USSR

UDC: 621.375.82

YEFIMENKO, L. V. and MASHKEVICH, V. S.

"Theory of Two-Channel Laser Oscillation in Spectrally Heterogeneous Media"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, No 5, 1973, pp 756-771

Abstract: It is noted that spectra of multichannel laser oscillation in the case of heterogeneous broadening of the luminescence lines still represent an unsolved problem. The purpose of this paper is to help remedy this defect. It sets up a theory of oscillation and obtains an oscillation spectrum for two transitions with the total upper level of operation for the case in which there is no correlation between the various frequencies of the individual active center. An analysis of the various modes of oscillation is provided and the conditions of their realization are found. As an example of the analysis provided by the authors, the glass laser activated by neodymium is considered. The authors emphasize that their views relate to cases in which there is no correlation between the different frequencies of the individual active center.

1/1

USSR UDC: 550.834

BALASHKAND, M. I., FILIPPOV, N. G., YEFIMENKO, M. D., CHEN, O. L., MAYOROV, V. V., KRASNOPOL'SKIY, A. D., SOLODILOV, L. N., YEVDOKIMOV, G. S., Ramenskoye Department of the All-Union Scientific Research Institute of Geophysical Methods of Prospecting

"A Device for Emission of a Seismic Signal"

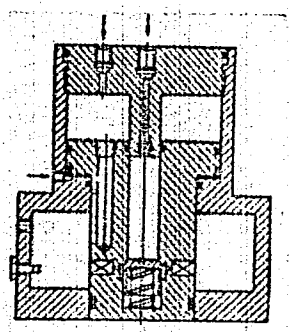
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, Mar 72, Author's Certificate No 330407, Division G, filed 20 Jan 70, published 24 Feb 72, p 142

Translation: This Author's Certificate introduces: 1. A device for emission of a seismic signal. The device contains compressed-air and liquid-fuel supply systems and a pneumatic chamber with movable piston which opens and closes the outlet port of the chamber. As a distinguishing feature of the patent, the compressed-air discharge energy is increased and the heat and force load on the chamber is reduced by fitting the movable piston with atomizers which break up the fuel in the compressed air during gas exhaust and by attaching a device for ignition of the fuel mixture to the chamber housing. 2. A modification of this device distinguished by the fact that

USSR

BALASHKAND, M. I. et al., USSR Author's Certificate No 330407

the movable piston has a channel filled with fuel and communicating with the atomizer through a check valve, and the cover of the chamber has a rod which enters the channel of the piston and feeds fuel into it through the chack valve. 3. A modification of this device distinguished by the fact that the attachment for igniting the fuel mixture is made in the form of a wedge.



USSR

UDC 621.777.073.001.5

NIKOLAYEV, V. A., POLUKHIN, V. P., and YEFIMENKO, S. P.

"Stress Condition in the Contact Zones of Working Rolls in Rolling a Fold"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 217-225

Translation: A study is made of the causes of breaks in strips during rolling, and, in connection with this, the dynamic of stress condition during fold rolling due to the strip bending in two or three with the loss of tension. A calculation is made of the stress condition, and experimental data are given using optical modeling. Six figures, two tables, and two bibliographic entries.

1/1

USSR UDC 621.771.073.001.5

POLUKHIN, P. I., NIKOLAYEV, V. A., POLUKHIN, V. P., TERESHKO, A. K., and YEFIMENKO, S. P.

"An Analysis of Operating Stresses in the Contact Zones of Four-High Rolling Mill Rolls"

Moscow, Plasticheskaya Deformatsiya Metallov i Splavov, "Metallurgiya" Publishing House, No 64, 1970, pp 68-72

Translation: Data are given on the size and nature of the distribution of residual stresses in rolls 500 mm in diameter. Summary operating stresses in the rolling process are analyzed in dependence on the technological features: tension; ratio of internal friction; slippage. Four illustrations, three bibliographic entries.

1/1

USSR

UDC: 621.771

POLUKHIN, V. P., YEFIMENKO, S. P., NIKOLAYEV, V. A., POLUKHIN, P. I., SOLOGUB, V. L., and DUNAYEVSKIY, V. I.

"On the Question of Optimal Conditions for Operating the Rolls of Cold Rolling Mills"

Moscow, Plasticheskaya Deformatsiya Metallov i Splavov, "Metallurgiya" Publishing House, No 64, 1970, pp 53-63

Translation: The article gives recommendations for situating the rolls on the stands, evaluates the degree of built-up metal danger, and offers steps to restore working rolls damaged during the operating process. A new generalized criterion of hardness is proposed which makes it possible to evaluate conditions of roll manufacture and causes of service failures in them. Four illustrations and two tables.

1/1

USSR UDC 669.18.046.55

KUDASHKIN, V. V., [illegible], V. N., and PODNOGIN, I. Ya., Kuznetsk Metallurgical Combine

"Effect of Various Deoxidation Methods on the Quality of Steel and Expenditure of Deoxidizers"

Moscow, Metallurg, No 9, Sep 70, pp 19-21

Abstract: The Kuznetsk Metallurgical Combine has been using various methods of deoxidizing steel. Most steels have been deoxidized in the furnace and up to 1963, the deoxidizers were either ferromanganese alone or ferromanganese with 10-18% ferrosilicon or Simn 17 silicomanganese. This paper attempts to describe a more economic method which has recently been introduced at the combine. Slagging begins after 15-25 minutes and is terminated 10-20 minutes prior to deoxidation. In the process attempts are made to remove most of the slag. This makes it possible to reduce the loss of manganese and chromium by 20-40%, depending on the steel grade, and silicon up to 20%. Forty-five%-ferrosilicon is substituted for the 18-20%, reducing the expenditure of the silicon alloy to one-fifth or one-sixth, deoxidation time by 10-15 minutes, and the per-ton deoxidation cost of steel by 20-40 kopecks. Steel has also been deoxidized in

USSR

KUDASHKIN, V. V., et al, Metallurg, No 9, Sep 70, pp 19-21

the furnace with the use of 45%-ferrosilicon, and in the ladle -- with silicomanganese. The addition of the latter in the ladle reduced the loss of manganese from 22 to 9%, decreased deoxidation time by 6 minutes, and cut the expenditure of ferroalloys from 14.7 to 13.2 kg/ton of steel. The study of the mechanical properties of the rolled product from both experimental and ordinary melts failed to show any significant differences between them; in both cases the mechanical characteristics exceeded GOST requirements. As for the contamination of the steel with nonmetallic inclusions, the amount of the latter was the same in both steels.

2/2

1/2 CC7 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PREPARATION OF PURE BETA AND GAMMA PICOLINES BY THE AZEOTROPIC FRACTIONAL DISTILLATION OF A BETA PICOLINE FRACTION -U-

AUTHOR-(04)-PRIVALOV, V.YE., GLUZMAN, L.D., YEFIMENKO, V.M., SLACHINSKIY, YU.A.

COUNTRY OF INFO--USSR

SOURCE--KOKS KHIM. 1970, (5), 38-42

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AZEOTROPE, ISOMER, DISTILLATION, PYRIDINE, HETEROCYCLIC NITROGEN COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1734 STEP NO--UR/0068/70/000/005/0038/0042

CIRC ACCESSION NO--AP0125355

UNCLASSIFIED

2/2 007 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0125355
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AZEOTROPIC DISTN. OF A BETA PICOLINE FRACTION FORMING AN AZEOTROPE (60PERCENT H SUB2 O) H. 96.3DEGREES YIELDED 99PERCENT PURE BETA AND GAMMA ISOMERS WHEN THE COLUMN HAD GREATER THAN 70 THEORETICAL PLATES AND THE REFLUX RATION WAS 30. THE METHOD ALSO YIELDED 99PERCENT PURE ISOMERS WHEN APPLIED TO ALPHA AND GAMMA PICOLINE AND 2,6 LUTIDINE FRACTIONS, FORMING AZEOTROPES (46.5, 62.5, AND 51.0PERCENT H SUB2 O, RESP.) B. 94.4DEGREES, 96.7DEGREES, AND 95.5DEGREES.

UNCLASSIFIED

UDC: 621.317.341.3

USSR

PETROV, V. P., YEFIMENKO, Yu. G.

"Pulse Reflectometry in Circuits With Distributed Constants"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 156-160 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A387)

Translation: The principle of pulse probing is presented as a basis for pulse reflectometry. A number of problems which can be solved by this procedure are considered. One such problem is the investigation of the deviations in wave impedance caused by small nonhomogeneities. The convenience of such measurements determined the first applications of pulse reflectometry to the study of communications lines, especially cable lines. The further development of these principles involves the measurement of lumped nonhomogeneities and terminal impedors with high resolution. Of greatest interest is the use of pulse reflectometry for measuring the parameters of circuits with distributed constants, especially in the case where they are inaccessible to direct measurement. The solution of these problems takes two directions: 1) development of methods for analyzing and synthesizing

1/2

USSR

PETROV, V. P., YEFIMENKO, Yu. G., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam, t. 2, Novosibirsk, 1970, pp 156-160

circuits with distributed constants in the time region; 2) creation of signal sources with a minimum leading edge and the corresponding oscilloscopes for registration of short-term transient processes. Current aspects of the use of pulse reflectometry make severe demands on the principal units of the equipment (the oscillator and indicator). These requirements are outlined. It is noted that the methods of pulse reflectometry make it possible to completely automate the process of measuring the parameters of transmission lines. Bibliography of 12 titles. E. L.

2/2

YEFIMOV, A. (Col. Gen.)

Mil

JPRS [illegible]

IMPORTANCE OF AIR FORCE IN NATIONAL DEFENSE STRESSED

[Excerpt from article by Colonel General of Aviation A. Yefimov, twice Hero of the Soviet Union ~~and first deputy to the commander of the Air Force~~; Moscow, Kryl'ya Rodiny, Russian, No 2, 1972, signed to press 17 January 1972, pp 2-3]

The 24th Party Congress emphasized once more that everything that the people have created must be reliably defended. To strengthen the Soviet State means to strengthen its Armed Forces as well and to increase in every way possible the defensive capability of the Motherland. Thanks to the unflagging concern of the Communist Party, the might and fighting ability of our army, air force, and navy are increasing from year to year. The Soviet people can now be confident that at any time of the day or night our glorious Armed Forces are ready to repulse an enemy attack, no matter where it may come from. Any possible aggressor knows well that if he attempts a nuclear missile attack on our country he will receive a destructive response.

Our Armed Forces have now moved far from what they were at the end of the Great Patriotic War. They are qualitatively new armed forces with great military capabilities. The Soviet army and navy are outfitted with equipment of tremendous destructive force which is capable of reaching the enemy at any point on earth and which makes it possible to carry out successfully military assignments on land, at sea, and in the air.

Great changes have taken place in our air force. It has become jet-powered, supersonic, rocket-carrying, and all-weather. Tremendous flight speeds, which reach 3,000 kilometers per hour, powerful equipment in the form of missiles, bombers, and cannon, and new automatic communication and control equipment have significantly expanded the range of actions and military capabilities of our winged aircraft. Day and night flights under complex weather conditions have become commonplace events. It is precisely in such meteorological circumstances that military training assignments are carried out -- interception of target planes at high and low altitudes, missile launchings, bomb runs, and other complicated assignments, including the execution of landings in zero visibility.

USSR

UDC: 681.335.7

YEVDOKIMOV, V. F., YEFIMOV, A. A., KULIK, M. N., Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"A Device for Modeling a System of Differential Equations"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 72, Author's Certificate No 332468, Division G, filed 25 Mar 68, published 14 Mar 72, p 198

Translation: This Author's Certificate introduces a device for modeling a system of differential equations based on Author's Certificate No 223398. As a distinguishing feature of the patent, the accuracy of the device is improved and its operating conditions are moderated by adding filters whose inputs are connected through the commutator to the output of the code-controlled converter, while the outputs are connected to the lines of the matrix of integrating capacitors.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--ELECTRON SPECTRA AND STRUCTURE OF MOLECULES OF DIKETONE VAT DYES -U-

AUTHOR-(02)-YEFIMOV, A.A., NURMUKHAMETOV, R.N.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(1), 58-65

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELECTRON SPECTRUM, DYE, FLUORESCENCE SPECTRUM, KETONE, POLYNUCLEAR HYDROCARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/1911 STEP NO--UR/0051/70/028/001/0058/0065

CIRC ACCESSION NO--AP0100479

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100479

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE QUASILINEAR FLUORESCENCE SPECTRA OF PYRANTHRONE (I), VIOLANTHRONE (II), AND FLAVANTHRONE (III) WERE OBTAINED AT 77DEGREESK BY USING THE SHPOLSKII METHOD; I AND II WERE DISSOLVED IN PHCL AND THE SOLNS. DILD. BY C SUB11 H SU924(1:9); III WAS MEASURED IN NEAT PHCL. THE VIBRATIONAL COMPONENTS OF THE SPECTRA WERE ASSIGNED. IT IS SUGGESTED THAT THE SPECTRA CAN BE INTERPRETED BY CONSIDERING I AND III AS PYRENE DERIVS. IN THE SERIES PYRENE, 1, PHENYLPYRENE, 3, BENZOYLPYRENE, I, III, AND II AS A PERYLENE DERIV. IN THE SERIES PERYLENE, DEFECTOL (DI TERT BU 3,9, PERYLENEDICARBOXYLATE), 3, 9, DIBENZOYLPERYLENE, ISOVIOLANTHRONE, II.

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--MOESSBAUER EFFECT IN TIN IMPURITY ATOMS IN SILVER HALIDES -U-

AUTHOR-(04)-YEFIMOV, A.A., BONDAREVSKIY, S.I., SEREGIN, P.P., SHIPATOV, V.T.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(3), 949-50

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--MOSSBAUER EFFECT, SILVER COMPOUND, HALIDE, IODIDE, CHLORIDE, DEBYE TEMPERATURE, EMISSION SPECTRUM, SPECTROSCOPY, TIN, METAL IMPURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1288 STEP NO--UR/0181/70/012/003/0949/0950

CIRC ACCESSION NO--AP0116750

UNCLASSIFIED

2/2 028 UNCLASSIFIED

CIRC ACCESSION NO--AP0116750 PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STATE OF SN ATOMS WAS STUDIED IN AGCL AND AGI BY MOESSBAUER EMISSION SPECTROSCOPY USING PRIME119 SN PRIMEM. SN WAS INTRODUCED BY MELTING THE ABOVE SALTS WITH METALLIC PRIME118 SN THEN IRRADIATING WITH AN INTEGRAL FLUX OF THERMAL NEUTRONS (2 TIMES 10 PRIME21 N-CM PRIME2). THE SPECIMENS OBTAINED WERE MOESSBAUER SOURCES AND CA STANNATE WAS THE ABSORBER. CONCN. OF SN DID NOT EXCEED 5 TIMES 10 PRIME18 -CC. THE MAGNITUDE OF THE CHEM. SHIFT OF PRIME119 SN PRIMEM IN AGCL AND AGI CORRESPONDS TO THE PRESENCE OF ONLY SN PRIME4POSITIVE IONS. IT CAN BE ASSUMED THAT SN PRIME4POSITIVE ION IS IN INTERSTIAL LOCATIONS AND SURROUNDED BY 4 CATIONIC VACANCIES. ANOTHER POSSIBILITY IS THAT SN PRIME4POSITIVE ION IS LOCATED AT CATIONIC SITES AND FORMS ASSOCNS. WITH 3 CATIONIC VACANCIES. THIS IS CONFIRMED BY THE BROADENING OF THE MOESSBAUER SPECTRA. THE EFFECTIVE DEBYE TEMPS. WERE CALCD. FROM THE MOESSBAUER COEFF.

UNCLASSIFIED

USSR

YEFIMOV, A. B., MALYY, V. I., UTESHEV, S. A., Moscow

"Loss of Stability of a Cylindrical Shell on Longitudinal Impact"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 20-23

Abstract: The forms of loss of stability of a cylindrical shell on longitudinal impact of an infinite mass moving with a velocity V against the end of the shell are studied in this paper. Equations are derived which define the bending of the sheld during the linear stage of loss of stability. It is pointed out that the bends develop with time as the superposition of two types of waves. The amplitudes of the wave of the first type oscillate with time, that is, they remain limited, and the amplitudes of the second type waves increase exponentially with time leading to loss of stability of the shell. However, all of the waves of the second type do not make a significant contribution to the stability loss process since the amplitude of the wave which has the maximum growth rate overtakes the others and becomes predominant. The predominant wave is axisymmetric.

Equations are derived which define the characteristics of the predominant stability loss wave without restrictions on the impact velocity. After

1/2

USSR

YEFIMOV, A. B., et al., Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 20-23

comparing the equations neglecting inertial reduction, that is, the effect of the intertia of the shell elements in the radial direction on the propagation of the longitudinal compression wave, and the equations with and without restrictions on impact velocity it is concluded that these factors have little effect on the form of stability loss. It is pointed out that it is known that in the case of a static load on a cylindrical shell the shape of the stability loss remains indeterminant in the linear approximation. In the case of an impact load on the end of the shell, the loss of stability with small bends occurs in axisymmetric form. Further development of the bends is not described by the linear equations of the shells. When the bends reach a magnitude on the order of h, significant membrane stresses occur in the shell. Together with the occurrence of nonlinear effects, the form of the stability loss has to lose its axisymmetric nature. When the bends increase to the point that the nonlinearity becomes the defining factor, the shell assumes the form of isometric bending of a cylindrical surface. The relations obtained in this paper for calculating the wavelength in the linear stage of stability loss give values which are 12% and 10% lower than the experimental values obtained by Lindberg and Herbert.

2/2

USSR

YEFIMOV, A. I., MAKSIMILNAN, S. V.

"One 4-index Transport Problem"

Mat. Metody v Ekon. [Mathematical Methods in Economics -- Collection of Works], No 3, Kishinev, Shtiintsa Press, 1971, pp 3-34 (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V528).

NO ABSTRACT.

1/1

USSR UDC 621.371:533.9

YEFIMOV, A. I., YAKOVLEV, O. I.

"On Propagation of Monochromatic Radio Waves in Interplanetary Plasma"

Moscow, Radiotekhnika i Elektronika, Vol 26, No 9, Sep 71, pp 1554-1563

Abstract: This paper is devoted to analysis of the fluctuations of phases, amplitudes and change in the spectrum of radio waves from a coherent point source located at an arbitrary point of interplanetary space, and to a comparison of calculated effects with experimental data. The analysis takes account of wave sphericity. The described theory of fluctuations in the amplitudes of radio waves emitted by space vehicles agrees satisfactorily with the experimental data of interplanetary flickers of radio sources of small angular dimensions. Fluctuations of the amplitudes of decimeter radio waves propagating in an unperturbed interplanetary plasma are small at distances of less than 10^8 km from the transmitter for regions where $\psi > 30°$, where ψ is the angle between the directions from the point of observation on the Earth to the source of radio emission and to the sun. Appreciable variations in amplitude

USSR

YEFIMOV, A. I., YAKOVLEV, O. I., Radiotekhnika i Elektronika, No 9, Sep 71, pp 1554-1563

should be observed when space vehicles move out to distances of $3 \cdot 10^9$ km or more and for $\psi < 10°$. Radio waves in the meter wave band should undergo strong fluctuations even under undisturbed conditions in interplanetary space if lines of communications extend beyond $7.5 \cdot 10^7$ km. Phase fluctuations on a frequency of 1000 MHz become appreciable (more than a radian) at distances of about $3 \cdot 10^8$ km and $\psi < 7°$. The angular distance to the sun increases to 30° at this range when the frequency is dropped to 100 MHz. A comparison of calculated values with experimental data for the change in bandwidth of radio waves as the source passes through a nonuniform interplanetary plasma indicates that the proper theoretical approach to the phenomenon is to analyze the spectra of oscillations phase-modulated by a random process which is due to the passage of nonhomogeneities of electron concentration through the line of propagation of radio waves. Nonhomogeneities of electron concentration depend on the level of solar activity. Changes of interplanetary space conditions may cause considerable changes in the average values of fluctuations given in the article.

2/2

USSR

YEFIMOV, A. I.

UDC 669.017.539.67

"Device for Measuring the Internal Friction and Modulus of Rigidity of Refractory Metals and Alloys"

Metallofizika. Resp. mezhved. sb. (Metal Physics. Republic Interdepartmental Collection), 1970, vyp. 31, pp 167-172 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I 950)

Translation: The structural design of a torsion pendulum permitting the internal friction and modulus of rigidity to be measured in the temperature range of 20-1,750° in a vacuum up to 10^{-5} mm Hg is described. Wire samples 15-150 mm long and 0.3-2 mm in diameter are used. The frequency range is 0.2-50 hertz. The magnitude of the shear on the surface of the sample can vary from 10^{-3} to 10^{-6}. A special attachment to the device permits the effect of plastic flow on the magnitude of the damping decrement to be studied in a wide temperature range. The device is equipped with a photorecording attachment permitting recording of the damping curve and the time marks on oscillographic paper up to 180 mm wide. This offers the possibility of calculating the damping decrement with an accuracy of no less than 2-4% in

1/2

USSR

YEFIMOV, A. I., Metallofizika. Resp. mezhved. sb., 1970, vyp. 31, pp 167-172

the entire investigated temperature range. Use of automation permitted simplification of the control of the device. There are 5 illustrations and a 10-entry bibliography. [Institute of Metal Physics of the Ukrainian SSR Academy of Sciences].

2/2

Instrumentation and Equipment

UDC 539.67

USSR

YEFIMOV, A. I., Institute of Metal Physics, Academy of Sciences UkrSSR

"An Installation for Measuring the Internal Friction and Shear Modulus of High-Melting Metals and Alloys"

Kiev, Metallofizika, No 31, 1970, pp 167-172

Translation: The design of a torsion pendulum, which makes it possible to measure the internal friction and shear modulus over the temperature range 20° - 1750°C in vacuum up to 10^{-5} mm Hg is described. Wire specimens 15-150 mm long and with a diameter of 0.3-2 mm were used. The frequency range was 0.2-50 cps. The value of shear deformation on the specimen's surface can change from 10^{-3} to 10^{-6}. A special attachment to the installation made it possible to investigate the effect of plastic deformation over a wide temperature range on the value of the damping decrement. The installation was equipped with a photoregistering attachment, which made it possible to record the damping curve and time markings on an oscillographic paper up to 180 mm wide. This made it possible to calculate the damping decrement with an accuracy of not below 2-4% over the entire temperature range studied. The use of automation made it possible to simplify the installation's control. Bibliography: 10 entries, 5 illustrations.

1/1

Acc. Nr: AP0034227

Abstracting Service: CHEMICAL ABST. 4-70

Ref. Code: UR 0078

E

71246g Complexing in cobalt(II) chloride-rubidium chloride and nickel(II) chloride-rubidium chloride systems. Efimov, A. I.; Kudryashova, Z. P. (USSR). *Zh. Neorg. Khim.* 1970, 15(1), 255–7 (Russ). $NiCl_2$-RbCl system forms a compd. that melts congruently at 712°, $RbNiCl_3$, and a eutectic that melts at 505° and contains 75 mole % PbCl. The ΔH of soly. in water was detd. calorimetrically and ΔH°_{298} of formation of complexes were calcd. The given data are (compd., ΔH of soly. in kcal/mole, ΔH°_{298} of formation in kcal/mole): $RbNiCl_3$, −10.11 ± 0.07, −5.8 ± 0.1; $RbCoCl_3$, −9.83 ± 0.19, −5.8 ± 0.2; Rb_2CoCl_4, −5.58 ± 0.19, −6.0 ± 0.2; Rb_3CoCl_5, −0.25 ± 0.12, −7.4 ± 0.1.

HMJR

REEL/FRAME
19710880

USSR

GUBANOV, V. I., YEFIMOV, A. K., KALACHENKO, A. A.

"Algorithm and Program for Pattern Recognition with Automatic Clarification of Objects"

Mat. metody. i geol. [Mathematical Methods in Geology -- Collection of Works], No 2, Alma-Ata, 1971, pp 197-207 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V689)

Translation: An algorithm is described, calling for recognition of patterns on the basis of search for the most frequently encountered combinations of components, reflecting the greatest probability of membership of the object being recognized in a given category. The initial information for learning might be chemical analysis of rocks, different qualitative and quantitative characteristics of rocks, ores, types of deposits and ore manifestations, characteristics and estimates made during geological survey work. Learning is performed with matrices including 39 objects with 13 components, each of which yields three characteristics. The characteristics are defined as functions of the qualitative or quantitative aspects of the components. For example, if silicon oxide is a component, the maximum and minimum values are taken as two learning data, while their difference is divided into three

1/2

USSR

GUBANOV, V. I., et al., Mat. metody. i geol., No 2, Alma-Ata, 1971, pp 197-207

parts, which are then used as determining characteristics in the production of the learning matrix. A one indicates the interval within which the content of the element of the object to be recognized falls. Solution of the problem consists in running through all combinations of characteristics in units of three elements. The 80 most frequently encountered characteristics are then determined, on the basis of both frequency and weight.

2/2

Computers: Applications & Programming

USSR UDC: 621.391.2:519.27

YEFIMOV, A. N., PODLESNYY, N. I., RUBANOV, V. G.

"Synthesis of an Optimal Algorithm for Interrogation of Sensors"

Radiolektronika Letatel'n. Apparatov [Aircraft Electronics - collection of works], No 3, Khar'kov Aviation Institute, 1971, pp 10-19 (translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 3, 1972, Abstract No 3 A370 from the resume)

Translation: The problem of optimization of the sequence of interrogation of sensors which are sources of primary information, represented by stable Gaussian random processes, is solved. It is shown that the sequence of interrogation of sensors is not neutral from the point of view of the quantity of information produced concerning the state of the object. The determining factors in this respect are the time of interrogation of the sensor and the probability characteristics of the random processes. The method of dynamic programming is used to find the optimal procedure (based on maximum information obtained) for interrogation of sensors. 3 figures; 5 references.

1/1

USSR

UDC 681.3.06:51

YEFIMOV, A. N., GREBENNIK, V. D.

"Construction of Optimal Procedure for Collection of Information in Automatic Control and Testing Systems"

Kibernet. Tekhnika. vyp. 4 [Cybernetic Equipment, No 4 -- Collection of Works], Kiev, 1970, pp 4-19, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V605).

NO ABSTRACT.

1/1

USSR

UDC 541.123:546.791.6

YEFIMOV, A. N., ZHIKHAREV, M. I., and ZHIRNOV, YU. P.

"Liquid-Vapor Equilibrium in the System H_2O-HNO_3-$UO_2(NO_3)_2$ at Pressures of 180, 360, and 720 mm Hg"

Leningrad, Radiokhimiya, Vol 12, No 5, 1970, pp 766-768

Abstract: The equilibrium was studied by the recycling method on a specially designed apparatus in which the pressure was maintained by means of a 100 l receiver. Equilibrium was reached usually in 40 min. In order not to change the liquid composition during the experiment, acid was added in concentrations close to that of the equilibrium composition, and the volume of the solution corresponded to the capacity of the trap. It was shown that lowering of the pressure -- P -- lowers the acid content -- y -- in equilibrium vapor at small y values; when y $\gtrsim$ 15% the effect of pressure is the opposite. This relationship is quite linear in Othmer coordinates, permitting interpolation for technological purposes. The addition of uranyl nitrate to the binary system H_2O-HNO_3 increases the content of nitric acid in equilibrium vapor, the salt "salts out" the acid into the vapor phase. The salting-out effect of uranyl nitrate increases with higher salt concentration and with lower acid concentration.

1/1

Acc. Nr.: AP0032016 Ref. Code: UR 0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 1, pp 72-75

SUMMARY

EFFECT OF COMPLEX TREATMENT ON THE STATE OF THE CARDIO-VASCULAR SYSTEM IN PATIENTS WITH DIABETES MELLITUS

L. S. Yefimov, A. F. Litvinenko and *Yu. P. Kopylov* (Kiev)

Electrocardiography, arterial sphygmography, polycardiography, mechanocardiography, capillaroscopy, capillarography, electrothermometry were used in examination of the cardio-vascular system in patients with diabetes mellitus. Such complex examination makes it possible to carry out early diagnosis of myocardial involvement and angiopathias, even before their clinical manifestations. Functional tests enable to determine the degree of cardio-vascular involvement.

It was found that complex treatment resulted in improvement of the state of the cardio-vascular system in patients with diabetes mellitus only in cases of functional disorders.

The abovementioned instrumental methods of examination are valuable for the control of the efficiency of treatment.

1/1

2 mr

REEL/FRAME
19700168

1/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFICACY AND MECHANISM OF ACTION OF ANABOLYTIC STEROIDS IN DIABETIC ANGIOPATHIES -U-

AUTHOR-(05)-YEFIMOV, A.S., LIMANSKAYA, G.V., LITVINENKO, A.F., LAPKO, L.E., BODNAR, P.N.

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 6, PP 81-85

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIABETES MELLITUS, BLOOD VESSEL, EYE, ADRENAL GLAND, CARBOHYDRATE METABOLISM, LIPID METABOLISM, MINERAL, RETINA, ATHEROSCLEROSIS, HORMONE, PROTEIN, BLOOD SERUM, BLOOD PLASMA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1889 STEP NO--UR/0504/70/042/006/0081/0085

CIRC ACCESSION NO--AP0129245

UNCLASSIFIED

2/2 029 UNCLASSIFIED

CIRC ACCESSION NO--AP0129245 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO EVALUATE THE IMMEDIATE RESULTS OF MONTHLY USE OF NEROBOL (IN THE DOSE OF 10 MG DAILY) IN 106 PATIENTS WITH DIABETES MELLUTUS COMPLICATED IN 49 PATIENTS WITH MACRO AND 42, WITH MICROANGIOPATHIES THE AUTHORS STUDIED IN DYNAMICS THE INDICES OF CLINICAL SYMPTOMATICS, SPHIGMOGRAPHY OF THE LEG VESSELS, OPTHALMOSCOPY OF THE EYE FUNDUS VESSELS, THE FUNCTIONAL CONDITION OF THE ADRENALS AND SOME ASPECTS OF CARBOHYDRATE, FAT AND MINERAL METABOLISM. THE POSITIVE CLINICAL EFFECT WAS OBSERVED IN THE MAJORITY OF PATIENTS (IN 34 OUT OF 39) WITH OBLITERATING ATHEROSCLEROSIS AND ONLY IN 5 OUT OF 42 PATIENTS WITH RETINOPATHY. A FAVOURABLE EFFECT OF NEROBOL ON SOME METABOLIC AND HORMONAL DISORDERS EXPRESSED ITSELF BY A COMPARATIVE INCREASE OF ALBUMIN SHARE IN THE PROTEIN SPECTRUM OF THE BLOOD SERUM, BY INCREASED CONCENTRATION OF INTRACELLULAR POTASSIUM, BY A DROP OF THE II OXICORTICOSTEROID LEVEL IN THE BLOOD PLASMA. NO SUBSTANTIAL CHANGES ON THE PART OF THE LIPID METABOLISM WAS MARKED. TEH PRELIMINARY RESULTS PROVE THE EXPEDIENCY OF USING NEROBOL AS A MEANS OF PATHOGENIC TREATMENT OF DIABETIC ANGIOPATHY. FACILITY: KLINICHESKIY OTDEL KIYEVSKOGO INSTITUTA ENDOKRINOLOGII I OBMENA VESHCHESTV.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--THE IMPORTANCE OF DYSFUNCTION OF THE ADRENALS IN THE PATHOGENESIS OF DIABETES MELLITUS AND DIABETIC ANGIOPATHIAS -U-

AUTHOR-(05)-KOMISSARENKO, V.P., YEFIMOV, A.S., POVOLOTSKAYA, G.M., LIMANSKAYA, G.F., BEZVERKHAYA, T.P.

COUNTRY OF INFO--USSR

SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 5, PP 118-123

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIABETES MELLITUS, ADRENAL GLAND, HORMONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1772 STEP NO--UR/0497/70/048/005/0118/0123

CIRC ACCESSION NO--AP0129140

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129140

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPLEX EXAMINATION OF 154 PATIENTS SUFFERING FROM DIABETES MELLITUS REVEALED DYSFUNCTION OF THE ADRENALS MANIFESTED BY AN INCREASE OF THE GLUCOCORTICOID, ANDROGENIC AND ADRENAL FUNCTION IN A SIMULTANEOUS REDUCTION OF THE MINERALOCORTICOID ACTIVITY. THE NOTED DISTURBANCE WAS CHARACTERITIC FOR PATIENTS DURING DECOMPENSATION OF THE DISEASE. WITH THE CONCOMITANCE OF VASCULAR COMPLICATIONS THERE WAS SEEN A MORE MARKED RISE OF THE CATECHOLAMINE AND ADROGENIC ACTIVITY. GLUCOCORTICOID HYPERFUNCTION OF THE ADRENALS WAS MORE PECULIAR TO PATIENTS WITH INITIAL FUNCTIONAL LESIONS OF THE VESSELS. A SUPPOSITION IS MADE ON THE POSSIBLE PATHOGENETIC ROLE OF HYPERPRODUCTION OF CONTRINSULAR ADRENAL HORMONES IN THE DEVELOPMENT OF DIABETIC ANGIOPATHIAS. FACILITY: KIEV. N-I INSTITUT ENDOKRINOLOGII I OBMENA VESCHESTV.

UNCLASSIFIED

USSR

UDC: 621.372.832.8*988.8)

YEFIMOV, A. T., REYTMAN, E. Ya.

"A Wide-Band Circulator"

USSR Author's Certificate No 251031, filed 17 May 68, published 3 Feb 70 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7B167 P)

Translation: The proposed circulator based on a strip-type Y-split contains a magnetic system, a ferrite disc and a disc made of an electrically conductive material located on opposite sides of the central conductor of the split. The working frequency range is expanded by making the electrically conductive disc with a diameter which varies with height. One illustration. Resumé.

1/1

USSR

UDC 669.15.018.44

ALEKSEYENKO, N. N., GORYNIN, I. V., YEFIMOV, A. V., RAZOV, I. A., SIKORSKIY, O. F.

"Effect of Scale and Neutron Irradiation When Testing 15Kh2MFA Heat-Resistant Steel"

Metallovedeniye -- V sb. (Physical Metallurgy -- collection of works), No 14, Leningrad, Sudostroyeniye Press, 1970, pp 186-193 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I635)

Translation: The effect of the scaling factor on improving the critical embrittlement temperature of 15Kh2MFA heat-resistant steel is studied. It is established that the magnitude of the scaling effect is reached in 80-100 mm samples, and it is ~50°. Neutron irradiation at 150° with a dose of 10^{20} neutrons/cm^2 (E > 1 megaelectron volt) lowers the scaling effect somewhat with an increase in sample size from 5 to 10 mm. It is demonstrated that low sensitivity of this steel to scale and also to loading rate and neutron irradiation arises from its alloying and uniform structure of the sorbite as a result of quenching and tempering. There are 2 illustrations, 6 tables, and a 14-entry bibliography.
1/1

USSR UDC: 533.6.011.8

BUSHMIN, A. S., YEFIMOV, B. G.

"Experimental Study of Nonequilibrium Gas Flow Excited by a High-Frequency Discharge"

Uch. zap. Tsentr. aerogidrodinam. in-ta (Scientific Notes of Central Aerohydrodynamics Institute), 1971, 2, No 6, pp 112-115 (from EZh-Mekhanika, No 5, May 72, Abstract No 5B296)

Translation: The paper is a report on the results of experimental studies of supersonic flow of a rarefied gas in a vacuum wind tunnel with a high-frequency heater. The principal elements of the experimental set-up used were: a high-frequency generator with a frequency of $4 \cdot 10^7$ Hz, a water-cooled quartz discharge chamber with inside diameter of 40 mm, an inductor, and an Eifel chamber with vacuum system. The working gas (air) was accelerated in a shortened underexpanded nozzle with critical cross sectional diameter of 4 mm up to a Mach number M = 1. The gas is further accelerated in the vacuum chamber in the jet beyond the nozzle. The gas pressure and temperature in the discharge chamber were 225 mm Hg ($3 \cdot 10^4$ N·m^{-2}) and 900 kelvins respectively, and the pressure in the vacuum chamber was 10^{-2} mm Hg

1/2

USSR

BUSHMIN, A. S., YEFIMOV, B. G., Uch. zap. Tsentr. aerogidrodinam. in-ta, 1971, 2, No 6, pp 112-115

(1.33 $N \cdot m^{-2}$). The gas was analyzed both spectrographically and by means of heat-sensitive pickups both in the discharge chamber and in the supersonic flow.

It was found that the composition of the air heated by a high-frequency discharge in the prechamber differs from the equilibrium composition. In the discharge chamber are molecules of nitrogen in the excited electron--oscillatory state, as well as excited atoms of oxygen. An estimate of the oscillatory temperature in the S^3P state gives a value of ~3000 K. It is shown that in the jet beyond the nozzle, the molecules remain in the state of electron-oscillatory excitation to a distance of up to ~60 mm from the nozzle. A graph is given for the reduction in oscillatory temperature with distance from the nozzle. The relaxation time of molecules in the electron--excited state is $\sim 10^{-4}$ s, which is considerably less than the value given in the literature for the time of oscillatory relaxation of molecules in the ground electron state. It is found that thermal fluxes to heat-sensitive elements with catalytic surface is approximately 30% higher than to elements with noncatalytic surface. Bibliography of 9 titles. O. K. Rozanov.

2/2

USSR

UDC 629.78.015:533.95

BUSHMIN, A. S., YEFIMOV, B. G.

"Experimental Study of Non-equilibrium Flow of a Gas Excited by a High Frequency Discharge"

Uch. zap. Tsentr. Aero-gidrodinam. Inta [Scientific Writings of Central Aero-Hydrodynamics Institute], Vol 2, No 6, 1971, pp 112-115, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 4, 1972, Abstract No 4.41.159 from the Resume).

Translation: Results are presented from experimental studies of supersonic flow of a rarefied gas in a vacuum wind tunnel with an HF heater. The spectral composition of the gas in the discharge chamber and in the stream beyond the nozzle, change in oscillating temperature in the $C^3\Pi$ state with increasing distance from the nozzle cross section, dependence of heat flux to model on degree of catalytic activity of the surface are shown. 4 Figures; 9 Biblio. Refs.

1/1

1/2 031 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--INTENSITIES OF THE PARTIAL RADIATIVE TRANSITIONS TO THE ROTATIONAL AND VIBRATIONAL BANDS IN THE RESONANCES OF THE GD PRIME155 AND GD

AUTHOR-(03)-DANELYAN, L.S., YEFIMOV, B.V., SOTNIKOV, S.K.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 2, PP 456-459

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--NUCLEAR SPIN RESONANCE, RADIATIVE CAPTURE, NEUTRON IRRADIATION, PHOTON EMISSION, GAMMA SPECTRUM, GADOLINIUM ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1976/2057 STEP NO--UR/0056/70/058/002/0456/0459

CIRC ACCESSION NO--AP0043585

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--090CT70

2/2 031

CIRC ACCESSION NO--AP0043585

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TOTAL INTENSITIES OF GAMMA TRANSITIONS TO THE ROTATIONAL AND VIBRATIONAL BAND LEVELS IN THE GD PRIME155 AND GD PRIME157 ISOTOPE RESONANCES FOR NEUTRON ENERGIES UP TO 150 EV ARE MEASURED WITH A DOUBLE CRYSTAL SCINTILLATION SPECTROMETER. AN ANALYSIS OF THE EXPERIMENTAL DATA INDICATES THE EXISTENCE OF CORRELATION BETWEEN THE INTENSITIES OF TRANSITIONS TO THE ROTATIONAL BAND AND THE SPINS OF THE INTIAL STATES IN THE GD PRIME155 NUCLEUS. A PROBABILITY ASSIGNMENT OF CAPTURE STATE SPINS OF GD PRIME155 IS MADE.

UNCLASSIFIED

ACC. NR: AP0048367

Abstracting Service: INTERNAT. AEROSPACE ABST.

Ref. Code: 5-70 21R0293

YEFIMOV G.B.

A70-24305 # Optimal acceleration in a central field to hyperbolic velocities (Optimal'nyi razgon v tsentral'nom pole do giperbolicheskikh skorostei). G. B. Efimov. *Kosmicheskie Issledovaniia*, vol. 8, Jan.-Feb. 1970, p. 26-47. In Russian.

Construction of a limit solution in the problem of energetically optimal acceleration of a low-thrust space vehicle. Asymptotic expansions are constructed near the center of attraction and far from it. Approximate formulas for estimating the parameters of an optimal acceleration from an earth orbit to hyperbolic velocities are presented. A.B.K.

REEL/FRAME
19800075

12

1/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--NON LOCAL QUANTUM FIELD THEORY, NON LINEAR INTERACTION LAGRANGIANS AND THE CONVERGENCE OF THE PERTURBATION THEORY SERIES -U-
AUTHOR--YEFIMOV, G.V.

COUNTRY OF INFO--USSR

SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 2, NR 3, PP 302-310
DATE PUBLISHED-------70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--QUANTUM FIELD THEORY, LAGRANGE EQUATION, PERTURBATION THEORY, CONVERGENT SERIES, S MATRIX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/2036 STEP NO--UR/0646/70/002/003/0302/0310

CIRC ACCESSION NO--AP0102065
UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0102065

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS SHOWN IN THE FRAMEWORK OF NON LOCAL QUANTUM THEORY OF A ONE COMPONENT SCALAR FIELD PHI, THAT IF THE INTERACTION LAGRANGIANS ARE OF THE ESSENTIALY NON LINEAR FORM L SUBI (X) EQUALS GU (PHI(X)), WHERE THE FUNCTION U (A) SATISFIES THE CONDITION LIM MAGNITUDE OF U (A) EQUALS 0, A YIELDS PLUS OR MINUS INFINITE THE NON LOCAL FORMFACTOR CAN BE CHOSEN IN SUCH A WAY THAT THE S MATRIX WILL BE FINITE AND UNITARY IN EVERY ORDER OF THE PERTURBATION THEORY AND THE PERTURBATION THEORY SERIES WILL CONVERGE ABSOLUTELY IN THE EUCLIDEAN REGION.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--THE ESSENTIALLY NONLINEAR INTERACTION LAGRANGIANS AND THE NONLOCAL QUATUN FIELD THEORY -U-

AUTHOR--YEFIMOV, G.V.

COUNTRY OF INFO--USSR

SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 2, NR 1, PP 36-54

DATE PUBLISHED-------70

SUBJECT AREAS--MATHEMATICAL SCIENCES, PHYSICS

TOPIC TAGS--ELECTROMAGNETIC FIELD, QUANTUM THEORY, PERTURBATION THEORY, LAGRANGE EQUATION, S MATRIX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1978/1229 STEP NO--UR/0646/70/002/001/0036/0054

CIRC ACCESSION NO--AP0046152

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0045152

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FORMAL SCHEME IS DEVELOPED FOR THE INVESTIGATION OF THE QUANTUM THEORY OF SCALAR FIELD PHI (X) WITH THE ESSENTIALLY NONLINEAR INTERACTION LAGRANGIAN OF THE TYPE WHERE U SUBN IS THE SEQUENCE OF NUMBERS, WHICH SATISFY SOME GENERAL CONDITIONS. EQUATION SHOWN ON MICROFICHE. THE ARGUMENTS ARE PRESENTED IN FAVOUR OF THE CONCLUSION THAT IN THE DEVELOPED FRAMEWORK THE NON LOCAL FORM FACTOR CAN BE FOUND WHICH MAKES THE S MATRIX CONSTRUCTED FROM THE INTERACTION LAGRANGIAN L SUBI (X) FINITE AND UNITARY IN ALL ORDER OF THE PERTURBATION THEORY.

UNCLASSIFIED

USSR

UDC 539.374

BOGOYAVLENSKIY, K. N., YEGOROV, YU. I., YEFIMOV, I. A., KHOROSHAYLOV, V. G.

"On the Possibility of Cold Rolling of EI437BU Alloy"

Tr. Leningr. politekhn. in-ta (Works of Leningrad Polytechnical Institute), 1971, No. 322, pp 150-151 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12V596)

Translation: The results of a study to determine the resistance to deformation under conditions close to cold rolling are presented. The maximum possible degree of deformation before destruction of the samples under various load conditions, contact friction, and various heat treatments was determined. High plasticity is ensured after appropriate heat treatment, making it possible to recommend the cold rolling method for obtaining a feather profile from the EI437BU alloy. Authors' Abstract.

1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--TREATMENT OF NONDEOXIDIZED STEELS WITH GASES IN LADLES -U-

AUTHOR-(05)-KABLUKOVSKIY, A.F., KLIMOV, S.V., SALAUTIN, V.A., YEFIMOV, I.A., STURMAN, V.K.

COUNTRY OF INFO--USSR

SOURCE--METALLURG (MOSCOW) 1970, 15(3), 18-21

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GAS CONTAINING METAL, METAL CONTAINING GAS, ARGON, METAL REFINING, CARBON MONOXIDE, METAL MELTING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0941 STEP NO--UR/0130/70/015/003/0018/0021

CIRC ACCESSION NO--AP0133027

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0133027
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. MELTINGS WERE MADE WITH THE BLOWING OF AR, AR-O MIXTS., AND CO GAS INTO THE LADLE TO DET. WHETHER IT IS POSSIBLE TO DECARBURIZE AND REFINE THE MELT. REJECTED ELEC. FURNACE STEEL WAS MELTED IN A 5-TON LADLE. GRAPHS SHOW THE DEPENDENCE OF GAS CONSUMPTION ON PRESSURE FOR VARIOUS POROUS REFRACTORIES; DEPENDENCE OF SP. SURFACE OF GAS AND METAL ON THE BUBBLE DIAM.; IN ADDN., SOME PROPERTIES OF THE REFRACTORY PLUGS ARE TABULATED. SIO SUB2 AND AL SUB2 O SUB3 CONTENTS IN THE SLAG ARE INCREASED AND CAO FALLS. THE EFFECT OF THE METAL BLOW CYCLE WITH GASES ON THE LIFE OF THE REFRACTORY LINING IN THE LADLE NEEDS TO BE DETD. THE C CONTENT OF THE METAL FALLS UNDER THESE CONDITIONS. THE RESULTS SUGGEST WIDE POSSIBILITIES FOR VARIOUS GASES FOR EXTRA FURNACE REFINING OF METAL. FACILITY: ISENT. NAUCH.-ISSLED. INST. CHERN. MET., MOSCOW, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--GAMMA RAY SPECTRA OF THE CAPTURE OF RESONANCE NEUTRONS BY RHODIUM, TANTALUM, AND GOLD -U-

AUTHOR-(05)-BURGOV, N.A., DANILYAN, G.V., YEFIMOV, I.A., KAZACHKOVSKIY, O.D., PAVLOV, V.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 89-96

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GAMMA SPECTRUM, RADIATIVE CAPTURE, NEUTRON ABSORPTION, RESONNANCE ABSORPTION, RHODIUM, TANTALUM, GOLD, GAMMA TRANSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/2003 STEP NO--UR/0048/70/034/001/0089/0096

CIRC ACCESSION NO--AP0105077

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105077

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SPECTRA OF GAMMA RAYS FROM THE CAPTURE OF THE RESONANCE NEUTRONS (0.5 IS SMALLER THAN E SUBN IS SMALLER THAN 7.0 MEV) BY RH, TA, AND AU NUCLEI WERE MEASURED BY THE GLOBAL METHOD. ADVANTAGES AND DISADVANTAGES OF THE SUGGESTED METHOD ARE DISCUSSED. THE ENERGIES AND INTENSITIES OF THE GAMMA TRANSITIONS IN PRIME104 RH, PRIME182 TA, AND PRIME198 AU WERE CALCD. FROM THE EXPTL. DATA. THE ENERGIES AND SPINS OF THE LOWER EXCITED STATES OF THESE NUCLEI ARE PRESENTED AND COMPARED WITH THE ANALOGOUS DATA OF OTHER WORKS. THE NEWLY DISCOVERED STATES ARE INDICATED.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--RESISTANCE OF ALUMINUM ALLOYS IN VARIOUS CORROSIVE MEDIA -U-

AUTHOR-(05)-BUDOV, G.M., GUZEYEV, E.A., YEFIMOV, I.A., SMETANINA, N.G., FLAKS, V.YA.
COUNTRY OF INFO--USSR

SOURCE--PROM. STROIT. 1970, (1), 40-2

DATE PUBLISHED--------70

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

TOPIC TAGS--ALUMINUM ALLOY, ALUMINUM CORROSION, ALLOY DESIGNATION, CHLORINE, HYDROGEN SULFIDE, CARBON DISULFIDE, INDUSTRIAL PLANT, SULFUR OXIDE, OCEAN, ARCTIC TEST/(U)D1BT ALUMINUM ALLOY, (U)B95T1 ALUMINUM ALLOY, (U)AK6T1 ALUMINUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/1298 STEP NO--UR/0227/70/000/001/0040/0042

CIRC ACCESSION NO--AP0055969

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0055969

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CORROSION OF D16-T, B95-T1, AND AK6-T1 AL ALLOYS (COMPN. NOT GIVEN) WAS DETD. BY A 2 YR EXPOSURE ON THE SHORE OF THE ARCTIC OCEAN AND AT INDUSTRIAL PLANTS. THE RESULTS ARE GIVEN. THE LOSS STRENGTH WAS GREATER ON THE SHORE THAN AT THE PLANTS. AT THE INDUSTRIAL PLANTS, CL BEARING ATMS. CAUSED GREATER CORROSION THAN THOSE CONTG. SO SUB2, H SUB2 S, OR CS SUB2.

UNCLASSIFIED

USSR

UDC 621.397:621.396.61

SOLNTSEV, A. A., YEFIMOV, I. I.

"A Television Device for Observation of High-Contrast Objects"

USSR Author's Certificate No 285043, filed 11 Dec 68, published 29 Dec 70 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7G104 P).

Translation: This Author's Certificate introduces a television device for observing high-contrast objects. The unit contains a television transmitting tube, a video amplifier, and an amplitude selector with two selection thresholds. The signal from one of the selector outputs is fed through a gamma corrector to the modulator of the transmitting tube. As a distinguishing feature of the patent, the contrast of the elements of the object being transmitted is reduced by connecting an adder between the output of the gamma corrector and the vidicon modulator. The second input of the adder is connected through an additional gamma corrector to the second output of the amplitude selector.

USSR UDC: 621.397

NIKIFOROV, D. D., SOLNTSEV, A. A., LIFSHITS, M. A., YEFIMOV, I. I.

"A Device for Measuring the Time Interval Between the Midpoints of Video Pulses"

USSR Author's Certificate No 275851, filed 15 Jul 67, published 13 Oct 70 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5G69 P)

Translation: The device is designed for measuring the time interval between the midpoints of video pulses in two sequences of identical frequency where the relative phase shift between sequences is such that the pulses of one sequence are within the limits of the pulses of the other sequence. The device contains time interval meters, and registration units, and is distinguished by the fact that measurement precision is improved by connecting the inputs of the device through differentiating links and a commutator to the inputs of the above-mentioned time interval meters. The outputs of these meters are connected thorugh flip-flops to the registration unit.

1/1

USSR UDC: 621.374.5(088.8)

SOLNTSEV, A. A., YEFIMOV, I. I., LIFSHITS, M. L.

"A Signal Shaper"

USSR Author's Certificate No 250214, filed 28 Oct 66, published 22 Jan 70 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7G345 P)

Translation: A device is proposed for shaping a signal located on the time axis in the middle of a video pulse. The device contains a differential link and a delay unit. To improve the precision with which the shaped signal coincides with the middle of the video pulse, keys are connected between the differential link and the delay unit which serve to isolate signals corresponding to the front and cut-off of the video signal, and the leads from the delay unit are connected through coincidence circuits to memory elements which are connected to the load.

1/1

Public Health, Hygiene and Sanitation

USSR

UDC 612.432+612.453].014.45

BONDAREV, G. I., Candidate of Medical Sciences, SINITSINA, A. D., and YEFIMOV, I. N.
Scientific Research Institute of Water Transport Hygiene

"The Combined Effect of Low-Frequency Vibration and Noise on the Hypophyseal Adrenocortical System"

Moscow, Gigiyena i Sanitariya, No 5, 1970, pp 106-108

Abstract: The effect of vibration (10 and 20 hz) combined with noise (80 and 84 db) on the weight of the adrenals and the blood corticosterone level of rats was studied after exposure for 8 hours daily for 20 days. The weight of the adrenals remained unchanged throughout the experiment. The corticosterone level tended to increase on the 7th and 17th days of exposure to vibration and noise, whereas noise alone produced the same changes on the 17th and 21st days. But on the first day after the experiment, the corticosterone level fell sharply and on the second day it was the same as in controls. The shifts appeared earlier when higher frequency vibration was applied, i.e., the initial increase in corticosterone content began to decrease on the 12th day, and by the 20th day was significantly below the control. Injection of ACTH on the 20th day increased the secretion of corticosterone two- to three-fold. Thus, the combined action of vibration and noise lowered the blood corticosterone level and decreased the adrenocorticotropic activity of the hypophysis.

1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--REACTION OF CERIUM (IV) WITH BETA DIKETONES -U-

AUTHOR-(03)-VORONETS, L.S., YEFIMOV, I.P., PESHKOVA, V.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 886-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, ORGANOMETALLIC COMPOUND, CERIUM COMPOUND, KETONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0734 STEP NO--UR/0078/70/015/003/0886/0887

CIRC ACCESSION NO--AP0113598

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0113598
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION OF CE(IV) WITH BETA DIKETONES IN AQ. SOLNS. IS ACCOMPANIED BY REDN. OF CE ION. THE DEGREE OF THE REDN. DEPENDS ON REDOX POTENTIAL OF BETA DIKETONES AND THE DURATION OF THE REACTION. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR UDC 612.314.58(088.8)

YEFREMOV, I. S., KOSAREV, G. V., KOS'KIN, O. A., and STRATIY, V. I. [Mosk. energ. in-t-- Moscow Power Institute]

"Device for Regulation of D-C Voltage"

USSR Author's Certificate No 2599995 (sic), filed 3 Feb 68, published 4 May 70 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5B443P)

Translation: An improvement of the circuit of a direct pulse d-c converter is proposed. In order to decrease overvoltage at the principal thyristor, the circuit is fulfilled so that the cathode of an auxiliary thyristor is connected with the positive terminal of the power supply through a commutating capacitor, and the anode of both thyristors is connected across a commutating choke coil. 1 ill. I.A.

1/1

Titanium

USSR

UDC 669.15'295-194

KAMAIDIN, V. A., YEFIMOV, I. V., KASPER, N. V., NIKITIN, B. N., and YAKOVLEV, N. F.

"Role of the Lower Oxides in Titanium Redox Reactions During Electrical Melting of Titanium-Containing Steels"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 2, Mar-Apr 72, pp 66-70

Abstract: An investigation was made in an attempt to determine the mechanism of titanium oxidation (reduction) in normal steel melting processes. Tests were made using steel OKh18N10T and a synthetic slag of the CaF_2-Al_2O_3 system which were melted in a TVV-5 crucible vacuum furnace. To the molten metal, having a constant alumina content (40%), titanium dioxide was added (up to 20%). With increased TiO_2 concentration, the amount of Ti_2O_3 in the slag also increased and small quantities of TiO were found. These titanium oxides depleted some of the titanium in the original metal and lowered the equilibrium concentration of Ti. In order to neutralize the negative action of weak oxides it is necessary to provide for a higher Ti_2O_3/TiO_2 ratio in the slag, which can be done by having a higher TiO_2 content in the initial slag. Four figures, 1 table, 6 bibliographic references.

1/1

YEFIMOV, I. Ye.

electronics

JPRS 53659

22 July 1971

TRENDS IN MICROELECTRONICS

[Article by B. S. Danilin and I. Ye. Yefimov, Moscow, Radiotekhnika, Russian, Vol 26, No 5, 1971, pp 3-11]

The contemporary stage of the scientific and technological revolution is characterized by an especially rapid increase in the complexity of radioelectronic apparatus in connection with this, traditional methods of manufacturing it, by sequential assembly of separate elements, have become unacceptable, insofar as they cannot guarantee the necessary reliability, economy, power capacity, manufacturing time, and sizes. Against this background, microelectronics was born -- a new scientific and technological direction for electronics, which solves the problem of creating highly reliable, economical miniaturized electronic units and assemblies[1,2] through the use of a complex combination of physical, chemical, schematic engineering, and technological -- to mention a few -- ways and means.

The central problem of microelectronics is the creation of maximally reliable elements, units, and assemblies, along with the development of reliable and cheap methods of assembling them, using qualitatively new principles for manufacturing electronic apparatus. One of these new principles involves the abandonment of the use of discrete components and the formation of complex assemblies, or "integrated circuits" IS, in microscopically small areas, directly from the basic materials.

The use of extremely pure basic materials, conducting the technological process under sterile conditions (excluding the possibility of contamination), a minimal quantity of internal schematic assemblies, and the small size and compactness of microelectronic assemblies and units, allow a sharp increase in the reliability of microelectronic apparatus. Thus, the complex contradictions between increased radioelectronic apparatus reliability requirements and the impossibility of solving this problem through the use of discrete components are re-

USSR

UDC 681.3.06.51

YEFIMOV, I. Ye.

"One Method of Estimating the Error in Solution of Systems of Linear Algebraic Equasions by Analog Devices"

Mat. Metody v Kibernet. Tekhn. Vyp. 2 [Mathematical Methods in Cybernetic Equipment, No. 2 -- Collection of Works], Kiev, 1970, pp 20-28 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V659).

No Abstract.

1/1

CAROL

(4)

SO: JPRS 60598
20 Nov 73

DESIGN AND ELECTRICAL CHARACTERISTICS OF COMMUNICATIONS CABLES

[Selected portions of a book by I. Ye. Yefimov, M. A. Klimov, R. M. Lakernik, and D. L. Sharle; Moscow, Konstruktivnyye i elektricheskiye kharakteristiki kabeley svyazi, Russian, Gosudarstvennoye izdatel'stvo literatury po voprosam svyazi i radio, 1959, pp 38-55, 186-196, 282-361]

Chapter 2

BASIS OF THE THEORY OF TRANSMISSION ALONG COMMUNICATIONS CABLES

2.1. Basic principles and circuits of electrical communications along cables

The transmission of communications from one point to another by means of electrical energy is called electrical communications. Electrical communications may be telegraph or telephone.

In telegraphy, by means of direct current pulses of current of various duration and various combinations are sent to the line. In the receiving apparatus these pulses are reproduced on a moving paper tape in the form of dots and dashes. The conventional combinations of dots and dashes, replacing the letters of the alphabet, are called a telegraph code (Morse alphabet). Modern high-speed telegraph apparatuses make it possible to transmit letters rather than conventional signs.

Telegraph signals are sent to the line in the form of combinations of pulses of direct current of various duration and various sign. In the study of processes of the transmission of telegraph signals along a line, the currents and voltages of these signals can be conveniently considered as periodic transmissions of elementary pulses (Figure 2.1). Such pulses correspond to dots in the operation of the Morse apparatus and to the transmission of the letter T in the operation of letter-printing

YEFIMOV, I. YE.

USSR

UDC: 621.382

DANILIN, B. S., YEFIMOV, I. Ye., Active Members of the Scientific and Technical Society of Radio Engineering, Electronics and Communications

"Prospects for Microelectronics"

Moscow, Radiotekhnika, Vol. 26, No 5, May 71, pp 3-11

Abstract: The article surveys the present state and future prospects of microelectronics with particular emphasis on problems of reliability. Topics covered include the use of semiconductor and thin-film electronics in integrated circuitry, MOS transistors in hybrid integrated circuits, the use of semiconductor logic circuits in computer technology, large-scale integration, microwave integrated circuitry, and the use of integrated circuits in computer technology, communications equipment and household appliances. It is assumed that efforts in microelectronics in the coming decades will be concentrated on development of integrated circuitry, both improvement of existing techniques and research on the use of new physical phenomena in this branch of microelectronics. The use of electron and ion beams shows great promise for the production of integrated circuits. The coming years should see applications of semiconductor elements with negative resistance, electronic phenomena accompanying phase transitions, superconductivity phenomena, strong field effects, injection of

USSR

DANILIN, B. S., et al, Radiotekhnika, Vol. 26, No 5, May 71, pp 3-11

current carriers in amorphous films, optrons, semiconductor lasers, fiber lasers, fiber optics and other devices and phenomena in microelectronics. There is hope that new solid-state devices will be developed as a result of wave processes in media with volumetric negative differential conductivity. Such devices might give us amplifiers, frequency converters, high-speed switches and other elements with a specific power considerably higher than that possible with transistors. The use of optoelectronic phenomena should also provide considerable material for future research in microelectronics.

2/2

UDC 616.61-002.151-02

USSR

AGAFONOV, V. I., Maj Gen Med Serv, Docent; LEV, M. I., Col Med Serv; NOSKOV, F. S., Lt Col Med Serv, Candidate of Medical Sciences; KONIKOVA, R. Ye., Candidate of Biological Sciences; YELIGULASHVILI, R. K., Candidate of Medical Sciences; GAVRILYUK, B. K., Doctor of Medical Sciences; KULIKOV, I. A., Lt Col Med Serv; YEFIMOV, L. S., Lt Col Med Serv; SERGEYCHIK, I. I., Capt Med Serv; BELYAYEVA, H. S.

"Etiological Decoding of an Outbreak of Hemorrhagic Fever With a Renal Syndrome"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 9, Sep 71, pp 46-49

Abstract: In June and July 1970, in the southern area of Khabarovskiy Kray, an outbreak of hemorrhagic fever with a renal syndrome (HFRS) occurred among workers employed on construction work and housed in a tent camp located on a hill surrounded by swampy meadows. Despite repeated rodent extermination, the camp area was infested with rodents and ticks. Relocation of the workers to a nearby village halted the outbreak. Only one of the 34 hospitalized workers died. The onset of the

USSR

AGAFONOV, V. I., et al, Voyenno-Meditsinskiy Zhurnal, No 9, Sep 71, pp 46-49

disease was acute, and fever of 39-41°C lasted 3-15 days. Renal and cardiovascular insufficiency developed in five patients. The clinical picture was atypical, suggesting both HFRS and leptospirosis. After test for Leptospira proved negative in all patients, two types of tests for hemorrhagic fever antigens were performed: indirect hemagglutination inhibition and agglutination with fluorescent antibodies. In the indirect hemagglutination tests, sheep erythrocytes sensitized with antibodies against the 10-10 strain of hemorrhagic nephrosonephritis (HNN) were used. All tests were positive. The fluorescence tests yieldod green granular fluorescence in spleen smears. It is concluded that the green granular fluorescence is specific for HNN, and that the granules represent areas of replication of the HNN virus.

2/2

1/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--ABSORPTION OF NITROGEN BY A CONTINUOUSLY RENEWED TITANIUM FILM -U-

AUTHOR-(03)-BIRYUKOVA, N.YE., VINOGRADOV, M.I., YEFIMOV, M.N.

COUNTRY OF INFO--USSR

SOURCE--ZHUR. FIZ. KHIM., JAN. 1970, 44, (1), 145-149

DATE PUBLISHED----JAN70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--NITROGEN, ABSORPTION, TITANIUM, SURFACE PROPERTY, CHEMICAL REACTION MECHANISM, METAL FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0247 STEP NO--UR/0076/70/044/001/0145/0149

CIRC ACCESSION NO--AP0124009

UNCLASSIFIED

2/2 028 UNCLASSIFIED

CIRC ACCESSION NO--AP0124009 PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANISMS RESPONSIBLE FOR THE ABSORPTION OF N BY A TI FILM WERE STUDIED, THE FILM BEING CONTINUOUSLY RENEWED IN ORDER TO PREVENT THE ACCUMULATION OF OXIDES AND OTHER REACTION PRODUCTS. BETWEEN MINUS 196 AND PLUS 200DEGREESC THE MECHANISM WAS AS FOLLOWS: (I) N MOLECULES WERE PHYSICALLY ADSORBED ON THE SURFACE OF THE FILM; (II) THE PHYSICALLY ADSORBED MOLECULES WERE THEN CONVERTED INTO THE MOLECULAR CHEMISORBED STATE, RETAINING THE MOBILITY OF CHEMISORBED MOLECULES; AND (III) THE MOLECULES WERE THEN CONVERTED INTO AN ATOMIC CHEMISORBED STATE, WITH THE FORMATION OF AN ADSORBED LAYER FIRMLY ATTACHED TO THE SURFACE.

UNCLASSIFIED

USSR

UDC 537.591.15

VERNOV, S. N., Y'EGOROV, T. A., Y'EFIMOV, N. N., KOLOSOV, V. A., KORYAKIN, V. D., KRASIL'NIKOV, D. D., KUZ'MIN, A. I., KULAKOVSKAYA, V. P., MAKSIMOV, S. V., NESTEROVA, N. M., NIKOL'SKIY, S. I., ORLOV, V. A., SLEPTSOV, I.YE., SIZOV, V. V., KHRISTIANSEN, G. B., and SHAMSUTDINOVA, F. K.

"Preliminary Results of Recording Extensive Showers on a Recording Array in Yakutsk"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 10, Oct 71, pp 2098-2101

Abstract: Experiments are described in which attempts were made at determining the energy spectrum, composition, and anisotropy of cosmic rays within the range of energy 10^{17} to 10^{18} ev. It is desired to extend the range to cover 10^{19} ev and above. Of a particular interest are the following problems: do the rays originate within the Galaxy or in metagalactic regions, what is the direction from which they arrive, and how Cerenkov radiation produced by them is distributed within the atmosphere. The test equipment consists of 13 recording points distributed over an area of 3 km^2, with a central time control point. The output spectrum was measured over a period of 29.5 hours. 82 showers were noted during that period, with the axes falling within the

USSR

VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 10, Oct 71, pp 2098-2101

array area. The orientation of the axis was found by the "triangulation" method, comparing the time of arrival of the showers at different recording points. An analytic expression is given in the paper for the integral output spectrum of extensive showers at sea level for the interval of N between 2×10^7 and 2×10^8. The intensity, determined with this formula, appears to be 2 to 3 times as great as recorded elsewhere. Distribution of Cerenkov light with respect to the shower axis was determined by observations conducted on clear, moonless nights. It was found to be similar to that of the primary gamma quanta, but it decayed with the distance from the axis more slowly than the amount of charged particles ($R^{-2.5}$ as against $R^{-3.3}$ for charged particles).

Examination of the energy spectrum of primary particles lead to the conclusion that the electromagnetic component is responsible for 80% of it. Dependence of primary energy on the output N was established, and on the basis of this relation the integral spectrum was computed. The coefficient connecting these two magnitudes was found to be twice as high as the one previously accepted elsewhere.

2/3

USSR

VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 10, Oct 71, pp 2098-2101

In the final analysis, variation of Cerenkov light at the primary particle energy of 3.6×10^{16} ev and the output (intensity) of 1.5×10^{7} particles at sea level is given, as well as the expected distribution of the nuclear components of primary rays.

3/3

USSR

UDC 621.4/.6:533.6

YURINSKIY, V. T., YEFIMOV, N. N.

"The Working Process of an Active Mechanical Nozzle"

Tr. Novocherkas. politekhn. in-ta (Works of Novocherkassk Polytechnical Institute), 1972, Vol. 258, pp 49-56 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B435)

Translation: The process of the acceleration of a gas flow in an axial turbine is considered when the mechanical work supplied to the shaft of the turbine is used to raise the kinetic energy of the directed motion of the gas with the conservation of the unchanged specific potential energy (the energy of molecular motion) from the input to the output of the cross section of the machine. The essential shape of the through-flow section and the skeletal shapes of blades of the working and rectifying grids of such a flow stimulator are shown. By considering the flow stimulator as an equivalent acceleration nozzle and using the methods of flow theory, the authors calculate the parameters of the flow accelerated in the channels of the turbina and determine the efficiency of the flow stimulator. L. V. Nosachev.

1/1

USSR UDC:

SHEYKHET, E. G. and YEFIMOV, O. N., Institute of Semiconductors of the USSR Academy of Sciences, Leningrad

"Photoelectric Absorption and Diffusion Scattering During the Anomalous Transmission of X-rays in Ge Single Crystals"

Leningrad, Fizika Tverdovo Tela, Vol 14, No 3, Mar 1972, pp 734-736

Abstract: The authors analyze the absorption and scattering processes of x-rays during their interaction with cluster-type defects (clustering of impurity atoms) and loop-type dislocations. The average distance of the static displacement of atoms is determined during the formation of dislocation-type loops in the Ge-As system. It is shown that photoelectric absorption and diffusion scattering during anomalous transmission of x-rays depend on defect size and magnitude of the deformations, which distort the crystal lattice during the decay of germanium-based, supersaturated solid solutions. Original article: two formulas, one figure, two tables, and no bibliographic entries.

1/1

1/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ANOMALOUS TRANSMISSION OF X RAYS FOR DIVERGENT INCIDENT BEAM -U-

AUTHOR-(03)-KOVEV, E.K., KOROVIN, L.I., EFIMOV, O.N.

YEFIMOV, O.N.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 38, NR 2, PP 531-540

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--X RAY SCATTERING, ELECTROMAGNETIC WAVE REFLECTION, ELECTROMAGNETIC WAVE PROPAGATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0943 STEP NO--GE/0030/70/032/002/0531/0540

CIRC ACCESSION NO--AP0107472

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE-30OCT70

CIRC ACCESSION NO--AP0107472

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS SHOWN THAT THE ANALYTICAL FORM OF SOME CHARACTERISTICS OF THE ANOMALOUS TRANSMISSION OF X RAYS FOR DIVERGENT INCIDENT BEAM IS DIFFERENT FROM THE CORRESPONDING EXPRESSION DERIVED FOR THE CASE OF PARALLEL BEAM. IN PARTICULAR, THE EXPRESSIONS FOR THE REFLECTION COEFFICIENT AND HALF WIDTH ARE MODIFIED, WHILE THE INTEGRATED INTENSITY PRESERVES THE SAME MEANING. THE NEW CONTENT OF THE REFLECTION COEFFICIENT MAKES IT POSSIBLE TO USE IT FOR OBTAINING THE INTEGRAL CHARACTERISTICS OF ANOMALOUS TRANSMISSION, CONNECTED WITH DIFFERENT PARTS OF THE STRUCTURE FACTOR. CONSIDERATION OF THE DIVERGENCE OF THE INCIDENT BEAM LEADS TO A GOOD AGREEMENT OF THE EXPERIMENTAL AND THEORETICAL DATA FOR THE CHARACTERISTICS OF ANOMALOUS TRANSMISSION. FACILITY: INSTITUTE OF SEMICONDUCTORS, ACADEMY OF SCIENCES OF THE USSR, LENINGRAD.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EFFECT OF IMPURITY PRECIPITATIONS ON THE ANOMALOUS X RAY TRANSMISSION IN HEAVILY ARSENIC DOPED GERMANIUM -U-

AUTHOR-(03)-EFIMOV, O.N., SHEIKHET, E.G., DATSENKO, L.I.

YEFIMOV, E O.N.

Y

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 38, NR 1, PP 469-498

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GERMANIUM SEMICONDUCTOR, CRYSTAL DISLOCATION, X RADIATION, WAVE PROPAGATION, SEMICONDUCTOR IMPURITY, ARSENIC, SOLID SOLUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1067 STEP NO--GE/0030/70/038/001/0489/0498

CIRC ACCESSION NO--AP0107576

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0107576

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL DATA OF QUANTITATIVE STUDIES OF THE INTEGRAL CHARACTERISTICS OF ANOMALOUS X RAY TRANSMISSION ARE GIVEN FOR GERMANIUM WITH DIFFERENT DISLOCATION DENSITIES, DOPED WITH ARSENIC UP TO A CONCENTRATION OF APPROXIMATELY EQUAL TO 4 TIMES 10 PRIME19 AT-CM PRIME NEGATIVE3 AT VARIOUS TAGES OF EXISTENCE AND DECOMPOSITION OF THE SOLID SOLUTION. THE STATE OF SOLID SOLUTION WAS CONTROLLED BY ELECTROPHYSICAL MEASUREMENTS AND X RAY TOPOGRAPHS (BORRMANN'S METHOD). ON THE BASIS OF THE RESULTS OBTAINED SOME CONCLUSIONS ARE DRAWN ABOUT THE CHARACTER OF THE DISTURBANCES GENERATED BY THE ABOVE MENTIONED DECOMPOSITION OF THE SOLID SOLUTION. PARTICULARITIES OF THE SOLUTION BEHAVIOUR ARE CONSIDERED WHEN THE CONCENTRATION OF ARSENIC IS NEAR THE LIMIT. FACILITY: INSTITUTE OF SEMICONDUCTORS, ACADEMY OF SCIENCES OF THE USSR, LENINGRAD. FACILITY: INSTITUTE OF SEMICONDUCTORS, ACADEMY OF SCIENCES OF THE UKRAINIAN SSR, KIEV.

UNCLASSIFIED

USSR

YEFIMOV, O. N., Institute of Semiconductors, Academy of Sciences USSR, Leningrad

"Characteristics of the Anomalous Transmission of X-Rays for Germanium With Impurities and Precipitates"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 5, May 1970, pp 1562-1564

Abstract: The anomalous tranmission of x-rays in germanium with hydrogen, nickel, and copper purities is studied in a more refined manner considering the "thickness" term and polarization of the primary beam. It is noted that experimental results have frequently been interpreted in different ways, since these factors were not taken into account. The integral characteristics of anomalous transmission for these solid solutions were obtained using the relationship

$$\ln R_i + \frac{1}{2} \ln kt = \mu_i t + y_i^{\varepsilon} \qquad (1)_{\varepsilon}$$

and the definitions of the integral characteristics $\mu_i = \mu_i^{\varepsilon}$ and $y_i = \ln(X_{rh})$

$$\mu_i^{\varepsilon} = (\mu - 2\pi k |X_{i1}|) \frac{1}{\gamma}, \qquad (2)$$

1/2

USSR

YEFIMOV, O. N., Fizika Tverdogo Tela, Vol 12, No 5, May 1970, pp 1562-1564

$$y_i^0 = \ln|X_{rh}| - \frac{1}{2}\ln|X_{ih}| + \ln\frac{1}{4\sin\vartheta} + \frac{1}{2}\ln\gamma_0 \qquad (3)$$

where R_i is the integral intensity of Laue reflection, k is the wave number, μ is the normal absorption coefficient, γ is the direction cosine, $\theta = 2\theta_B$, and X_{rh} and X_{ih} are the h Fourier expansion coefficients for polarizability. A table gives the experimental results for μ_i and y_i, from which the experimental values of the integral characteristics and the corresponding parts of the structural factor can be determined. The introduction of impurities basically led to an increase in the interference absorption coefficient. But the role of other electrically nonactive impurities and vacancies cannot be underestimated. These changes, however, are associated in the first stage with the microheterogeneous distribution of the impurity or with the existence of it in the pre-precipitation stage, since the concentrations are close to the limiting concentrations. As for the decay of the solid solution, the considerable change in inte-
2/2 gral characteristics also occurs for the limiting concentration.

1/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EXCHANGE OF MOLECULAR DEUTERIUM WITH DIMETHYL FORMAMIDE IN THE PRESENCE OF A COMPLEX HYDROGENATION CATALYST -U-
AUTHOR-(02)-YEFIMOV, O.N., PANOV, V.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 491-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--DEUTERIUM, FORMIC ACID, AMIDE, CATALYST, HYDROGENATION, RHENIUM COMPOUND, COMPLEX COMPOUND, RADIOACTIVITY, TRITIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1784 STEP NO--UR/0062/70/000/002/0491/0493

CIRC ACCESSION NO--AP0123581

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123581

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXCHANGE OF D WITH HCONME SUB2 IN THE PRESENCE OF THE HYDROGENATION CATALYST (I) FORMED FROM RH AND N,PHENYLANTHRANILIC ACID (AVILOV V. A., ET AL., 1968) WAS FOUND, ON THE BASIS OF A KINETIC STUDY, SHOWN GRAPHICALLY, TO PROCEED BY REVERSIBLE TRANSFER OF ONE D ATOM TO THE HCONME SUB2 MOL. UNDER THESE CONDITIONS D EXCHANGES WITH H IN THE C-ME GROUP OF ACNME SUB2 WITH PARTIAL HYDROGENOLYSIS OF THE C-ME BOND TO FORM CH SUB4 AND HCONME SUB2. IT WAS SUGGESTED THAT THE PROCESS INVOLVES SUCH EQUIL. AS RH. . .O:CMENME SUB2 PLUS D SUB2 FORMS AND IS FOFORMED FROM MEDRH. . .O:CDNME SUB2, WITH EACH OF THESE CAPABLE OF UNDERGOING TRANSLATION OF D AND H ATOMS. FROM DATA ON REDISTRIBUTION OF RADIOACTIVITY WITH TRITIUM TRACING IT WAS SHOWN THAT THE ME GROUP BOUND TO C TAKES PART IN THE EXCHANGE.

FACILITY: INST. KNIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.374.4

MOS'PAN, P.I., YSFINOV, S.K.

"To The Problem Of A Decrease Of Instability Of The Time Lag Of A Signal Spectrum In Fractional Regenerative Frequency Dividers"

V sb. Radioelektronika letatel'n. apparatov (Aircraft Radio Electronics--Collection Of Works), No 3, Khar'kov, Khar'kov Aviation Institute, 1971, pp 80-85 (from RZh:Radiotekhnika, No 2, Feb 72, Abstract No 2D33)

Translation: Two methods are described of decreasing the instability of the time lag of the signal spectrum in dividers with a coefficient of division $(n + 1)/n$. Formulas and graphs are presented which illustrate the advantages of the stabilized dividers considered in the paper. Summary.

AN0016982

Y

UR9008

AUTHORS-- PETROV, V., ENGINEER, AND YEFIMOV, V., CANDIDATE OF MEDICAL SCIENCES

TITLE-- ATTENTION, RADIATION

NEWSPAPER-- KRASNAYA ZVEZDA, FEBRUARY 1, 1970, P 4, COL 1

ABSTRACT-- THE ARTICLE DISCUSSES THE DANGER OF SPACE RADIATION IN POPULAR-SCIENCE TERMS AND GIVES THE TOTAL RADIATION DOSE OF THE THREE "SOYUZ" SPACE SHIPS /THE RECENT FLIGHT/ AS 36-54 MILLIRADS WHICH, PRESUMABLY, IS MANY TIMES LESS THAN THE PERMISSIBLE DOSE OF 15 RADS.

1/1

19600110

USSR

UDC 678.06-419.8:677.521]01:586

KIRILLOV, V. N., AVRASIN, Ya. D., YEFIMOV, V. A. and DOBROKHOTOVA, R. A.

"Effect of the Conditions of Thermal Treatment of Fiberglass on Their Thermophysical Properties"

Moscow, Plasticheskiye Massy, No 2, 1973, pp 58-60

Abstract: Results are reported of the study of the effect of the conditions of thermal treatment of fiber glass on its thermophysical properties in temperature range 20-300°C. It was shown that a considerable effect is exerted by thermal treatment and thermal aging on numerical values and temperature function of thermophysical properties. The type of change of the coefficient of heat transfer can be correlated to the structural aspects of the material. Due to the direct relationship between the depth of solidification of polymer and its thermophysical properties, the latter may be used in selecting technological conditions for the manufacturing of these materials. For example, on the basis of the change in thermal capacity the temperature range may be determined in which the processes of structuralization, of the emission of low-molecular-weight volatile products, destruction processes, etc., are taking place.
1/1

USSR

UDC 678.06-419.8:677.521.01:53

KIRILLOV, V. N., SOBOLEV, I. V., YEFIMOV, V. A., and GARANINA, S. D.

"Thermophysical Properties of Fiberglass With Silicon Filler"

Moscow, Plasticheskiye Massy, No 2, 1973, pp 54-57

Abstract: The effect of thermal treatment for silicon fiber on its properties and the thermophysical properties of the fiberglass based on a silicon filler and various binders was studied. The silicon fiber KT-11 was treated at 300, 600 and 800°C. Fiberglass materials were prepared from phenylfurfuryl, phenylformaldehyde, organosilicon, and modified epoxy binders. Experimental results show that with increased temperature of the fiber treatment the amount of moisture on the surface of fibers is sharply decreased. In fiberglass materials with large interconnected pores the moisture loss occur in all layers of the filler; in fiberglass of low porosity these processes occur only on the surface layers. Thus during the thermal treatment of silicon fiber its properties are altered in line with its structural changes. Thermophysical properties of fiberglass filled with silicon fiber KT-11 depend to a large degree on the treatment temperature of the filler.

1/1

Reliability Theory

UDC 621.382:621.362

USSR

YEFIMOV, V.A., LUPANOV, B.S., SHATALOVA, N.F.

"Problem Of Reliability Of Semiconductor Thermoelectric Devices"

Kholodil'n. tekhn. i tekhnol. Resp. mezhved. nauchno-tekhn. sb. (Cooler Technics And Technology. Republic Interdepartmental Scientific-Technical Collection), 1970, No 9, pp 3-5 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B175)

Translation: Various types of thermoelectric devices are considered and their qualitative reliability indices are presented. The area of applicability of the exponential law of the probability density distribution of rejections is described for computations on the devices mentioned. On the basis of an analysis of the quantitative reliability indices, and the design and technological features of the devices, a series of recommendations are given with respect to an increase of the reliability and quality of the devices in question. Rejections are considered which took place during tests and exploitation of the devices, and the most common of them are considered with the object of demonstrating the causes for their occurence. 4 ref. Summary.

1/1

UDC 678.06-419.8:677.521/.01:53

USSR

KIRILLOV, V. N., YEFIMOV, V. A., KOZIN, V. I., ABLEKOVA, Z. P., KRASNOV, L. L., TIKHOMIROVA, R. S.

"Effect of Fillers on the Thermophysical Properties of Fiberglass Plastics"

Moscow, Plasticheskiye Massy, No 11, Nov 70, pp 38-40

Abstract: The authors investigate the effect which chemical composition and heat treatment of the filler have on the thermophysical properties of fiberglass plastics at 50-300°C. The plastics studied were based on phenol-furfural or organosilicon binders, and fillers comprised or silica or aluminoborosilicate fabric with a paraffin lubricant. It was found that the behavior of the thermophysical characteristics of fiberglass plastics as the temperature changes depends on the processes which take place in the filler. In materials based on aluminoborosilicate fiber, oxidation of the lubricant determines the change in thermophysical properties with temperature, while the determining factor in plastics based on silica fabric is evaporation of the mositure absorbed by the fibers. Heat treatment of silica fabric is an effective measure for reducing shrinkage of plastics based on this filler.

1/1

AN0012150

UR 9013

AUTHOR-- V. A. YEFIMOV, CORRESPONDING MEMBER OF THE UKRAINIAN ACADEMY OF SCIENCES, DIRECTOR, THE INSTITUTE OF FOUNDING PROBLEMS /IFP/

NEWSPAPER-- PRAVDA UKRAINY, JANUARY 11, 1970, P 2, COLS 1-3

ABSTRACT-- THE AUTHOR DIRECTED A PROGRAM AT THE IFP, THE RESULT OF WHICH WAS A NEW HIGH-SPEED TEEMING OF 17-23 TON INGOTS OF THE OPEN-HEARTH STEEL. THE "CORRUGATED" INGOT WALLS PREVENT THE FORMATION OF CRACKS IN RIMMED STEEL INGOTS. THE NEW METHOD INCREASED THE POURING RATE BY A FACTOR OF 8-10 AND CUT THE TIME BY A FACTOR OF 2.5. THE NEW METHOD IS PRACTICED AT THE METALLURGICAL PLANT IMENI IL,ICH IN ZHDANOV AND THE CHEREPOVETS PLANT. CANDIDATE OF TECHNICAL SCIENCES V. N. SAPKO AND ENGINEER V. V. SHEPELEV PARTICIPATED IN THE RESEARCH PHASE OF THIS PROGRAM.

1/2

18

19570879

AN0012150

THE INSTITUTE ALSO CONDUCTED RESEARCH INTO UNDER-SLAG POURING OF STEEL /ENGINEER V. P. OSIPOV, A DEPARTMENT HEAD, CANDIDATE OF TECHNICAL SCIENCES N. YA. YASHCHUK, ET. AL./ AND COLLABORATED WITH PATON,S INSTITUTE OF ELECTRIC WELDING IN DEVELOPING THE PRODUCTION TECHNOLOGY OF THIS PROCESS. AS A RESULT, THE PRODUCTION TIME HAS BEEN REDUCED TO ONE-TENTH, AND THE AMOUNT OF REJECTS BY A FACTOR OF 2-32, DEPENDING UPON THE GRADE OF STEEL.

2/2

19570980

USSR UDC 547.341.07

KAFAFOVA, F. M., KAMAY, G. KH., YEFIMOVA, V. D., and FHIGABIYEVA, F. A., Kazan Chemical Technology Institute imeni S. M. Kirova

"Process for the Preparation of Methyldichlorophosphines"

USSR Author's certificate No 362026, filed 24 Apr 70, published 13 Dec 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 2, 1973, p 55)

Translation: This process is based on tertiary phosphines and is improved in that in order to strengthen the process, dichlorides of methylphosphonic acid react with tertiary phosphines while being heated. The desired product is subsequently separated by known methods. 2. The process in number 1 is improved in that it is carried out at temperatures between 175-190°C. under a stream of inert gas, for example, carbon dioxide.

1/1

USSR

UDC: 621.396.6-181.5

YEFIMOV, V. G. and ZEMLYANOV, G. L.

"Method of Determining Geometrical Dimensions of Film Resistors Using Nomograms"

Elektron. tekhnika, Nauchno-tekhn. sb. Mikroelektronika (Electronic Engineering, Scientific-Technical Collection, Microelectronics) 1970, No. 2(23), pp 42-46 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3V348)

Translation: A nomogram is constructed which represents the width and length of resistors as functions of the resistance and dissipated power. A technique of computation using the nomogram is explained; the computation errors are estimated. One illustration, one table, bibliography of one.

1/1

YEFIMOV, V. I.

SO: JPRS 54396
03 Nov 1971

SPACE MEDICINE

UDC 629.78.067:614.876

PROVIDING RADIATION FLIGHT SAFETY FOR THE 'SOYUZ-9' SPACESHIP CREW

5621026 (Au - Radiation Medicine) 6606391

[Article by Ye. I. Vorob'yev, I. V. Gotselev, Yu. G. Grigor'yev, V. I. Yefimov, N. S. Zatsepa, Ye. Ye. Kovalev, M. D. Nikitin, V. N. Obridko, V. A. Petrov, M. V. Tel'tsov and A. V. Sedov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 4, pp 29-33, 1971, submitted for publication 28 December 1970]

2401503 6600786

During flight of the "Soyuz-9" ship, as on earlier flights of Soviet manned spaceships, necessary measures were taken for ensuring crew radiation safety. The general approaches and principles serving as a basis for radiation protection have been set forth in earlier published studies (Yu. M. Volynkin, et al., 1964; Yu. G. Grigor'yev, et al., 1967; Ye. I. Vorob'yev, et al., 1969).

Accordingly, during the period of preparations for this flight an evaluation was made of the radiation conditions along the trajectory of the "Soyuz-9" ship, having the following principal characteristics: mean apogee ~ 250 km, mean perigee ~ 225 km, angle of inclination of orbital plane to the equatorial plane 51.7°. An analysis revealed that in the case of absence of powerful proton solar flares the radiation conditions will be determined by galactic cosmic radiation, the contribution of the proton component of the earth's radiation belt in the zone of the Brazilian magnetic anomaly, and the electron component of the belt in the high-latitude segments of the flight trajectory. The total dose due to galactic cosmic radiation and the earth's radiation belt, according to computations, must not exceed 0.25 rad. However, an examination of the ship trajectory in L,B coordinates indicated the presence of trajectory segments in which the geomagnetic shielding effect was considerably attenuated and the geomagnetic threshold for protons was ~ 100 MeV. A possible decrease in this threshold during the development of several successive solar flares, whose probability was not excluded due to the flight duration, made it necessary to have an effective forecast and careful monitoring of radiation conditions during the entire flight.

Microelectronics

USSR UDC 621.382.2

ALEKSANDROVA, G. A., YEFIMOV, V. I., YEMEL'YANOV, A. V., PASHINTSEV, Yu. I.

"Investigation of Planar Devices Based on the Gunn Effect"

Sb. nauchn. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collection of Scientifics Works on Problems of Microelectronics. Moscow Institute of Electrical Engineering), 1969, Issue 2, pp 34-37 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B157)

Translation: The technology of production and the characteristics of planar devices based on the Gunn effect (PGE) are considered. For production of PGE, epitaxial films were employed of n-type GaAs grown on semi-insulating GaAs substrates with a resistivity of 10^6 ohm.cm. The concentration and mobility of electrons in the films amounted to $7 \cdot 10^{14}$--1.10^{15} cm^{-3} and 6000--9000 cm^2/v sec. In order to assure the prescribed geometry of the devices, a SiO_2 film was employed, obtained by decomposition of tetraethoxysilane in a high-frequency plasma. The contacts were obtained by deposition and fusing in H_2 at a temperature of 500°C of an AuSn alloy. The distance between contacts amounted to 80 micrometers. The dependences are presented of the output microwave power and the oscillation frequency on the bias voltage. The PGE generated

1/2

USSR

ALEKSANDROVA, G. A., et al., Sb. nauchn. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn., 1969, Issue 2, pp 34-37 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B157)

150 mw pulse power at a 1.3 GHz frequency. The PGE has positive temperature coefficient of resistance. A. Ye.

2/2

USSR

UDC 621.382.2

ALEKSANDROVA, G.A., YEFIMOV, V.I., YEMEL'YANOV, A.V.

"Gunn Effect Planar Devices"

V sb. Arsenid galliya (Gallium Arsenide--Collection Of Works), Issue 3, Tomsk, Tomsk University, 1970, pp 263-265 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B147)

Translation: The design, technology, and principal parameters are described of Gunn planar semiconductor diodes. An output power of 125 mwatt with an efficiency of 1.5-percent at a frequency of 1200 MHz was obtained. 2 ill. 4 ref. B.M.

1/1