-
nery were calculated. The deformations and stresses were deter-
mined, using Castigliano's theorem, for a simplified form of the
mount according to a presented schema. The applied calculation
method of the inflexibility and strength of closed type mounts
considers the clearance between the mount stands and the bea-
rings of supporting rolls and the variable stiffness of cross
ties. On a level with the calculations, including the fatigue
strength, the stressed condition of the mount was also investi-
gated by the polarization-optical method on a simplified model

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USSR

ROZORENOV, V. A., et al., Vestnik Mashinostroyeniya, No 9, Sep 73, pp 16-21

of optically active ED6-M material. The results are discussed by reference to optical stress-strain pictures (photoelastic method) and the stress-strain diagram of contour stresses. Determined values of the reserve strength factor and of the deformation and rigidity of the mount are interpreted. Four figures, two tables, twelve formulas, two bibliographic references.

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USSR

MOROZOV, A. A., SERKIN, A. F. and STEPANENKO, V. N.

"Structural Analysis of Transient Processes"

Metody i Sistemy Obrab. Eksperim. Inform. [Methods and Systems for Processing of Experimental Information -- Collection of Works], Kiev, 1972, pp 42-48 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V210)

Translation: In order to study the properties of the transient processes of certain systems resulting from random perturbations, it is suggested that structural connection functions and structural connection matrices (in the vector case) be introduced. For example, the structural connection function of two processes $x_1(t)$ and $x_2(t)$, $0 \leq t \leq T$, is fixed by the formula

$$r_{1,2}(T) = \frac{\int_0^T dt \int_0^{T-t} a_1(t, \tau) q_2(t, \tau) d\tau}{\int_0^T dt \int_0^{T-t} p(t, \tau) d\tau}$$

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USSR

MOROZOV, A. A., SERKIN, A. F. and STEPANENKO, V. N., *Metody i Sistemy Obrab. Eksperim. Inform.*, Kiev, 1972, pp 42-48.

where $q_i(t, \tau) = \text{sign}[x_i(t + \tau) - x_i(t)]$, $i = 1, 2$, but $p(t, \tau)$ is a certain weight function, $0 \leq p(t, \tau) \leq 1$.

Comparison of function $r_{1,2}(T)$ and the matrices composed from such functions with standard functions and matrices allows, in a certain sense, analysis of the transient processes generated by random perturbations.

R. Liptser

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USSR

UDC 62-52(047.1)

MOROZOV, A. A.

"Possibility of Using Blocked Thyristors in Automation Devices"

Vestn. Kiev. Politekhn. In-ta. Ser. Avtomatiki i Elektropriborostr [Herald of Kiev Polytechnical Institute. Automation and Electronic Instruments Series], 1971, No 8, pp 32-35, (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, 1971, Abstract No 11 A14).

Translation: The basic properties of blocked thyristors and methods of control of blocking are described. The advantages of blocked thyristors in the design of various direct current circuits in automation pulse devices are indicated. 2 Figures; 3 Biblio. Refs.

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USSR

MOROZOV, A. A.

"A Spin Generator in a Nonhomogeneous Field"

Leningrad, Yadernyy Magnitnyy Rezonans, No 4, 1971, pp 121-125

Abstract: The author discusses certain questions associated with the effect which nonhomogeneity of the magnetic field surrounding a spin generator of the Schmeltzer type has on its operation. A comparison of the conventional single-section pickup with the low-interference modification having two physically spaced sections shows that the two-section pickup has a phase response with less slope. However, since the characteristics of the NMR gaussmeter are determined as much by the external interference level as by the properties of the spin generator, the two-section modification may still be preferred. One figure, bibliography of three titles.

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USSR

UDC 621.382.002:621.382.32

ZARUDNYY, D.I., MORALEV, S.A., NOROZOV, A.A.

"Problems Of Planning And Analysis During Simulation Of The Technological Process Of Production Of Integrated Circuits Based On MIS Structures"

V sb. Mikroelektronika (Microelectronics--Collection Of Works), Moscow, Izd-vo "Sovetskoye Radio," No 4, 1971, pp 294-302

Abstract: The specific special features of the use of mathematical statistics during selection of a strategy of systematic investigation are studied and experiments and their interpretation are conducted, as applied to the technological process of production of integrated circuits based on metal-insulator-semiconductor (MIS) structures. The principal stages of the solution of the problems considered are shown in the form of a block diagram of the control process. A complex algorithm and a program using algorithmic language for the "Minsk-22" electronic computer were developed for solution of the problems considered. The mathematical provision worked out can be extended to other forms of technological processes. 2 fig. 15 ref.

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USSR

UDC 621.317.799:621.372(088.8)

KUDRYAVTSEV, G. I., MOROZOV, A. A.

"Device for Measuring Spatial Harmonic Amplitudes"

USSR Author's Certificate No 272403, Filed 25 Mar 68, Published, 22 Sep 70
(from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4A274P)

Translation: A device is proposed for measuring the spatial harmonic amplitudes in decelerating structures closed in a ring comprising a superhigh frequency oscillator connected with the decelerating structure and displaceable along the decelerating structure of the receiving probe and a superhigh frequency detector with a display. The device is distinguished by the fact that in order to simplify the measurements, the superhigh frequency detector input is connected to the receiving probe and the output of the superhigh frequency oscillator. A spectral analyzer is used as the display, and the receiving probe is made to move continuously around a circle along the decelerating structure.

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USSR

UDC 621.382.3(C88.8)

DANILIN, V.N., KONSTANTINOV, P.B., KOROZOV, A.A., FILATOV, A.L., CHERNYAVSKIY, A.A.

"Transistor For Circuits With Automatic Gain Control"

USSR Author's Certificate No 256084, filed 10 June 67, published 19 March 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B163P)

Translation: In the proposed structure of a transistor for circuits with AGC, the electrodes for the emitter and base are made by alloy-diffusion technology (in contrast to deposition in mesa structures), and the small active area of the emitter junction, necessary to assure a decrease of gain at high frequency, is assured because of a radial clearance between the base layer and the emitter electrode. A high-resistance semiconductor wafer with a resistivity not less than 1 ohm.cm serves as the base for the device, and the invariability of the dimensions of the emitter electrode assures reliability of the emitter lead out connection irrespective of the area of the emitter junction. By changing the area of the radial clearance, it is possible to obtain transistors of various classes with constant dimensions of the initial blank [zagotovka]. P.S.

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UDC 621.382.3

USSR

DANILIN, V.N., KONSTANTINOV, P.B., MOROZOV, A.A., FILATOV, A.L., OHERNYAVSKIY, A.A.

"Increase Of Cutoff Frequency Of Gain Of Alloy-Diffused Transistors"

Elektron. tekhnika. Nauchno-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, No. 1(51), pp 152-161 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B417)

Translation: Methods are described for an increase of the cutoff frequency of the gain F_T of alloy-diffused transistors (to 1.5--2 GHz). The technological method proposed makes it possible directly to decrease the thickness of the active base and the area of the emitter junction of the transistor. With an increase of the cutoff frequency, it is possible to increase the value of the breakdown voltage of the emitter junction, and also to obtain a transistor suitable for use in circuits with direct automatic gain control. Experimental results are presented. 10 ref.

Summary.

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AA0044642

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UR 0482

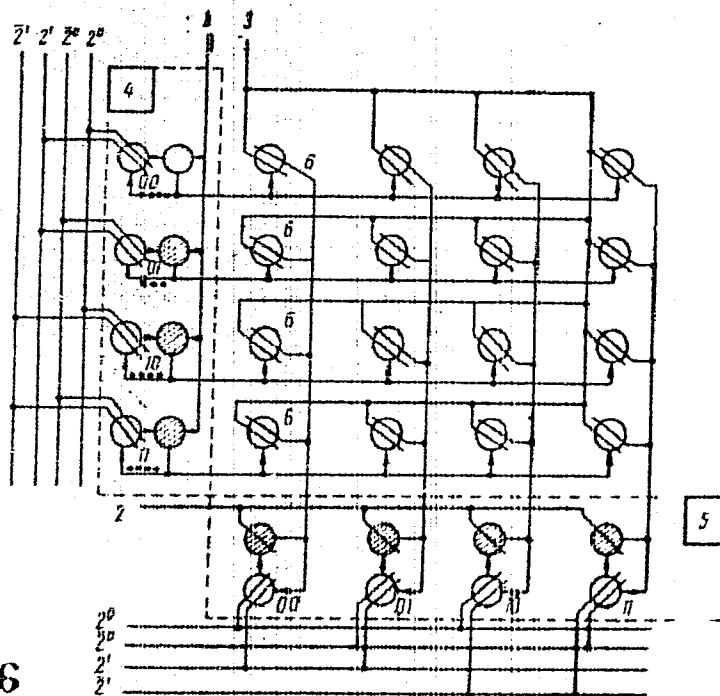
Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

239662 COORDINATE DECODER of binary code has the digit lines of the up-count connected with the inhibit windings of the generating units, in which the corresponding digit code combinations contain the "0"'s. The down-count digit lines are connected to inhibit windings of generating units which contain the "1"'s in the digits. The output lines of the pre-decoders are connected to the inputs of the coordinate matrix.

19.10.67 as 1190790/18-24. A. A. MOROZOV & V. A. SCAKOVA
(28.7.69) Bul 11/18.3.69. Class 42m³, 21a⁴. Int. Cl.
G 06f, H 03k.

19771345

AA0044642



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19771346

MOROZOV, A. B.

SO: JPAS 53402
18 JUN 71 UDC: 614.23:616.21:658.36

OPTIMUM SCHEDULING OF WORK OF OTORHINOLARYNGOLOGISTS IN THE OUTPATIENT SERVICE OF OBLAST HOSPITALS

(Article by A.B. Morozov, Candidate of medical sciences, Moscow Scientific Research Institute for Ear, Nose and Throat (Director: Professor N.A. Bobrovskiy), RPSR Ministry of Health; Moscow, Sovetskoye Zhdanovskoye Uchenye, Russian, No 5, 1971, submitted 10 December 1970, pp 39-44)

In view of the fact that organization of work and setting norms for working hours of ENT (ear, nose, throat) specialists in oblast consultation polyclinics, in the outpatient service, have not been covered sufficiently in the domestic literature, we set the goal of determining the actual time spent by ENT physicians, of investigating the quality of the therapeutic and consultative aid rendered by them to patients, and of developing optimum work volume for ENT consultants as related to service to outpatients in the oblast hospital polyclinic. The chronometry method developed by the All-Union Scientific Research Institute of Social Hygiene and Public Health Organization (Inst N.A. Semashko, for outpatient work was used, after making some additions related to the specific activity of ENT consultants. Specialists specially trained by us performed the data. The study was pursued in different months, for two work weeks, in ten cities which were the administrative centers of oblasts and autonomous republics, and which were situated in different climate and economic zones of the nation. Nurses, who were taught how to keep time filled out "special cards on which, in addition to identification data, were recorded the time spent on each patient and all other forms of activity of ENT specialists during the day. At the same time, an evaluation (expert opinion) was made of the justification for visiting this specialist and of the thoroughness and quality of therapeutic and diagnostic services to the patient. In all, over 3,000 cards per patient were filled out, and 100 time cards for the ENT doctor in the course of a work day. The data gathered were coded and processed by the method of variational statistics.

Classification of the obtained data revealed that the ENT specialists of oblast polyclinics render not only consultative but also therapeutic and diagnostic aid to the inhabitants of a number of rural regions. In addition,

Magnetohydrodynamics

USSR

UDC: 533.951

YESIPCHUK, Yu. V., MOROZOV, A. I., TILININ, G. N., TROFIMOV, A. V.

"Fundamental Properties of Plasma Oscillations in an Accelerator With Closed Drift and Extended Acceleration Zone"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 43, No 7, Jul 73, pp 1466-1473

Abstract: The authors investigate oscillations in an accelerator with closed drift and extended acceleration zone. It is shown that oscillations with a fairly high amplitude level are set up in all investigated working modes. The two main types of instabilities having the highest amplitudes are studied. It is shown that in the case of easily ionized working substances, modes with one or the other type of instability -- ionization or drift -- can be independently realized. Previous studies have shown that conductivity anomalously high compared with Coulomb conduction is observed across the magnetic field in an accelerator with closed drift and extended acceleration zone. Based on available data it may be stated that this conductivity is caused by buildup of oscillations in the accelerator, the main contribution apparently coming from transverse amplitude electric fields. Electron drift in crossed electric and magnetic fields intensifies

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YESIPCHUK, Yu. V., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 43, No 7, pp 1466-1473

transverse diffusion. In previous work transverse conductivity had been connected only with an ionization wave. It is shown that in many modes of operation without an ionization wave, in which drift oscillations are the fundamental waveform, the conductivity across the field is still several orders of magnitude higher than Coulomb conduction. It is hypothesized that the mechanism responsible for both ionization and drift instability may be oscillations with a frequency close to the electron cyclotron frequency.

2/2

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USSR

UDC 533.92:621.039.01

VINOGRADOVA, A. K., VINOGRADOV, V. P., and MOROZOV, A. I.

"Neutron Radiation in a Magnetic Plasma Compressor"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 43, No 8, Aug 73, pp 1637 - 1640

Abstract: A magnetic plasma compressor is a quasi-equilibrium, co-axial plasma accelerator. Previous compression system experiments had reported a neutron yield of 0.5 - 1 times 10^9 at an initial discharge voltage of 24kv and a discharge current of 650 ka. The experiments reported in this article used significantly lower values and longer process times. It was found that a yield of up to 4 times 10^5 neutrons was observed over a wide range of deuterium gas pressures and condenser voltages. The temperature and density of the plasma in the zone of focus was not high enough to permit a noticeable intensity of D-D "temperature" reactions, indicating that the neutrons were produced most probably by some unstable processes.

The experimental device contains a central electrode and ten peripheral electrodes. When the central electrode was negative, both the neutron and X-ray emission showed a series of unequal peaks; when the central electrode was positive, both forms of radiation had a single sharp peak. The radiation intensity also varied along the axis of the electrodes.

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USSR

UDC 533.9.07

MOROZOV, A. I., NEVROVSKIY, V. A., and SMIRNOV, V. A.

"Action in the Plasma Flow in a Closed Drift Accelerator System With Feedback"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 3, 1973, pp 543-549

Abstract: In a closed drift accelerator system undesirable perturbations of the plasma parameters are observed. The purpose of the experiments described in this paper is to investigate the applicability of a simple feedback system for damping out these perturbations. The system consists of a device for sensing the perturbations, a band filter, a delay line, voltage and power amplifiers, and a control electrode. Circuits of the entire control system and the sensing device used to measure the ion current oscillations in the channel are given. The experiments done with this equipment are described, and oscillograms showing the effects on the plasma perturbations by the feedback system are produced. While complete suppression of the perturbations could not be realized, the experiments demonstrated that stabilization of the perturbations was possible.

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USSR

UDC 533.9.07

MOROZOV, A. I., NEVROVSKIY, V. A., and SMIRNOV, V. A.

"Investigating Forced Oscillations of a Plasma Potential in an Accelerator With Closed Electron Drift"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 3, 1973, pp 535-542

Abstract: It is noted that closed electron drift plasma accelerators with extended zones of ion acceleration are known in American science literature as linear Hall accelerators. The present paper gives the results of experimental work in the investigation of the response of the accelerator plasma to an external perturbing signal which is regular in time and is varied in frequency from 30 to 800 kHz. The following characteristic reactions of the plasma were noted in the experiments: the dependence of the amplitudes of the forced oscillations on the amplitude of the forcing signal and its frequency (the amplitude-frequency characteristic of the plasma space); the amplitude distribution of the signal in the accelerator channel; the phase delay of the harmonic signal in its passage through the plasma (the phase-frequency characteristic). A cross-sectional diagram of the experimental accelerator is given; its basic principle of operation was described in an earlier article

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USSR

MOROZOV, A. I., et al., Zhurnal Tekhnicheskoy Fiziki, No 3, 1973, pp 535-542

(G. Janes and J. Dotson, in the book Prikladnaya magnitnaya gidrodinamika -- Applied Magnetic Hydrodynamics -- "Mir," Moscow, 1965, p 235). The authors thank G. Ya. Shchepkin for his assistance in organizing the experiments, and Yu. V. Yesipchuk and A. M. Kapulkin for discussing the experimental results.

2/2

USSR

UDC: 533.9.07

ZUBKOV, I. P., KISLOV, A. Ya., and MOROZOV, A. I.

"Optimizing the Parameters of Heavy-Current Ion Accelerators"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 4, 1972, pp 898-900

Abstract: This brief communication demonstrates the possibility of reducing the relative dimension of the ionization zone and increasing the compensation of the output ion angular moment, with the consequent reduction in the angular loss at the output of a two-lens accelerator. Modifications of the accelerator with one, two, and four lenses are investigated and an important result is derived; it is found that the magnitude of the discharge voltage can be increased while the required current is maintained constant. A diagram of the accelerator used in the author's experiments together with oscillograms of the discharge current and voltage is given. Luminograms of the output ion current are also shown.

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Converters

USSR

UDC 621.315.592

MOROZOV, A. I.

"Piezosemiconducting Wedge-Type Ultrasonic Surface Wave Converter"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 10, October 1971, pp 1994-1996

Abstract: A wide band wedge-type piezosemiconducting ultrasonic surface wave converter in integrated execution is described. The wedge is made of a low-resistance CdS single crystal directly in which a transverse ultrasonic body wave piezoconverter is created by diffusion of Ag in air. The results of experimental testing of the converter are given. The results show that use of this type of converter permits a decrease in conversion losses and increase in the operating frequency range as a result of complete acoustic matching of this piezoconverter with the wedge, absence of an intermediate layer at the piezo-converter-wedge interface, a large electromechanical coupling constant and low damping of the ultrasonic waves in the monocrystalline wedge. Use of piezo-semiconductors with a larger electromechanical coupling constant, for example, ZnO as the wedge material can lead to still greater improvement of these characteristics.

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USSR

UDC 539.293:534.286.8

GULYAYEV, YU. V., KMITA, A. M., MEDVED', A. V., and MOROZOV, A. I., Institute of Radio Engineering and Electronics, Academy of Sciences USSR

"Ultrasound Photoabsorption in CdS and CdSe at Low Temperatures"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 5, May 71, pp 889-894

Abstract: The article describes results of a detailed study of ultrasound photoabsorption in photoconductive CdS and CdSe crystals in relation to temperature, conductivity, and illumination intensity in the 2-50° K temperature range and 2-3 Hz frequency range. Experimental results show that the observed photoabsorption of ultrasound is due to the excitation of photoelectrons and their interaction with ultrasonic waves through the piezo effect but cannot be explained by sound absorption by free electrons. The most probable mechanism appears to be ultrasound absorption by electrons bound on small impurity centers -- absorption of the Debye dipole electric relaxation type. The authors thank S. G. KALASHNIKOV and I. A. VIKTOROV for discussing the work and V. N. FEDORETS for assisting in the measurements.

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USSR

UDC 533.9.07

VOLKOV, T. F., and MOROZOV, A. I.

"The Magnetic System of a Tubular Multilens Accelerator"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol XLI, No 6, Jun 71, pp 1247-1256

Abstract: The main component of a tubular multilens accelerator, as proposed recently by Morozov and Shchepkin, is a system of coils which makes it possible to obtain a radial magnetic field. In the present article, the magnetic field of this type of system is computed; the need for this computation arose from the development of electronic and ion models of tubular multilens accelerators. As a first approximation, a system of infinitely thin rings or coils is considered. It is assumed that the system is sufficiently long so that the effect of the ends of the magnetic field on the middle portion of the field may be ignored. Equations describing the magnetic field are obtained and then extended to the case of a real accelerator consisting of a finite number of rings, although, as in the previous case, it is assumed that the rings are infinitely thin. Formulas are obtained which allow one to calculate the magnetic field for an arbitrary number of rings, taking into consideration the effects of the ends of the field on the middle, these effects being of $1/2$

USSR

VOLKOV, T. F., and MOROZOV, A.I., Zhurnal Tekhnicheskoy Fiziki, Vol XLI,
No 6, Jun 71, pp 1247-1256

considerable interest in the real case. The structure of the formulas shows that the middle portion of the magnetic field consists of the field of an infinite system plus the disturbance from the ends. Semi-infinite systems are also examined briefly. In subsequent articles, the dynamics of particles in tubular multilens accelerators will be analyzed.

2/2

PHYSICS
Acoustics

USSR

KMITA, A. M., ~~MOROZOV, A. I.~~, FEDORETS, V. N., Institute of Radio Engineering and Electronics, Academy of Sciences USSR, Moscow

"Impurity-Dipole Absorption of Ultrasonic Waves in CdSe at Low Temperatures"

Leningrad, Fizika Tverdogo Tela, No. 4, Apr 71, pp 1011-1014

Abstract: The absorption of piezoactive ultrasonic waves in photoconducting CdSe crystals at a frequency of $3 \cdot 10^9$ Hz was investigated by the echo method with longitudinal ultrasonic waves generated from the free end surface of a sample placed at the antinode of the electric field of a coaxial quarter-wave resonator. To avoid the effect of infrared background the resonator and sample were placed directly in the tube of a helium cryostat and cooled in helium vapors. It was observed that in the temperature range 4.2-15°K the predominant absorption mechanism for ultrasonic waves at low conductivities is impurity-dipole absorption of ultrasound that is unconnected with the conductivity of the crystal at constant current and is caused by the capture of photoelectrons on small impurity centers, absorption of the Debye dipole dielectric relaxation type. If the conductivity of the crystal is sufficiently high, ordinary electron absorption of ultrasonic

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USSR

KMITA, A. M., et al, Fizika tverdogo tela, No. 4, Apr 71, pp 1011-1014

waves is observed. As the temperature increases, the impurity-dipole absorption decreases due to a decrease in the effectiveness of impurity centers. The effects observed in CdSe were very similar to effects observed by other authors in CdS and support the generality of the theory that has been established for impurity-dipole absorption of ultrasound for crystals of the piezosemiconductor class, in which impurity electron states exhibit natural dipole moments. According to the theory the phenomena observed in CdS are explained by the absorption of piezo-active ultrasonic waves on photoelectrons captured by small impurity centers which have fairly high natural dipole moments at helium temperatures; these electrons, being bonded, do not make a contribution to the conductivity of the crystal in a constant field but can participate in the absorption of sound as free electrons by interacting with the variable field of the waves. It follows from the theory that this mechanism for absorption of sound at low conductivities is predominant in the low-temperature region for this class of crystals in which there is a sufficient concentration of capture centers.

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USSR

MOROZOV, A. I., BELYAYEV, A. D., VITRIKOVSKIY, N. I., Institute of Semiconductors
of the Academy of Sciences UkrSSR, Kiev

"Acoustoelectric Effect in $Cd_xZn_{1-x}S$ Single Crystals"

Leningrad, Fizika Tverdogo Tela, No. 4, Apr 71, pp 1079-1083

Abstract: $Cd_xZn_{1-x}S$ photoconducting single crystals grown by the synthesis method from the vapor phase with a ZnS content from 0 to 40 mol % and with a dark resistance of 10^5-10^{10} ohm·cm were investigated. Indium contacts were applied in a vacuum on the {0001} plane. The electroacoustic effect was studied in a pulse mode with longitudinal ultrasonic waves in the 20-40 MHz frequency range. Radial pulses of a length ~ 100 μ sec and an amplitude of up to 200 v were used. A parity electroacoustic effect was observed in the samples, and the effect increased with an increase in the Zn content. The magnitude of the parity electroacoustic effect was studied as a function of the conductivity of the samples ($\sigma = 4 \cdot 10^{-10} - 2 \cdot 10^{-5}$ ohm $^{-1}$ ·cm $^{-1}$), the spectral composition of the illumination ($\lambda = 0.4-0.7$ μ), and the intensity of the ultrasonic wave. The strength of the electroacoustic effect reached 15 v and the value of the average field in the sample was 100 v/cm. It is noted that the effect of electron-phonon interaction has been discussed theoretically but that the mechanism for the rise of a parity acoustoelectric effect requires further explanation.

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USSR

MOROZOV, A. I., and ZEMLYANITSYN, M. A., Institute of Radiotechnology and Electronics Academy of Sciences USSR

"Electroacoustic Interaction of CdS with Pure Surface Shear Waves"

Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki (Letters to the Journal of Experimental and Theoretical Physics, Vol 12, No 8, 20 Oct 1970, pp 396-399

Abstract: Electron absorption and amplification of surface shear waves (ssw) as well as electroacoustic (EA) surface wave effects are studied with CdS mono-crystals. Two sets of electrodes were attached to two sides of a long (50 mm), etched, photosensitive CdS crystal: one on the [1010] plane for excitation and detection of ssw and one on the [0001] plane for measuring Rayleigh waves for purposes of comparison. A parallel beam of light falls normal to the [1010] or [0001] planes between a pair of pickup electrodes. The remainder of the crystals is shielded from light. The length of the crystal provided the necessary time delay for the pulse. When the crystal was illuminated, a strong electroacoustic affect and electron absorption was observed for both types of waves. A drop of water between the pickup electrodes produced Rayleigh wave attenuation of 10 to

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USSR

MOROZOV, A. I., et al, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 12, No. 8, 20 Oct 1970, p 396-399

15 db, and the EA emf fell by a factor of 6 to 10, depending on interelectrode conductivity. No attenuation effects were observed for shear waves lacking longitudinal components. Application of indium, resin, and other materials capable of shear deformation did have an effect. For example, liquid salol had no effect but, on hardening, damped the ssw by 4 db. At the same time, both liquid and solid forms damped the Rayleigh waves by 12 db. The surface shear waves penetrate deeper into the surface layer. The effective constants of electro-mechanical coupling, Rayleigh and shear wave velocities, and the dependence of the ssw on the drift field are calculated. The authors thank Prof. S. G. Kalashnikov for his interest in the work.

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USSR

MOROZOV, A. I., SHUBIN, A. P. (Moscow)

"Concerning the Theory of Two-Dimensional Flows of Well Conducting Plasma in a Channel"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 4, July-August 1970, pp 9-19

Abstract: A number of theoretical and experimental endeavors have been devoted to stationary coaxial plasma accelerators with their own magnetic field (i.e., a field created exclusively by the electric current passing through the accelerator); nevertheless, proper understanding of the processes taking place in systems such as these is as yet lacking. This is explained not only by the diversity of the processes but also by their complexity and interdependence. In the present article simplified equations have been obtained which describe slowly changing two-dimensional flows of well conducting, quasi-neutral, nonviscous plasma in a channel. Detailed attention is devoted to a case that is of practical interest: namely, flow in a channel with solid metal, ideally conducting walls which serve as electrodes. 4 figures, 14 bibliographic entries.

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USSR

MOROZOV, A. I., et al (Institute of Radio Engineering and Electronics, USSR Academy of Sciences)

"CdS Epitaxial and Textured Film Piezoelectric Converters"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, May 1971, pp 922-927

Abstract: The article concerns a study of CdS epitaxial and textured film piezoelectric converters grown on sound conductors of Ge, CdS, GaAs, Al_2O_3 , and fused and crystalline quartz. The variation, with frequency, of the conversion loss and the insertion loss in delay lines with such converters in the 10-3000-Mc frequency range were measured. It is shown that the characteristics of the converters do not depend on temperature in the 78-430°K range, and the dynamic range comprises more than 80 decibels.

The article includes 6 figures. Figure 1 is a schematic drawing of the film piezoelectric converters with sound conductors. Figure 2 is an electron diffraction pattern of a CdS epitaxial film on a GaAs substrate. Figure 3 shows curves for the dependence of the specific resistance of CdS films on the temperature of the heat treatment in different media. Figure 4 shows

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USSR

MOROZOV, A. I., et al, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, May 1971, pp 922-927

a number of curves for the conversion loss of semiconductor converters as a function of the frequency. Figure 5 shows the block diagram of an arrangement for measuring the insertion loss in delay lines with one piezoelectric converter in the 2-3-gigacycle frequency range. Figure 6 shows curves for the insertion loss as a function of the frequency.

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USSR

UDC 533.9.07

ZUBKOV, I. P., KISLOV, A. Ya., LEBEDEV, S. V., and MOROZOV, A. I.

"Ion Motion in a Two-Lens Accelerator With 'Closed' Electron Drift"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 51, No 3, Mar 71, pp 526-533

Abstract: Ion trajectories in a two-lens accelerator with closed drift of electrons was calculated, and the distributions of ion current densities in the accelerated channel were measured. The article is a continuation of a description of studies of a high-current quasistationary ion plasma accelerator with closed electron drift. An averaged picture of the motion of the ion component inside the accelerator channel and the region of ionization of the working material (hydrogen) are given. Ion motion was analyzed by two methods: first, ion trajectories were calculated on the basis of experimentally measured distributions of electric and magnetic fields, and then a picture was obtained of the distribution of ion current densities along the channel with the aid of double electric probes. It was concluded from the study that the averaged picture of current density distributions qualitatively agrees with calculations of ion trajectories made on the basis of measurements of electric and magnetic fields in the accelerator

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USSR

ZUBKOV, I. P., et al, Zhurnal Tekhnicheskoy Fiziki, Vol 15, No 3, Mar 71,
pp 526-533

channel. It was also concluded that the interaction of ions with the magnetic field basically determines the geometry of the ion current. As a result of this interaction, the beam moves close to the outer insulator in the region of the first lens; however, the greater portion of the ions generated in the vicinity of the first lens continued to accelerate in the second lens without collision with the wall.

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UDC 537.533.3

USSR

MOROZOV, A. I.

M

"Probing Axially Symmetrical Electric and Magnetic Fields With a Charged Particle Flow"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 8, Aug 70, pp 1776-1779

Abstract: It is noted that beams of charged particles for field diagnostics in a plasma have been applied in several previous studies but that all these studies were of a very special nature. This article presents calculations for the fairly general case of probing axially symmetric fields with charged particles. In principle the probing can be conducted in two methods: with a broad beam ("panoramic probing") and with a narrow beam ("point probing"). The first method is an analog of shadow methods and clearly shows the qualitative structure of the field as a whole, and the second method makes it possible to determine quantitative parameters of the field. The velocities and trajectories of the particles are obtained in the form of series in terms of inverse powers of the initial velocity, assuming that the energy of the particles is large and that they are only slightly deflected by the field under investigation. Formulas are derived expressing the characteristics of an axially symmetric electromagnetic field in terms of measured deflections of the particles.

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1/2 041 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--PHOTOABSORPTION OF ULTRASOUND IN CADMIUM SULFIDE AT LOW
TEMPERATURES -U-
AUTHOR--(04)-GULYAYEV, YU.V., KMITA, A.M., MEDVED, A.V., MOROZOV, A.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(3), 690-9
DATE PUBLISHED-----70
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TOPIC TAGS--ULTRASONIC ABSORPTION, CADMIUM SULFIDE, PHOTOCONDUCTIVITY,
CRYOGENIC PROPERTY, ELECTRON CAPTURE, POTENTIAL WELL, TEMPERATURE
DEPENDENCE, CRYSTAL IMPURITY, CRYSTAL DEFECT
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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105079

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ABSORPTION OF ULTRASOUND WAVES WAS INVESTIGATED IN PHOTOCONDUCTING CDS CRYSTALS AT 2.5-50DEGREEK AND AT 2.2-3.2 GHZ. THE ABSORPTION COEFF. CAUSED BY ILLUMINATION OF THE CRYSTAL CAN EXCEED BY SEVERAL ORDERS OF MAGNITUDE THE CORRESPONDING ABSORPTION COEFF. OF ULTRASOUND BY FREE ELECTRONS CALCD. BY THE LINEAR THEORY OF WYATT. THE OBSD. PHOTOABSORPTION OF ULTRASOUND DOES NOT HAVE A SINGULAR RELATION WITH THE INSTANTANEOUS COND. OF THE CRYSTAL OVER A WIDE RANGE. ON INCREASING TEMP. FROM HE TEMP. TO 20DEGREEK, THE PHOTOABSORPTION OF ULTRASOUND DECREASES APPROX. INVERSELY PROPORTIONALLY TO TEMP.; ABOVE 24DEGREEK AT CONDS. SMALLER THAN 10 PRIME NEGATIVE6 OHM PRIME NEGATIVE1-CM PRIME NEGATIVE1, NO NOTICEABLE PHOTOABSORPTION WAS OBSD. THE DEPENDENCE WAS ALSO STUDIED OF PHOTOABSORPTION ON THE APPLIED CONST. ELEC. FIELD. AN EXPLANATION IS PROPOSED FOR THE EXPTL. DATA IN TERMS OF NOTIONS ABOUT CAPTURE OF ELECTRONS (PHOTOELECTRONS) IN SHALLOW POTENTIAL WELLS OF LARGE RADIUS DETD. BY THE PRESENCE OF IMPURITIES AND CRYSTAL DEFECTS. THESE ELECTRONS, BEING BOUND OR QUASI BOUND, DO NOT CONTRIBUTE TO THE STATIC COND. OF THE CRYSTAL, BUT CAN PARTICIPATE IN THE ABSORPTION OF ULTRASOUND BY INTERACTING WITH THE ALTERNATING ELEC. FIELD CREATED BY THE SOUND WAVE. IN ANALOGY WITH THE DEBYE THEORY OF DIPOLE RELAXATION INSOLIDS, AN ELEMENTARY THEORY WAS DEVELOPED OF SUCH ABSORPTION AND QUAL. COMPARISON WAS MADE WITH EXPT. FACILITY: INST. RADIOTEKH. ELEKTRON., MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr: **AP0048388**

Abstracting Service:
CHEMICAL ABST. 5/30

M

Ref. Code:
UR 0/51

94412x Epitaxial piezoelectric transducers. Morozov, A. I.;
 Gingis, A. D.; Kotelyanskii, I. M.; Aitkhozhin, S. A.; Pantelev,
 V. V. (Inst. Radiotekh. Elektron., Moscow USSR). *Fiz.*
Tverd. Tela 1970, 12(1), 109-113 (Russ). Epitaxial piezotrans-
 ducers were prep'd., based on CdS films grown by gas transport.
 Frequency characteristics were investigated of these transducers
 of longitudinal and transverse ultrasound waves at 10-800 MHz.
 The dynamic range of such piezoelec. transducers is > 80 decibels.
 The relative transmission band is 100-120% with conversion
 losses of 20-5 decibels. Good temp. stability was noted for these
 transducers. Data are given on damping of longitudinal ultra-
 sound waves in Ge at 80, 300, and 430°K. Prospects for appli-
 cation of piezoelec. transducers are discussed. A. Libackyj /

BYK

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19800096

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USSR

M
MOROZOV, A. I.; et al (Institute of Radio Engineering and Electronics, USSR
Academy of Sciences, Moscow)

"Epitaxial Piezoelectric Transducers"

Leningrad, Solid State Physics; January, 1970; pp 109-13

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ABSTRACT: Epitaxial piezoelectric transducers of cadmium sulfide films grown by a method of gas transport reactions were successfully obtained. The frequency characteristics of the piezoelectric conversion of longitudinal and transverse ultrasonic waves in the 10-600 Mc frequency range were studied. It was shown that the dynamic range of such piezoelectric transducers exceeds 80 db, and the relative pass band is 100-120% for conversion losses of 20-25 db. Good thermal stability was obtained for the characteristics of the epitaxial transducers, measured with a germanium acoustic delay line. Data was given for the damping of longitudinal ultrasonic waves in germanium with temperatures of 80, 300, and 430°K. The prospects for the use of epitaxial transducers were discussed.

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- 78 -

USSR

MOROZOV, A. I., et al., Solid State Physics; January, 1970; pp 109-13

The authors express their thanks to S. G. Kalashnikov for his interest in the work and Yu. V. Proklov and B. A. Stankovskiy for their discussion of the results.

The article includes three figures, one of them two photographs showing the microscopic structure of a cadmium sulfide film 25 μ thick. There are 10 bibliographic references.

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USSR

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MOROZOV, A. I.; KISLOV, A. YA.

"Distribution of Total Pressure in a Plasma Emitted from a Quasi-Stationary Injector"

Leningrad, Journal of Technical Physics; April 1970; pp 768-71

Abstract: The article concerns the measurement of the total pressure distribution in the current of a plasma emitted from a quasi-stationary plasma injector with its own magnetic field. The total pressure was measured with a pressure sensor the sensing element of which was a piezoelectric crystal of barium titanate. The authors describe a method of calibrating the pressure sensor by means of a "magnetic" shock. This method makes it possible to determine not only the sensitivity of the sensor but also its own frequency.

In the work it is shown that the nature of the distribution of the total pressure at the output of the injector varies strongly with the polarity of the central electrode; this is caused by the appearance of a "Hall" electrical current within the injector.

The article includes five figures: Figure 1 shows a cross section of the pressure sensor; Figure 2 shows oscillograms of the magnetic field and signals from the piezoelectric sensor; Figure 3 shows the calibration curve; Figures 4 and 5
1/2

USSR

MOROZOV, A. I.; KISLOV, A. YA, Journal of Technical Physics; April 1970, pp 768-1.

show the total pressure distributions in the current with negative and positive polarities respectively of the central electrode.

There are three bibliographic references.

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UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--THE POSSIBILITY OF USING GAUSSIAN APPROXIMATION IN EVALUATING
JAMMING INVULNERABILITY OF RECEPTION -U-

AUTHOR-(02)-MOROZOV, A.K., TRATAS, YU.G.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKNIKA, NO 1, 1970, PP 25-29

DATE PUBLISHED-----70

SUBJECT AREAS--NAVIGATION, MATHEMATICAL SCIENCES

TOPIC TAGS--GAUSSIAN DISTRIBUTION, COMMUNICATION JAMMING, INTERFERENCE
IMMUNITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1359

STEP NO--UR/0108/70/000/001/0025/0029

CIRC ACCESSION NO--AP0123317

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123317

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONDITIONS ARE GIVEN FOR THE USE OF GAUSSIAN APPROXIMATION IN EVALUATING THE RECEPTION JAMMING INVULNERABILITY OF BINARY SIGNALS BY RECEIVERS WITH NONLINEAR ELEMENTS. THE ORIGINAL ARTICLE HAS TWO ILLUSTRATIONS AND TWO BIBLIOGRAPHIC ENTRIES.

UNCLASSIFIED

USSR

UDC: 8.74

MOROZOV, A. M., LEONT'YEV, A. G.

"On the Problem of Physical Generation of Random Binary Sequences for Simulation of Errors in Communications Channels"

V sb. Peredacha diskretn. soobshch. po kanalam s gruppiruyushchimisya oshibkami (Transmission of Discrete Messages Over Channels With Grouped Errors--collection of works), Moscow, "Nauka", 1972, pp 116-126 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V500)

Translation: Methods of physical generation of random numbers are classified along with continuous realizations with a given distribution law. Principal attention is given to obtaining equally distributed random numbers. It is shown that registration of a periodically changing state at random times gives the least deviation from a given distribution law. Formulas are presented for calculating errors. A method of generating binary random sequences is recommended. Authors' abstract.

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- 44 -

USSR

UDC: 8.74

LEONT'YEV, A. G., MOROZOV, A. M., FUKS, B. K.

"A Random Sequence Generator, and a Check on its Quality"

V sb. Peredacha diskretn. soobshch. po kanalam s gruppiruyushchimiya oshibkami (Transmission of Discrete Messages Over Channels With Grouped Errors-- collection of works), Moscow, "Nauka", 1972, pp 126-134 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V497)

Translation: An explanation is given of a block diagram for a random sequence generator. The complete schematic of the device is given and the interaction between subassemblies is explained. Feedback is introduced to improve accuracy. Algorithms are presented for checking the random sequence generator, and a comparative analysis of the algorithms is given. Authors' abstract.

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USSR

UDC 535.37:548.0

MOROZOV, A. M., MOROZOVA, L. G., FEOFILOV, P. P.

"Luminescence of Uranium in Scheelite-Structured Monocrystals"

Leningrad, Optika i Spektroskopiya, No 1, 1972, pp 100-110

Abstract: An investigation is made of activated uranium in monocrystals of molybdates and tungstenates of group II metals with the general formula, $Me^{II}Me^{VI}O_4$ ($Me^{II} = Ca, Sr, Ba$; $Me^{VI} = Mo, W$) with scheelite structures. In this investigation, the authors used very low temperatures, including helium levels, in which unusually rare structures were formed at the centers of several specimens. Growth of the crystals is described and the absorption spectra of the crystals plotted. Examples of the latter are shown for $SrWO_4-U$ and $BaWO_4-U$ together with the luminescence spectra of $Me^{II}Me^{VI}O_4-U$ crystals, and an extensive table of the luminescence spectra of these crystals, obtained at a temperature of $4.2^\circ K$, is compiled.

1/1

USSR

UDC 681.332:519.2

MOROZOV, A. M., SUDAKOV, D. M., ZAKHAROV, V. M., Computing Center of the Academy of Sciences of the Georgian SSR

"A Random Number Generator"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310255, Division G, filed 20 Oct 69, published 26 Jul 71, pp 152-153

Translation: This Author's Certificate introduces a random number generator with arbitrary distribution. The device contains a module for shaping uniformly distributed random numbers connected to a number register. The outputs of the most significant digits of the number register are connected to the address outputs of a memory device. The proposed random number generator also contains an adder. As a distinguishing feature of the patent, in order to improve the accuracy of approximation to the distribution curve of the random numbers generated, the device contains multiplication units connected to the output of the memory device. The second inputs of these multipliers, except for one,

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USSR

MOROZOV, A. M., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310255, Division G, filed 20 Oct 69, published 26 Jul 71, pp 152-153

are connected to the least significant digital place outputs of the register through nonlinear contiguous digital converters, the one multiplier is connected directly to the least significant digital outputs of the register, and the outputs of all multipliers are connected to the adder.

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USSR

UDC 519.21

SUDAKOV, D. M., MOROZOV, A. M.

"Distribution of Moments in Time of First Intersection of a Rising Level by a Normal Random Process"

Tr. Vychisl. Tsentra. AN Gruz SSR [Works of Computer Center, Academy of Sciences, Georgian SSR], Vol. 9, No. 3, 1970, pp 80-86 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V92 by V. Chistyakov).

Translation: A random process is studied in which the one-dimensional distributions are normal:

$$\Phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-\frac{u^2}{2}} du. \quad (1)$$

A heuristic conclusion is presented for the formula for the distribution function of the moment of first intersection of level $x=f(t)$ by the process. Axis t is divided into small sectors and line $x=f(t)$ is replaced by a broken line consisting of sectors parallel to the t axis and sectors parallel to the x axis. The following assumptions are made:

A) The distribution function of the moment of first intersection, calculated for the broken line, converges as the sectors are made shorter with the corresponding

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- 8 -

USSR

UDC 519.21

SUDAKOV, D. M., MOROZOV, A. M., Tr Vychisl. Tsentra. AN Gruz SSR, Vol. 9, No. 3, 1970, pp 80-86.

distribution function for the line $x=f(t)$.

B) The intersection of the process with sectors of a broken line parallel to the t axis and sectors parallel to the x axis are independent.

C) The number of intersections of sectors parallel to the t axis is independent and distributed according to Poisson's rule.

Discussions are presented for the cases $f(t)=kT$ and $f(t)=a-U_0 e^{-\frac{t}{T}}$. In the case of arbitrary $f(t)$, a formula is written immediately. No limitations on $f(t)$ or on the random process are given except for (1).

Abstractors note. It is well known that the flow of crossings of a high, constant level is a Poisson flow. The assumption of independence and Poisson nature of the number of crossings of a finite level in neighboring intervals approaching 0 in length seems unjustified.

2/2

1/2 029 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--OPTICAL CONSTANTS, LUMINESCENCE, AND INDUCED RADIATION OF LANTHANUM
NIOBATE SINGLE CRYSTALS ACTIVATED BY NEODYMIUM -U-
AUTHOR--(05)-BAKHSHIYEVA, G.F., KARAPETYAN, V.YE., MOROZOV, A.M., MOROZOVA,
L.G., TOLSTOY, M.N.
COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(1), 76-81

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SINGLE CRYSTAL, OPTIC PROPERTY, THERMAL EFFECT, LUMINESCENCE,
ANISOTROPY, LANTHANUM COMPOUND, NIOBATE, CRYSTAL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/1315

STEP NO--UR/0051/70/028/001/0076/0081

CIRC ACCESSION NO--AP0049477

UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0049477

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LANBO SUB4 SINGLE CRYSTALS DIAM. 8-15, LENGTH 70 MM WERE ISOLATED FROM THE MELT AFTER HIGH TEMP. TREATMENT OF LANBO SUB4 IN INERT ATM. UNACTIVATED CRYSTALS AND CRYSTALS ACTIVATED WITH 1 MOLE PERCENT ND PRIME3 POSITIVE WERE STUDIED. UNACTIVATED CRYSTALS ARE TRANSPARENT IN THE RANGE 0.27-6.5MU; THE LIGHT ABSORPTION IN THE RANGE 6.5-9.0 MU CORRESPONDS TO THE VIBRATIONAL FREQUENCIES OF NBO SUB4 TETRAHEDRONS. N WAS OBTAINED AT 5 WAVELENGTHS IN THE RANGE 435.8-656.3 MMU. STRONG BIREFRINGENCE WAS OBSD. ACTIVATION OF THE SINGLE CRYSTALS WITH ND PRIME3 POSITIVE CAUSED STRONG ANISOTROPY OF THE CRYSTALS. LUMINESCENCE SPECTRA WERE RUN AT 77DEGREEK. THE LUMINESCENCE DURATION WAS 120 MUSEC AT ROOM TEMP.; IT DID NOT CHANGE ON HEATING OF THE ACTIVATED SINGLE CRYSTAL TO 250DEGREES. THREE AXIAL ELLIPSOIDS WERE CONSTRUCTED FOR THE SEP. LINES IN THE LUMINESCENCE SPECTRA OF LANBO SUB4 MINUS ND PRIME3 POSITIVE SCANNED IN POLARIZED LIGHT. GENERATION OF FORCED RADIATION OCCURRED IN THE ACTIVATED SINGLE CRYSTALS AT A SINGLE FREQUENCY, 1.0624 MU. SHIFT TO 1.0622 MU OCCURRED ON HEATING OF THE CRYSTAL TO 300DEGREES.

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UNCLASSIFIED

PROCESSING DATE--18SEP70

1/2 A 029

TITLE--OPTICAL CONSTANTS, LUMINESCENCE, AND INDUCED RADIATION OF LANTHANUM
NIOBATE SINGLE CRYSTALS ACTIVATED BY NEODYMIUM -U-

AUTHOR--(05)-BAKHSHIYEVA, G.F., KARAPETYAN, V.YE., MOROZOV, A.M., MOROZOVA,
L.G., TOLSTOY, M.N.
COUNTRY OF INFO--USSR

M

SOURCE--OPT. SPEKTROSK. 1970, 28(1), 76-81

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SINGLE CRYSTAL, OPTIC PROPERTY, THERMAL EFFECT, LUMINESCENCE,
ANISOTROPY, LANTHANUM COMPOUND, NIOBATE, CRYSTAL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1980/1315

STEP NO--UR/0051/70/028/001/0076/0081

CIRC ACCESSION NO--AP0049477
UNCLASSIFIED

PROCESSING DATE--18SEP70

UNCLASSIFIED

2/2 029

CIRC ACCESSION NO--AP0049477

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

ABSTRACT. LANBO SUB4 SINGLE CRYSTALS DIAM. 8-15, LENGTH 70 MM WERE ISOLATED FROM THE MELT AFTER HIGH TEMP. TREATMENT OF LANBO SUB4 IN INERT ATM. UNACTIVATED CRYSTALS AND CRYSTALS ACTIVATED WITH 1 MOLE PERCENT ND PRIME3 POSITIVE WERE STUDIED. UNACTIVATED CRYSTALS ARE TRANSPARENT IN THE RANGE 0.27-6.5MU; THE LIGHT ABSORPTION IN THE RANGE 6.5-9.0 MU CORRESPONDS TO THE VIBRATIONAL FREQUENCIES OF NBO SUB4 TETRAHEDRONS. N WAS OBTAINED AT 5 WAVELENGTHS IN THE RANGE 435.8-656.3 MMU. STRONG BIREFRINGENCE WAS OBSD. ACTIVATION OF THE SINGLE CRYSTALS WITH ND PRIME3 POSITIVE CAUSED STRONG ANISOTROPY OF THE CRYSTALS. LUMINESCENCE SPECTRA WERE RUN AT 77DEGREEEK. THE LUMINESCENCE DURATION WAS 120 MUSEC AT ROOM TEMP.; IT DID NOT CHANGE ON HEATING OF THE ACTIVATED SINGLE CRYSTAL TO 250DEGREES. THREE AXIAL ELLIPSOIDS WERE CONSTRUCTED FOR THE SEP. LINES IN THE LUMINESCENCE SPECTRA OF LANBO SUB4 MINUS ND PRIME3 POSITIVE SCANNED IN POLARIZED LIGHT. GENERATION OF FORCED RADIATION OCCURRED IN THE ACTIVATED SINGLE CRYSTALS AT A SINGLE FREQUENCY, 1.0624 MU. SHIFT TO 1.0622 MU OCCURRED ON HEATING OF THE CRYSTAL TO 300DEGREES.

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MOROZOV

A.M.

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AA0052569

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 1-70

243461 CUMULATIVE CHARGES OF EXPLOSIVES are obtained by charging the explosive into an elastic shell, e.g. of polyethylene provided with an inserted body of the corresponding shape and an overall length equal to the length of the above shell, and subsequent sealing and subjecting to the action of compressed air or a liquid under elevated pressure. 6.12.67. as 1201819/40-23. Add to 210724. N.L.ROSINSKII et alia. Safety in the Mining and Metallurgical Ind. Res. Inst. (30.9.69.) Bul.16/5.6.69. Class 78c. Int.Cl.C06b.

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AA0052569

Rosinskiy, N. L.; Matyunin, V. S.; Tolstykh, K. S.;
Morozov, A. M.; Kuznetsov, N. M.
Makeyevskiy Gosudarstvennyy Nauchno-Issledovatel'skiy
Institut po Bezopasnosti Rabot v Gornoy Promyshlennosti

19821255

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AA0043545

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243263 RANDOM NUMBER GENERATOR in which the accuracy and rapid action of random number generation is obtained by the formation of random duration strobed pulses spread according to the natural distribution law around its mean value uses a fluctuating potential produced by a noise generator. The duration of the pulses are determined by the instantaneous value of the noise amplitude. The method renders it possible to choose the pulse length, corresponding to the noise maximum, somewhat less than the period in which, in combination with the heat pulses from a computer, the input from a trigger can be interrupted in such a way as to interfere with its counting.

16.1.63 as 814308/26-24. A. M. MOROZOV (24.9.69.) Bul 16/3.3.69. Class 42m1, 21a. ~~Inventor's No. 11 03k.~~

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HH0043505

A.M. Morozov
UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

243264 RANDOM NUMBER GENERATOR, for operation in conjunction with the beat pulses of a digital computer, offers accurate and rapid working. It basically consists of a noise generator driving a strobe pulse shaper giving pulses of random duration and also receiving computer beat pulses. The random length output pulses fall upon a coincidence gate receiving pulses from a constant frequency generator. Hence, output pulses of standard shape and height enter a trigger, thence a second coincidence gate also receiving the computer beat. At the instant of arrival of the beat any random potential present in the last gate passes through to the computer's lowest register digit, shift takes place and the register shows

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the random number. The pulse shaper consists of a triode, the grid of which receives both the random noise potential and the beat. The front of the combined square wave signal causes little change on the grid, owing to shunting resistors; the rear gives a sharp negative voltage drop and the valve amplifier provides an anode potential linear with the noise input, coincident with the rear beat pulse face.

18.1.63 as 814308/18-24. A. M. MOROZOV (12.9.69) Bul 16/5.5.69. Class 42a, 21a¹. Int. Cl. G 06f, H 03k.

MIT

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19761900

1/2 028 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--PORTABLE DEVICE FOR PREFLIGHT MEDICAL EXAMINATION OF PILOTS -U-
AUTHOR-(02)-MOROZOV, A.N., STERLIKOV, V.P.
COUNTRY OF INFO--USSR
SOURCE--VOENNO-MEDITSINSKII ZHURNAL, MAR. 1970, P. 69, 70
DATE PUBLISHED--MAR 70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--MEDICAL EXAMINATION, MEDICAL APPARATUS, BLOOD PRESSURE,
MILITARY MEDICINE, AIRCRAFT PILOT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/2056 STEP NO--UR/0177/70/000/000/0069/0070
CIRC ACCESSION NO--AP0117299
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117299

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

ABSTRACT. DESCRIPTION OF A COMPACT PORTABLE DEVICE FOR SIMULTANEOUSLY RECORDING SYSTOLIC AND DIASTOLIC ARTERIAL PRESSURE, BODY TEMPERATURE AND PULSE RATES DURING PREFLIGHT MEDICAL EXAMINATION OF FLYING PERSONNEL. THE DEVICE USES A DISTAL PERIMETRIC OSCILLOGRAPHIC TECHNIQUE PROPOSED BY KAZARIAN (1965) FOR ARTERIAL PRESSURE RECORDING FROM FLUCTUATIONS OF EXTERMINITY PERIMETERS. A TRANSPARENT SLIDE RULE IS USED FOR READING THE PULSE RATES FROM OSCILLOGRAMS. A ZERO METHOD SERVOSYSTEM IS USED AT A FREQUENCY OF 400 HZ FOR TEMPERATURE MEASUREMENTS.

UNCLASSIFIED

UNCLASSIFIED
 PROCESSING DATE--20NOV70
 172 028
 TITLE--A PORTABLE INSTRUMENT FOR THE PREFLIGHT MEDICAL EXAMINATION OF
 PILOTS -U-
 AUTHOR-(GZ)-MORZOV, A.N., STERLIKOV, V.P.
 COUNTRY OF INFO--USSR
 SOURCE--VOYENNO-MEDITSINSKIY ZHURNAL, NO 3, 1970, PP. 69-70
 DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
 TOPIC TAGS--AIRCRAFT PILOT, MEDICAL EXAMINATION, BLOOD PRESSURE, MEDICAL
 EQUIPMENT, BODY TEMPERATURE, HEART RATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--3000/6363

STEP NO--UR/0177/70/000/003/0069/0070

CIRC ACCESSION NO--AP0134150

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134150

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE PERIOD OF PREFLIGHT MEDICAL EXAMINATION THE PHYSICIAN LOSES MUCH TIME IN TAKING THE PULSE, MEASUREMENT OF THE ARTERIAL PRESSURE AND BODY TEMPERATURE. WE HAVE DEVELOPED A PORTABLE INSTRUMENT BY MEANS OF WHICH IT IS POSSIBLE TO SIMULTANEOUSLY MEASURE AND RECORD THE VALUES OF THE SYSTOLIC AND DIASTOLIC ARTERIAL PRESSURE, BODY TEMPERATURE AND PULSE RATE. THIS IS ACCOMPLISHED AUTOMATICALLY, THE INDICATORS OF ARTERIAL PRESSURE AND PULSE RATE ARE RECORDED IN THE FORM OF AN OSCILLOGRAM ON HEAT SENSITIVE PAPER, AND THE BODY TEMPERATURE (DEGREESC) IS DETERMINED BY AN ARROW INDICATOR.

UNCLASSIFIED

AA0038781 - MOROZOV A.A.

UR 0482

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Soviet Inventions Illustrated, Section I Chemical, Derwent,

237322 NON-RESIDUAL OXIDISING GASIFICATION
METHOD FOR OIL RESIDUES by incomplete

3/70

burning in air or oxygen, differs in being carried out in two stages first at 500-700°C and then at 1200-1400°C with the formation of gaseous products. The preliminary oxidation chamber is fed with part of the air, 0.1 of the stoichiometric quantity, and with all the fuel to be gasified. The whole mass of fuel is evenly heated in the chamber. This causes considerable destruction of the complex compounds, introducing atoms of oxygen into the molecular structure of the fuel. The process in this chamber is not brought to a thermodynamic balance, so the condensation reactions do not have time to finish, and the product, containing a rich selection of active radicals, enters the reaction chamber where, being mixed with the remaining air, it reacts up to the point of terminal gaseous products con-

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siderably more rapidly. By eliminating intermediate oxidation, the process takes place more energetically, less jerkily, is easily regulated, and produces less soot. 29.3.67. as 1146013/23-26, MASLENNIKOV, V.M. et al. Theoretical and Practical Mechanics Inst. Siberian Sect. Acad. Sciences U.S.S.R. (7.7.69) Bul. 8/12.2.69. Class 24e, Int. Cl. C 10j.

AUTHORS: Maslennikov, V. M.; Vyskubenko, Yu. A.; Dimitrov, V. I.;
Zharkova, G. M.; Morozov, A. P. and Chusov, D. V.

Institut Teoreticheskoy i Prikladnoy Mekhaniki Sibirskogo
Otdeleniya AN SSSR

19731978

Acc. Nr.

AP0034071

Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code

UR 0078

74276c Thermographic study of the reaction of $\text{Bi}_2\text{Ti}_2\text{O}_{11}$ with vanadium pentoxide and molybdenum and tungsten trioxides. Smolyaninov, N. P.; Morozova, A. P.; Hochkareva, O. B. (Azovo-Chernomor. Inst. Tekhn. Sel. Khoz., Zernovoi, USSR). *Zh. Neorg. Khim.* 1970, 15(1), 253-51 (Russ). Reactions of $\text{Bi}_2\text{Ti}_2\text{O}_{11}$ with V_2O_5 , MoO_3 , and WO_3 , resp., were studied thermographically and by DTA. $\text{Bi}_2\text{Ti}_2\text{O}_{11}$ reacts with these oxides to give BiVO_4 , Bi_2MoO_6 , Bi_2WO_6 , and TiO_2 . HMJR

REEL/FRA

19710714

ELECTRICAL ENGINEERING

Materials

UDC 621.385.032.213.6

USSR

SAVITSKIY, YE. M., ~~MOROZOV, A. V.~~ IVANOVA, K. N., BELOUSOV, A. I., BARON, V. V., ROZHDESTVENSKIY, V. M., OVCHINNIKOV, M. A.

"Alloy for Manufacturing the Parts of the Cathode Junction of Electronic Devices"

USSR Author's Certificate No 304642, filed 14 August 1969, published 25 May 1971 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1971, No H 01j 1/20)

Translation: 1. An alloy for manufacturing the parts of the cathode junction of electronic devices based on niobium is introduced. It is distinguished by the fact that in order to improve strength and stability of shape of the parts, the alloy contains tungsten and zirconium additives.

2. The alloy according to item 1 distinguished by the fact that it contains 7-9% tungsten and 2-2.5% zirconium is introduced.

3. The alloy according to item 1 distinguished by the fact that it contains molybdenum is introduced.

4. The alloy according to item 3 distinguished by the fact that it contains 5-7% tungsten, 1-1.5% zirconium and 4-6% molybdenum is introduced.

1/1

USSR

M
UDC 678.5.06-419.8:66.035.3/5

P'YANKOV, G. N., MOROZOV, A. V., OMEL'CHENKO, S. I., KABAKCHI, A. M., BESSONOV, V.G.,
CHERVETSOVA, I. N., VIDENINA, N. G., DYACHOK, V. T., and GOLODNYI, I. F., Institute
of Physical Chemistry imeni L. V. Pisarzhevskiy, Kiev, Academy of Sciences
Ukrainian SSR, and Institute of Chemistry of High Molecular Compounds, Kiev,
Academy of Sciences Ukrainian SSR

"Radiation Technology of Manufacturing Glass-Plastics"

Kiev, Khimicheskaya Promyshlennost' Ukrainy, No 4, 1970, pp 8-10

Abstract: Production of glass plastics using electron accelerators as radiation sources is described. The operating principle is explained with an example of the manufacture of a cylindrical sheet of cross winding. The mandrel speed, feed pitch, and dose strength are selected so that during the time of passage of the winding section across beam cross-section the required degree of polymerization of the binder is attained. The degree of polymerization between layers wound on top of each other is regulated by the energy of the impinging radiation and beam current. The source of fast charged particles in the model setup is an accelerator with maximum electron energy of 0.4 Mev. Electrons at this energy ensure radiation polymerization of a 0.2-0.3 mm layer of glass-plastics. In this layer, when the density of the current of the beam is several tens of microamperes per square centimeter, dose strength of 10^6 - 10^7 rads/sec is produced.

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1/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--CERTAIN APPLICATIONS OF COMPUTER IN PLANNING OF RESEARCH WORK -U-
AUTHOR--(02)-MOROZOV, A.V., AGEYEVA, N.V. *M*
COUNTRY OF INFO--USSR
SOURCE--STANDARTY I KACHESTVO, 1970, NR 2, PP 77-79
DATE PUBLISHED-----70
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES
TOPIC TAGS--R AND D PLANNING, COMPUTER APPLICATION, R AND D ORGANIZATION
STRUCTURE, CODING, R AND D MANAGEMENT ORGANIZATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1984/2035 STEP NO--UR/0422/70/000/002/0077/0079
CIRC ACCESSION NO--AP0100600
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--18SEP70

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CIRC ACCESSION NO--AP0100600
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE SYSTEM DESCRIBED IS EMPLOYED AT THE ALL UNION RESEARCH INSTITUTE FOR STANDARDIZATION WITH THE AIM OF CLASSIFICATION OF THE MAJOR STRUCTURAL UNITS OF THE INSTITUTE IN ACCORDANCE WITH THEIR SCIENTIFIC OBJECTS. THE PRINCIPLES UNDERLYING THE SYSTEM OF NUMERICAL CODING OF RESEARCH WORKS ARE EXPLAINED.

UNCLASSIFIED

USSR

UDC 621.385.032.21 (088.8)

SAVITSKIY, YE. M., MOROZOV, A. V., IVANOVA, K. N., BELCUSOV, A. I., BARON, V. V., ROZHDESTVENSKIY, V. M., OVCHINNIKOV, M. A.

"Alloy For The Production Of Components Of The Cathode Unit Of Electronic Devices"

USSR Author's Certificate No. 304642, filed 14 August 1969, published 15 September 1971 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3A49)

Translation: A cathode-heating unit is proposed by which, with the object of increasing the stability, reliability, and longevity of a component, the cathode holder, screens, and pistons are produced from RN-6 or RN-8 alloys based on niobium. The RN-6 alloy contains (percent by weight): tungsten 5-7, molybdenum 4-6, zirconium 2-2.5, remainder niobium. The cost of the proposed alloy is considerably less than the cost of tantalum. The alloys are characterized by highly stable properties and sufficient plasticity, which makes it possible to produce tubes, wire, sheets, and foil 1-0.1 mm thick, from them under industrial conditions by the method of processing various semifinished products by pressure. Use of the electron-beam method of smelting considerably reduces the content of gaseous impurities, and a three-fold remelting is used for a more uniform composition of ingots. Sheets 0.5-0.1 mm thick are obtained by the hot forging method and cold rolling with intermediate recrystallization annealings.

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ELECTRICAL ENGINEERING

Machinery

USSR

UDC: 621.373.42

KONSTANTINOV, V. A., MOROZOV, A. V., RYAZANOVA, R. V.

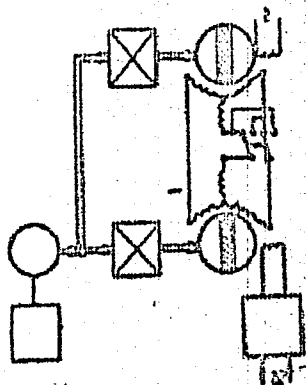
"An Electromechanical Ultralow-Frequency Generator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztzy, Tovarnyye Znaki, No 6, 1970, p 45, patent No 262213, filed 28 Oct 68

Abstract: This Author's Certificate introduces an electromechanical ultralow-frequency generator which contains an electric drive with controllable speed of rotation, a selsyn pair in the transformer connection mode, speed reducers and a demodulator. As a distinguishing feature of the patent, the range of frequencies which can be generated is extended, design is simplified and the reliability of the device is improved by connecting the electric motor to the rotors of both selsyns through separate speed reducers with different gear ratios. The synchronization windings of the selsyns are interconnected through an additional switch.

USSR

KONSTANTINOV, V. A., et al, Otkrytiya, Izobreneniya, Promyshlennyye Obratzy,
Tovarnyye Znaki, No 6, 1970, p 45, patent No 262213, filed 28 Oct 68



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USSR

UDC 621.313.12:538.4

MOROZOV, A. Ye., SYAS'KIN, Yu. M., SHPIL'RAYN, E. E.

"Analysis and Optimization of the Cycles of Atomic Liquid-Metal MHD Installations"

V sb. Magnitogidrodinam. metod polucheniya elektroenergii (Magnetohydrodynamic Method for Producing Electrical Energy -- Collection of Works), No. 3, Moscow, "Energiya", 1972, pp 268-282 (from RZh-50. Yardernyye reaktory, No 11, Nov 72, Abstract No 11.50.32).

Translation: A technique is presented for optimizing the cycles of atomic liquid-metal MHD installations by an analysis of the expended electrical energy. The cycle of an MHD injector installation is investigated. It was found that for a given surface of the scram system of the nuclear reactor and the maximum permissible temperature at the center of the fuel elements and also for the condition of independence of the effectiveness of the two-phase nozzle of the injector from the initial stage of steam dryness, the optimum cycle should be the cycle in which the initial point of the process of steam expansion is located in the left boundary curve. The effect of the fuel

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