

USSR

SERGIENKO, I. V., STOGNIY, A. A., MITROPAN, A. P.

"System for Automated Debugging of Programs for the Dnepr-2 Control Computer"

Sistema Avtomatizirovannoy Otladki Programm dlya UVS Dnepr-2 [English Version Above], Kiev, 1972, 170 pages (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V819 K).

Translation: An automated debugging system for programs written in Autocoder as realized for the Dnepr-2 computer is described. Furthermore, a method is studied for developing an automated program debugging system written in input language in general.

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USSR

UDC: 519.24(07)

MITROPOL'SKIY, A. K.

"Statistical Computation Techniques. Second Edition, Revised and Enlarged"

Tekhnika statisticheskikh vychisleniy. Izd. 2-ye, pererabot i dop. (cf. English above), Moscow, "Nauka", 1971, 576 pp, ill. 2 r. 20 k. (from RZh-Kibernetika, No 7, Jul 71, Abstract No TV372 K)

[No abstract]

1/1

- 26 -

1/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--CHARACTER OF ALKALINE EARTH AND ALKALI METAL DISTRIBUTION IN BOTTOM  
SEDIMENTS OF THE NORTHWESTERN PART OF ATLANTIC OCEAN -U-  
AUTHOR--(03)-BELYAVSKIY, G.A., MITROPOLSKIY, A.YU., ROMANOV, V.I.

COUNTRY OF INFO--USSR, ATLANTIC OCEAN

SOURCE--GEOL. ZH. (UKR. ED.) 1970, 30(2), 142-9

DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--ALKALINE EARTH METAL, OCEAN BOTTOM, GEOGRAPHIC LOCATION,  
BOTTOM SEDIMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/0960

STEP NO--UR/0008/70/030/002/0142/0149

CIRC ACCESSION NO--AP0133046

UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133046

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SAMPLES OF BOTTOM SEDIMENTS WERE TAKEN IN 4 SECTIONS WHICH ARE DESCRIBED. ALL ANALYZED ELEMENTS WERE SEPD. INTO 2 GROUPS ACCORDING TO THEIR GENETIC CHARACTERISTICS: (1) CA, SR, BA, MG, AND K AND (2) BE AND NA. THE BIOGENIC AND CHEMOGENIC FACTORS PLAYED THE MAIN ROLE IN DISTRIBUTION OF ELEMENTS OF THE 1ST GROUP. THE DELIVERY AND REDISTRIBUTION OF TERRIGENOUS MATERIAL PLAYED THE MAIN ROLE IN BEHAVIOR OF ELEMENTS OF THE 2ND GROUP. THE ELEMENTS OF THE 1ST GROUP ARE DISTRUBUTED MORE OR LESS UNIFORMLY IN THE STUDIED AREA WITH SMOOTH VARIATION OF THEIR CONTENT IN VERTICAL DIRECTION. THE ACTIVITY OF LABRADOR CURRENT AND THAT OF GULF STREAM, WHICH SORTED AND TRANSPORTED THE PRODUCTS, OF ROCK DISINTEGRATION, DELIVERED FROM CONTINENTS, AFFECTED STRONGLY THE DISTRIBUTION OF ELEMENTS OF THE 2ND GROUP.

FACILITY: INST. GEOL. NAUK, KIEV, USSR.

UNCLASSIFIED

172 021 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--DISTRIBUTION OF SOME ELEMENTS IN THE BOTTOM SEDIMENTS OF THE  
NORTHWESTERN ATLANTIC OCEAN -U-  
AUTHOR--(03)-BELYAVSKIY, G.A., MITROPOLSKIY, O.YU., ROMANOV, V.I.  
COUNTRY OF INFO--USSR, ATLANTIC OCEAN  
SOURCE--DOPOV. AKAD. NAUK UKR. RSR, SER. B 1970, 32(3), 198-202  
DATE PUBLISHED-----70  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--GEOGRAPHIC LOCATION, OCEAN BOTTOM SAMPLING, CHEMICAL  
COMPOSITION, POTASSIUM, SODIUM, CALCIUM, BARIUM, VANADIUM, NICKEL,  
COBALT, IRON, CHROMIUM, STRONTIUM, TITANIUM, BERYLLIUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PRDXY REEL/FRAME--3004/1726 STEP NO--UR/0442/70/032/003/0198/0202  
CIRC ACCESSION NO--AT0131992  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0131992

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTION OF K, NA, CA, BA, V, NI, CO, SR, MG, FE, CR, TI, BE, AND MN BOTTOM SEDIMENTS WAS STUDIED FOR 4 SECTIONS SITUATED IN THE ZONES OF THE GULF STREAM, THE LABRADOR CURRENT, AND THEIR INTERSECTION. THE SPATIAL PATTERN OF ELEMENT DISTRIBUTION WAS AFFECTED BY BOTH THE LABRADOR CURRENT AND THE GULF STREAM, WHICH SORTED AND TRANSPORTED PRODUCTS OF ROCK DISINTEGRATION, DELIVERED FROM CONTINENTS, AND PROMOTED MIGRATION AND PPTN. OF BIOGENIC, CHEMOGENIC, LITHOGENIC, AND HYDROGENIC MATERIAL. FACILITY:  
INST. GEOL. NAUK, KIEV, USSR.

UNCLASSIFIED

USSR

UDC 517.948

MITROPOL'SKIY, Yu. A., Academician of the Ukrainian SSR Academy of Sciences, FIL'CHAKOV, P. F., Institute of Mathematics, Ukrainian SSR Academy of Sciences, Kiev

"Using Series to Solve Nonlinear Differential Equations With a Deviating Argument"

Moscow, Doklady Akademii Nauk SSSR, Vol 212, No 5, 11 Oct 73, pp 1059-1062

Abstract: A useful method of solving equations with a deviating argument is the method of steps which reduces the given problem to solution of an analogous problem for a sequence of ordinary differential equations. In this paper the authors propose an effective method for using series to solve this latter problem, utilizing the Cauchy formula and the appropriate notation.

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USSR

METROPOL'SKIY, Academician of the Ukrainian Academy of Sciences Yu. A.;  
LYKOVA, O. B.; BOGATYREV, B. M. (Mathematics Institute, Ukr. Academy of Sciences)

"Method of Rapid Convergence in the Problem of Construction of a Lyapunov Function"

Kiev, Dopovidi Akademii Nauk Ukrain's'koi RSR: Seriya A - Fizyko-Tekhnichni ta Matematychni Nauky; August, 1972; pp 702-6

ABSTRACT: A method is suggested for the construction of a Lyapunov function  $V(\phi, x)$  of a weakly nonautonomous linear system of equations

$$\frac{dx}{dt} Ax + P(\phi)x, \frac{d\phi}{dt} = \omega,$$

with the assumption that  $\|P(\phi)\|$  is small and  $P(\phi)$  is a fairly smooth function of  $\phi$  representable by  $\phi$  in the form of a Fourier series.

The proposed method is based on the Krylov-Bogolyubov idea of successive substitution of variables, ensuring rapid convergence.

1/1 The article includes 27 equations. There are 9 references.



MATHEMATICS

Differential and Integral Equations

USSR

UDC: 517.917

MITROPOL'SKIY, Yu. A., SAMOYLENKO, A. M., Institute of Mathematics, Academy of Sciences of the Ukrainian SSR

"On Quasiperiodic Oscillations in Nonlinear Systems"

Kiev, Ukrainskiy Matematicheskiy Zhurnal, Vol 24, No 2, 1972, pp 179-193

Abstract: A system of differential equations of the form

$$\frac{da}{dt} = \epsilon A(a, \varphi, \epsilon), \quad \frac{d\varphi}{dt} = \lambda + \epsilon B(a, \varphi, \epsilon)$$

is considered, where  $a = (a_1, \dots, a_n)$  is an n-dimensional vector,  $\varphi = (\varphi_1, \dots, \varphi_m)$  is an m-dimensional vector,  $A = (A_1, \dots, A_n)$  and  $B = (B_1, \dots, B_m)$  are vector functions which are periodic with respect to  $\varphi$  with period  $2\pi$ ,  $\lambda = (\lambda_1, \dots, \lambda_m)$  are constants,  $\epsilon$  is a small parameter, and  $t$  is time. A method of asymptotic integration is proposed for this system which yields approximate solutions and determines the existence of invariant toroidal sets of the system, giving asymptotic expansions of the solutions which fill the invariant

1/2

USSR

MITROPOL'SKIY, Yu. A., SAMOYLENKO, A. M., *Ukrainskiy Matematicheskiy Zhurnal*,  
Vol 24, No 2, 1972, pp 179-193

toroidal sets. The results of the analysis are used in investigation of the  
quasiperiodic oscillations of a system described by  $n$  second-order differential  
equations. Bibliography of twelve titles.

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USSR

UDC: 519.24

MITROPOL'SKIY, Yu. A., KOLOMIYETS, V. G.

"Use of Probabilistic and Asymptotic Methods in the Theory of Oscillations of Stochastic Systems"

Mat. fizika. Resp. mezhved. sb. (Mathematical Physics. Republic Inter-departmental Collection), 1971, vyp. 9, pp 89-95 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V399)

Translation: A brief survey is presented of research done in the department of mathematical physics and the theory of nonlinear oscillations of the Institute of Mathematics of the Academy of Sciences of the Ukrainian SSR in the last few years. Bibliography of ten titles. Authors' abstract.

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MATHEMATICS

Differential & Integral Equations

USSR

UDC 517.544.3:517.947.43:517.947.3

MITROPOL'SKIY, YU. A. and KUL'CHITSKIY, V. L., Institute of Mathematics,  
Academy of Sciences, Ukrainian SSR

"On Asymptotic Integration of a Nonlinear Mixed Boundary Value Problem With  
Partial Derivatives"

Kiev, Ukrainskiy Matematicheskiy Zhurnal, Vol 23, No 4, 1971, pp 543-547

Abstract: The problem to be solved is a nonlinear mixed boundary value problem in three-dimensional space with partial derivatives and nonstationary boundary conditions on part of the bounding surface. This problem is reduced to a Cauchy boundary value problem for an ordinary first-order differential equation with positive unbounded operator coefficients, and this problem is considered in an orthogonal sum of Hilbert spaces. A formula which is asymptotic with respect to the small parameter and which is uniform with respect to the small parameter and which is uniform with respect to  $t$  in the interval  $[0, T]$  is obtained with the aid of a Taylor series expansion. This formula is the solution to the Cauchy problem, and in a generalized sense

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USSR

MITROPOL'SKIY, YU. A., and KUL'CHITSKIY, V. L., *Ukrainskiy Matematicheskiy Zhurnal*, Vol 23, No 4, 1971, pp 543-547

(in the sense of a scalar product) it also satisfies the original problem. Under certain conditions, this asymptotic formula will be a classic solution of the original problem.

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- 1 -

UDC 517.917:517.946:519.2

USSR

~~MITROPOL'SKIY, Yu. A.~~, KOLOMIYETS, V. G., Institute of Mathematics, Academy of Sciences UkrSSR

"Averaging in Stochastic Systems"

Kiev, Ukrainskiy Matematicheskiy Zhurnal, Vol. 23, No. 3, 1971, pp 318-345

Abstract: It is pointed out that although Kolmogorov-Fokker-Planck equations are an effective method of exciting random processes in nonlinear oscillating systems, it is difficult in the majority of cases to subject these equations to analytical solution, with the exception of the particular case of linear systems. The application of the principle of averaging is said to yield interesting and important results for quasilinear systems containing a small parameter. The Kolmogorov-Fokker-Planck equations in this case yield applicable results if the initial equations considered describing the random oscillatory process can be reduced to a standard form. The averaging can be carried out in either the most standard equations, which are then easily analyzed with the aid of Kolmogorov-Fokker-Planck equations, or in a KFP equation which also has a standard form.

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USSR

MITROPOL'SKIY, YU. A., and KOLOMIYETS, V. G., Ukrainskiy Matematicheskiy Zhurnal, Vol 23, No 3, 1971, pp 318-345

The essence of the method of KFP equations and the basic assumptions of the theory of differential equations with random functions are reviewed, starting with the first results obtained by I. I. Gikhman on applying the principle of averaging for stochastic principles and also giving later developments by R. L. Stratonovich, R. Z. Khas'minskiy, I. Vrkos, and the authors.

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USSR

MITROPOL'SKIY, Yu. A., and LYKOVA, O. B., *Dopovidi Akademii Nauk Ukrain's'koj RSR: Seriya A - Fizyko-Tekhnichni ta Matematychni Nauky*; May 1971, pp 409-413

THEOREM: The differential equations

$$\frac{d\xi}{dt} = A_1\xi + X_1(t, \xi, s, e),$$

$$\frac{ds}{dt} = A_2s + X_2(t, \xi, s, e), \quad (2)$$

$$\frac{d\bar{\xi}}{dt} = A_1\bar{\xi} + \bar{X}_1(t, \xi, 0, e) \quad (3)$$

are given. Suppose the functions in the right side of equations (2) and (3) have certain properties such that the spectrum of the operator  $A_1$  is critical and, with the operator  $A_2$ , does not intersect the imaginary axis but is located to the left of it. Then the stability of the position of



USSR

MITROPOL'SKIY, Yu. A., Academician of the Ukrainian Academy of Sciences; and  
LYKOVA, O. B., (Institute of Mathematics, Ukrainian Academy of Sciences)

"Stability of Solutions of Nonlinear Differential Equations in Banach  
Space"

Kiev, Dopovidi Akademii Nauk Ukrain's'koi RSR: Seriya A - Fizyko-Tekhnichni  
ta Matematychni Nauky, May 1971, pp 409-413.

Abstract: The method of integral manifolds is applied to a study of the  
stability of solutions of nonlinear differential equations in an infinite-  
dimensional Banach space for critical cases. The author proves the follow-  
ing theorem, by means of which it is possible to study the stability of  
solutions of the equation

$$\frac{dx}{dt} = Ax + X(t, x, \epsilon): \quad (1)$$

where A is a linear bounded operator;  $X(t, x, \epsilon)$  is a function of the real  
variable t, x, the values of which belong to the space  $\mathcal{L}$ ;  $\epsilon$  is a small  
parameter.

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USSR

MITROPOL'SKIY, Yu. A., and LYKOVA, O. B., Dopovidi Akademii Nauk Ukrain's'-  
~~koj RSR. Seriya A~~ Fyzyko-Tekhnichni ta Matematychni Nauky; May 1971,  
pp 409-413

the equality  $\xi = 0$ ,  $s = 0$  of equations (2) is completely determined by  
the stability of the position of the equality  $\xi = 0$  of equation (3).

The critical part of the spectrum for the operator A of equation (1) leads  
to a study of the stability of solutions of the equation with respect to  
the critical variable, whose degree is less than the degree of the original  
equation and in a number of cases can be finite.

There are five bibliographic references.

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USSR

UDC: 517.949.2

MITROPOL'SKIY, Yu. A. and MIKHAYLOVSKAYA, N. A.

"Periodic Solutions of Discrete Differences in Second-Order Equations"

Kiev, Ukrainskiy Matematicheskiy zhurnal, Vol 24, No 4, 1972, pp 537-541

Abstract: For the first time, to the authors' knowledge, this paper presents an algorithm for finding the periodic solution to a second-order linear difference equation and a proof for a theorem stating the existence of such a solution. The difference equation considered is of the form  $\Delta^2 x_n = f_n(x_n, \Delta x_n)$ , where  $f_n(x_n, \Delta x_n)$  is a function periodic in  $n$  with a period of  $N$  and is defined for  $-\infty < n < \infty$ ,  $a \leq x_n \leq b$ ,  $c \leq \Delta x_n \leq d$ , where it is continuous for the combination of variables  $x_n$  and  $\Delta x_n$  and satisfies the inequalities

$$|f_n(x, y)| \leq M \text{ and } |f_n(x', y') - f_n(x'', y'')| \leq k_1 |x' - x''| + k_2 |y' - y''|.$$

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USSR

UDC: 629.78

PETROV, B. N., GANIN, I. A., MITROSHIN, E. L., OLEYNICHENKO, L. G., UKOLOV, I. S., USSR

"Selecting Parameters for a System to Control Descent of a Spacecraft in the Case of Random Variations of Atmospheric Density"

Moscow, Trudy IV Mezhdunarodnogo simpoziuma IFAK po avtomaticheskomu upravleniyu v prostranstve, Dubrovnik, Jugoslavia, Sep 1971, Vol 2, pp 5-11

Abstract: The authors examine a method of constructing a control system for safe descent of a space vehicle in the earth's atmosphere. The approach to solution of the problem of descent control is based on analysis of systems with variable structure: i. e., systems in which the control law is a linear combination of coordinates with stepwise variable coefficients depending on the state of the system. The main coordinates of the system are independent of external perturbations, including variations of atmospheric density and deviations of the aerodynamic characteristics of the descent craft.

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USSR

UDC 629.76/.78.015:533.6

PETROV, B. N., VLASOV, A. G., MITROSHIN, E. I., UKOLOV, I. S.

"Stochastic Optimal Control System Under Entry Into the Atmosphere With Second Cosmic Velocity"

V sb. Upravleniye v kosmose. T. 1 (Control in Space. Vol 1 -- Collection of Works), Moscow, "Nauka", 1972, pp 32-40 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B345)

Translation: The problem of the optimal control of the perturbed motion of a descending space ship is discussed in the stochastic approximation. 6 ref. Authors' abstract.

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1/2 051

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--STOCHASTIC OPTIMAL CONTROL SYSTEM OF REENTRY AT SUPERCIRCULAR VELOCITY -U-

AUTHOR-(04)-PETROV, B.N., VLASOV, A.G., MITROSHIN, E.I., UKOLOV, I.S.

COUNTRY OF INFO--USSR, FRANCE

SOURCE--INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL, SYMPOSIUM ON AUTOMATIC CONTROL, 3RD, TOULOUSE, FRANCE, MAR. 2-6, 1970, PAPER. 17  
DATE PUBLISHED-----70

SUBJECT AREAS--SPACE TECHNOLOGY, NAVIGATION

TOPIC TAGS--REENTRY TRAJECTORY, SPACECRAFT REENTRY, SPACECRAFT CONTROL, TRAJECTORY OPTIMIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0002

STEP NO--FR/0000/70/000/000/0017/0017

CIRC ACCESSION NO--AT0117302

UNCLASSIFIED

2/2 051

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0117302

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL ANALYSIS OF SPACECRAFT REENTRY TRAJECTORY CONTROL WITH THE AID OF ACCELERATORS MOUNTED ON A GYROSTABILIZED PLATFORM AS FLIGHT INFORMATION SOURCES. REENTRY TRAJECTORIES WITH LATERAL VELOCITIES BEING ONLY SMALL FRACTIONS OF LINEAR VELOCITIES ARE CONSIDERED. EQUATIONS ARE DERIVED TO DESCRIBE A STOCHASTIC OPTIMAL REENTRY CONTROL SYSTEM. ALSO ESTIMATED IS THE ACCURACY AND COMPLETENESS OF REENTRY TRAJECTORY DATA OBTAINED WITH THE AID OF A KALMAN FILTER. A COMPUTER ALGORITHM IS DEVELOPED FOR SPACECRAFT REENTRY TRAJECTORY OPTIMIZATION.

UNCLASSIFIED

USSR

UDC: 621.643.002.2 + 411.4

ZERNOV, A. V., ZAV'YALOV, V. E., INDYUKOV, A. F.,  
IVANTSOV, V. YA., Ural NITI, Chelyabinsk; and  
SHCHEPKIN, E. V., MITROSHIN, S. S., Nefteprovodmontazh  
Trust, Ufa.

"Possibility of Automatic Double Welds of the Elbow Joints in  
Large Diameter Pipelines"

Moscow, Stroitel'stvo Truboprovodov, No 8, Aug 71, pp 15-17

Abstract: The Ural Pipe Industry Research Institute developed a  
method for producing automatic double-V welds under flux with an  
overhanging welding head in plates of 6-12 mm thickness with  
2-2.5 mm gap.

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USSR

ZERNOV, A. V., et al., Stroitel'stvo Truboprovodov, No 8, Aug 71, pp 15-17

With this method the welding arc is stabilized by a magnetic field created by a solenoid concentric with the electrode. The solenoid winding is in series with the welding circuit. The magnetic field is controlled by varying the distance of the solenoid from the weld.

This method makes it possible to make the initial root weld either from inside or from outside in the elbow joint of a pipe.

Analysis of weld sections showed that the quality of the welds is adequate. The subject solenoids can be installed on existing welding heads. This will result in increased productivity and quality.

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USSR

UDC: 621.643.002.2 + 411.4

ZERNOV, A. V., ZAV'YALOV, V. E., INDYUKOV, A. F.,  
IVANTSOV, V. YA., Ural NITI, Chelyabinsk; and  
SHCHEPKIN, E. V., MITROSHIN, S. S., Nefteprovodmontazh  
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USSR

ZERNOV, A. V., et al., *Stroitel'stvo Truboprovodov*, No 8, Aug 71, pp 15-17

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Analysis of weld sections showed that the quality of the welds is adequate. The subject solenoids can be installed on existing welding heads. This will result in increased productivity and quality.

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USSR

UDC 621.357.7.035.4:669.128(088.8)

BABENKO, B. A., DUNISHCHEV, P. A., MITRYAKOVA, A. V., CHECHETKINA, V. A., and SHILOVSKIYA, V. P., Saratov Polytechnical Institute

"A Process for the Reduction of Oxidized Chloride Electrolyte for Iron Plating"

Author's Certificate No 346389, filed 25 Dec 70, published 22 Aug 72 (from Referativnyy Zhurnal -- Khimiya, No 8(II), 1973, Abstract No 8L316P)

Translation: The process is patented for the reduction of oxidized chloride electrolyte of iron plating during its purification by electrolysis. It is improved in that in order to increase the speed of the reduction, the process is carried out with the application of ultrasonic vibrations having frequencies of 18-22 kHz and an intensity of 0.8-1.5 watts/cm<sup>2</sup> for a ratio of the anode to cathode surface of 3:1 and D<sub>a</sub> 10-30 amps/decimeter<sup>2</sup>. The application of the ultrasonic vibrations speeds up the process of the reduction of the oxidized chloride electrolyte during the iron plating 7 to 10 fold.

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USSR

UDC 621.9.01.669.018.25

REZNIKOV, N. I., BURMISTROV, Ye. V., ZHARKOV, I. G., ZYKIN, A. S., KRAVCHENKO, B. A., LENILIN, V. I., MEDVEDEV, L. P., MITRYAYEV, K. F., URYVSKIY, F. P.

"Cutting of Heat-Resistant, High-Strength Titanium Alloys"

Obrabotka Rezaniyem Zharoprochnykh Vysokoprochnykh i Titanovykh Splavov  
[English Version Above], Moscow, Mashinostroyeniye Press, 1972, 198 pages.

Translation of Foreword: The Twenty-Fourth CPSU Congress defined the main trends in further development of the socialist economy and indicated the necessity of comprehensive acceleration of scientific and technical progress.

One primary trend in the development of the economy is increasing the effectiveness of production. This means that under today's conditions, ever greater significance is being given to increasing the output of products, improving their quality and technical and economic indicators.

Over the past years, the tool industry has solved important problems related to the creation of new tool designs, the development of the production and improvement of tools, as well as mass production of tools of ever stronger high-speed steels. Broad utilization of automated machine tools, continuous and automatic production lines in large-series and mass production requires an increase in the output of cutting tools of long life and

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USSR

UDC 621.9.01.669.018.25

REZNIKOV, N. I., BURMISTROV, Ye. V., et. al., Obrabotka Rezaniyem Zharoprochnykh Vysokoprochnykh i Titanovykh Splavov, Moscow, Mashinostroyeniye Press, 1972, 198 pages.

high accuracy, capable of operating under severe cutting conditions for long periods of time without replacement. Tool life can be increased if the tool industry is provided with high quality steels and alloys. Soviet scientists have created alloys with high strength characteristics and high heat resistance. The workability of alloys and steels can be improved by the use of various methods based on ultrasonics, electric contact and induction heating, application of small electric currents to the cutting zone, etc. These methods allow the life of a cutting tool to be increased by 2 to 5 times, increasing the cutting speed and productivity of processing. Part quality can be improved by using tools of natural and synthetic diamonds, as well as elbor.

The present work familiarizes the reader with research conducted into the physics of the cutting process, materials for cutting tools, optimal cutting modes and methods of improving the quality and workability of parts.

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UDC 621.9.01.669.018.25

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USSR

UDC 621.9.01.669.018.25

REZNIKOV, N. I., BURMISTROV, Ye. V., et. al., Obrabotka Rezaniyem Zharoprochnykh Vysokoprochnykh i Titanovykh Splavov, Moscow, Mashinostroyeniye Press, 1972, 198 pages.

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USSR

UDC 621.9.01.660.018.25

REZNIKOV, N. I., BURMISTROV, Ye. V., et al., Obrabotka Rezaniyem Zharoprochnykh Vysokoprochnykh i Titanovykh Splavov, Moscow, Mashinostroyeniya Press, 1972, 198 pages.

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USSR

UDC 621.9.01.660.018.25

REZNIKOV, N. I., BURMISTROV, Ye. V., et al., Obrabotka Rezaniyem Zharoprochnykh Vysokoprochnykh i Titanovykh Splavov, Moscow, Mashinostroyeniya Press, 1972, 198 pages.

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6/6

1/2 018

UNCLASSIFIED

PROCESSING DATE--30DCT70

TITLE--DOMAIN STRUCTURE OF UNIAXIAL ANTIFERROMAGNETS. THE PROBLEM OF NUCLEATION -U-

AUTHOR-(03)-MITSEK, A.I., GAIDANSKIY, P.F., PUSHKAR, V.N.

COUNTRY OF INFO--USSR

M

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 38, NR 1, PP 69-79

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MAGNETIC DOMAIN STRUCTURE, MAGNETIC TRANSFORMATION, MAGNETIC ANISOTROPY, NUCLEATION, ANTIFERROMAGNETIC MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1058

STEP NO--GE/0030/70/038/001/0069/0079

CIRC ACCESSION NO--AP0107567

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0107567

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE ENERGY OF GAMMA SUB180 AND THE HALFWIDTH DELTA SUB180 OF 180DEGREES L DOMAIN WALLS IN ANTIFERROMAGNETS ON THE MAGNETIC FIELD H IS CALCULATED FOR LOW FIELDS. AT H YIELDS H SUB0 (H SUB0 IS THE CRITICAL FIELD OF THE SPIN FLOP TRANSITION) THE WALLS EXPAND AND THEIR ENERGY GAMMA SUB180 DECREASES. IN THE SPIN FLOP REGION 90DEGREES DOMAIN STRUCTURE APPEARS. GAMMA SUB90 AND DELTA SUB90 ARE DETERMINED BY THE VALUE OF FOURTH ORDER ANISOTROPY CONSTANT K SUB2. THE CALCULATION OF THE METASTABLE STATE (K SUB2 SMALLER THAN 0) REGION SHOWS THAT ITS BOUNDARIES MAY BE APPROXIMATED BY THE ASTROID AT THE MAGNITUDE OF K SUB2 IS LESS THAN K SUB1 ONLY. THE WALL DISPLACEMENT IN THE SPIN FLOP REGION (K SUB2 IS SMALLER THAN 0) AND THE DOMAIN STRUCTURE AT K SUB2 IS GREATER THAN 0 ARE DISCUSSED. THE PROBLEM OF THE NEW MAGNETIC PHASE NUCLEATION IS CONSIDERED. FACILITY: URAL STATE UNIVERSITY, SVERDLOVSK.

USSR

UDC 621.385.6

LOPUKHIN, V. M., MITSENKO, B. K., ROSHAL', A. S.

"Theory of a Two-Frequency Coupling with a Fast Cyclotron Electron Wave"

Kiev, Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 1015-1021

Abstract: A foundation is laid for the equivalent diagram of a two-frequency input resonator of a coupling with a fast cyclotron electron wave. One of the types of oscillations is used to decrease the noise of the fast cyclotron wave on the open-circuit frequency to the temperature of a load cooled by liquid nitrogen. The results of the calculations performed by computer using the equivalent diagram obtained show that the investigated input device permits a single-channel noise coefficient to be obtained for the electron beam parametric amplifier  $F = 1.5$ . The relation is presented for the frequency separation of the two types of oscillations as a function of the relation of the beam and resonator parameters. In the calculated case the band width is reduced by four times by comparison with the usual electron beam parametric amplifier having a noise factor  $F < 1.5$ . At the  $F < 1.7$  level the band is cut in half by comparison with the uncooled electron beam parametric amplifier.

1/1

Acc. Nr.: AP0029805

Ref. Code: UR 0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 1, pp 29-34

LIPID METABOLISM AND LIPOPROTEIN LIPASE ACTIVITY  
IN CEREBRAL FORMS OF HYPERTENSIVE DISEASE

P. M. Zubenko and M. D. Mitsenko (Dniepropetrovsk)

Patients with cerebral forms of hypertensive disease showed a distinct increase of blood serum triglycerides, beta-lipoproteins, free cholesterol, a decrease of the blood heparine level and lipase inhibition even in the initial stage of chronic insufficiency of the cerebral blood circulation. Advancing cerebral vascular pathology was characterized by a further increase of the blood serum lipid fractions, lipase inhibition, decrease of the heparin level and also by an increase of total lipids.

It is suggested that one of the causes of lipid metabolism disorders in patients with hypertensive disease (cerebral form) is inhibition of the lipolytic activity and deficit of endogenous heparine.

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REEL/FRAME

19681491

1/2 015 UNCLASSIFIED PROCESSING DATE--0900170  
TITLE--EFFECT OF P TOLUALDEHYDE ON THE LIQUID PHASE OXIDATION OF P XYLENE  
IN THE PRESENCE OF COBALT SALTS --U-  
AUTHOR--(05)-ARIKO, N.G., MITSKEVICH, N.I., LASHITSKIY, V.A., BUSLOVA,  
M.K., KOVALKOV, M.D. *M*  
COUNTRY OF INFO--USSR  
SOURCE--NEFTEKHIMIYA 1970, 10(1), 48-53  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ALDEHYDE, OXIDATION, XYLENE, COBALT COMPOUND, CARBON DIOXIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1992/1886 STEP NO--UR/0204/70/010/001/0048/0053  
CIRC ACCESSION NO--AP0112866  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112866

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDN. OF 4.5-10.5 MOLE PERCENT P  
TOLUALDEHYDE INCREASED THE RATE OF OXIDN. AT 120DEGREES OF P XYLENE  
CONTG. 2 TIMES 10 PRIME NEGATIVE3 MOLE-L. CO STEARATE. AS THE AMT. OF  
ALDEHYDE WAS INCREASED, EVOLVED CO SUB2 INCREASED LINEARLY, ALDEHYDE  
CONTENT REMAINED CONST., AND ACID AND ETHER FORMATION INCREASED UP TO  
0.58 MOLE-L. ALDEHYDE ADDED, AND REMAINED CONST. THEREAFTER. TAGGED  
ALDEHYDE EXPTS. SHOWED THAT CO SUB2 EVOLUTION OCCURRED BY DECOMPN. OF  
PERTOLUIC ACID FORMED BY OXIDN. OF THE ALDEHYDE. USE OF BZH UNDER THE  
SAME CONDITIONS ALSO GAVE AN INCREASE IN RATE OF FORMATION OF P TOLUIC  
ACID AND CO SUB2; THE FORMER BECAME CONST. AT 0.2 MOLE-L. ALDEHYDE, THE  
LATTER AT 0.4. FACILITY: INST. FIZ. ORG. KHIM., MINSK, USSR.

UNCLASSIFIED



USSR

UDC: 616.081.57

M  
MTSKEVICH, A.I., Candidate of Medical Sciences, SETEFAN, E.E. Aspirant, Chair of General Surgery and Chair of Microbiology, Odessa Medical Institute

"Intraosseous Administration of Specific Sera for Prophylaxis and Treatment of Gas Gangrene"

Kiev, Klinicheskaya Khirurgiya, No 3, 1970, pp 53-55

Abstract: Intraosseous introduction of therapeutic solution is simple and safe. A stout injection needle is inserted directly into the bone. A rubber bulb is attached to the free end containing the antiserum solution, which is periodically injected into the bone. The arrangement is held in place by a plaster bandage, allowing free manipulation of the patient, and transfers from place to place. Animals were infected with *Clostridium perfringens* and *Clostridium septicum*. One half of animals were treated by intramuscular injection and the other half by intraosseous administration of specific antiserum in similar doses. The ratio of survival of animals treated by the intraosseous method was twice that of animals treated by intramuscular injection. In eight patients with serious traumas, compound fractures, tissue maceration, or traumatic amputations -- conditions which would favor development of gas gangrene, the intraosseous method was an efficient prophylactic in all cases. This method seems to be advantageous for other medications as well.

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1/2 018 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--MIXTURE FOR PREPARING ARC, ARRESTER CHAMBERS FOR ELECTRICAL  
APPARATUS -U-  
AUTHOR-(04)-NAMITOKOV, K.K., BULGAKOV, V.A., MITSKEVICH, G.F., BREZINSKIY,  
V.G.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R.267,436  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRATSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--01APR70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR,  
TOPIC TAGS--ARC DISCHARGE, DISCHARGE CHAMBER, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FKAME--3005/0885

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132975

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0132975

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CHARGE FOR PREPG. ARC, ARRESTER  
CHAMBERS FOR ELEC. APP. CONSISTED OF ASBESTOS 20-30, CEMENT 60-75, AND  
ALK., EARTH METAL HALIDES 2-10 WT. PERCENT.

UNCLASSIFIED

Acc. Nr. **AP0049304**

Abstracting Service:  
CHEMICAL ABST. 5-70

Ref. Code  
**UR 0226**

*M*

103090v Cermet contacts of silver-cupric oxide composition.  
~~Mitskevich, G. F.; Kornienko, V. P.; Namirokov, K. K.;  
Smaga, N. N.; Yudin, B. A. (Vses Nauch.-Issled. Proekt.-  
Konstr. Inst. Elektroapp., USSR). Porosh. Met. 1970, 10(1),  
60-5 (Russ). The production of Ag-CuO contacts with fine-  
dispersed structural components is described. Comparative data  
are presented on the properties of contacts produced from a fine-  
dispersed charge, the charge being obtained by chem. methods,  
and contacts from the mixt. of comparatively large-size powders  
obtained by mech. mixing. Comparative results are also given  
for the wear resistance of the contacts during current flow.~~

S. A. Mersol •

*ccc*

*18*

REEL/FRAME  
**19801121**

UDC: 681.3:656.072

USSR

ZHOZHAKASHVILI, V. A., MITSKEVICH, L. A., NOVOKHATNIY, A. A., SILAYEV, V. N.

"The 'Sirena' Time-Sharing Queueing System"

Moscow, Prihory i Sistemy Upravleniya, No 9, Sep 70, pp 1-4

Abstract: A generalized analysis is presented of the requirements placed on remote automatic queueing systems, systems with large numbers of widely separated information sources (and consumers), a widely branched network of information transmission, and centers for storage and processing of information. Study of currently available series-produced equipment for use in such systems has indicated that the available equipment does not satisfy the requirements of such a system, particularly as concerns input-output and information transmission devices with sufficient reliability, devices for concentration of information flow, and devices for interconnection of channels and machines. Therefore, a new series of devices has been developed, including a cathode ray tube information terminal and display unit with a universal information keyboard; an information editor, a memory device for storage of information from the keyboard or information arriving from the information processing center; and a device for parallel printing of documents on standard blanks. This equipment plus equipment already available

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USSR

ZHOZHNIKASHVILI, V. A., et al, *Pribory i Sistemy Upravleniya*, No 9, Sep 70, pp  
1-4

has been combined into the "Sirena-I" computerized airline reservation system used for reservation of seats on Aeroflot Aircraft. The first portion of this system is presently being installed in Moscow. The computer used with the system is the M-3000 hybrid computer. A brief analysis of the operation of the system is presented.

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- 7 -

UNCLASSIFIED PROCESSING DATE--2300170  
 1/2 010  
 TITLE--LIQUID PHASE CATALYTIC OXIDATION OF P XYLENE IN MIXTURES WITH  
 CUMENE -U-  
 AUTHOR--(03)-ARIKO, N.G., MITSKEVICH, N.I., USKOV, I.I.  
 COUNTRY OF INFO--USSR  
 SOURCE--DOKL. AKAD. NAUK BELORUSS. SSR 1970, 14(2), 141-3  
 DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY  
 TOPIC TAGS--CATALYTIC OXIDATION, XYLENE, CUMENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--1997/1122

STEP NO--UR/0250/70/014/002/0141/0143

CIRC ACCESSION NO--AT0119976  
 UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

2/2 010

CIRC ACCESSION NO--AT0119976

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

ABSTRACT. SIX SUBJECT MIXTS. CONTG. 0-100PERCENT P XYLENE AND 2.1 MILLIMOLE PER L. CO STEARATE WERE TREATED AT 120DEGREES PER 1 ATM WITH O 2.5 HR. MAX. O ABSORPTION OCCURRED AT 80 WT. PERCENT XYLENE, AND MAX. CO SUB2 FORMATION AT 50PERCENT. INDUCTION TIMES FOR PURE XYLENE AND CUMENE WERE 37 AND 1.5 MIN, RESP.; THE MIXTS. WERE INTERMEDIATE. WT. PERCENT THEORETICAL YIELD OF P TOLUIC ACID RANGED FROM 86PERCENT FOR 90-100PERCENT XYLENE TO 44PERCENT FOR 10PERCENT XYLENE. THEREFORE, THE CUMENE CONTENT SHOULD NOT EXCEED 10PERCENT FOR HIGH SELECTIVITY IN OXIDN. TO THE ACID. FACILITY: INST. FIZ.-ORG. KHIM., MINSK, USSR.

UNCLASSIFIED



1/2 034 UNCLASSIFIED PROCESSING DATE--13NOV70  
 TITLE--MEAN FREQUENCY OF EXTREMES AND MEAN ELECTROCORTICOGRAM AMPLITUDE IN  
 THE DYNAMICS OF THIOPENTAL INDUCED ANESTHESIA, DATA DERIVED FROM CHRONIC  
 AUTHOR-(03)-MITSKIYENE, V., MILIAUSKAS, R., MITSKIS, A.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOV) 1970, 33(1), 3-7

M

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BRAIN, BIOPOTENTIAL, ELECTRODE, ELECTROPHYSIOLOGY, EYE,  
REFLEX, ELECTROMYOGRAPHY, ANESTHESIA, PENTOBARBITAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1997/0089

STEP NO--UR/0390/70/033/001/0003/0007

CIRC ACCESSION NO--AP0119085

UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0119085

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHANGES IN THE AV. FREQUENCY OF THE EXTREMES AND THE AV. AMPLITUDE OF THE ELECTROCARDIOGRAM WERE STUDIED IN RABBITS WITH IMPLANTED ELECTRODES DURING NA THIOPENTAL NARCOSIS (20-30 MG-KG I.V.). THE DIAM. OF THE PUPILS, EYELIDS, AND CORNEAL REFLEXES, ELECTROMYOGRAM OF THE OCCIPITAL MUSCLES, RESPIRATION FREQUENCY, AND MOVEMENT OF THE RABBITS WERE SIMULTANEOUSLY MEASURED AND COMPARED WITH THOSE FROM ACUTE EXPTS. ON CURARIZED RABBITS. THE AV. EXTREME FREQUENCY WAS SIMILAR DURING BOTH CHRONIC AND ACUTE EXPTS. AND VARIED INVERSELY WITH THE DEPTH OF ANESTHESIA. THE ELECTROCARDIOGRAM PARAMETERS COULD BE USED TO MEASURE THE DEPTH OF ANESTHESIA. THE AV. AMPLITUDE OF THE ELECTROCARDIOGRAM WAS HIGHER IN ACUTE THAN IN CHRONIC EXPTS., BUT THE CHARACTER OF CHANGES UNDER THIOPENTAL ACTION WAS SIMILAR. FACILITY: LAB. ELEKTROENTSEFALOGR., KAUNAS. MED. INST., KAUNAS, USSR.

UNCLASSIFIED

USSR

UDC 621.385.032.21(038.8)

MITSKIS, A.-YU. YU

"Cold Emission of Electrons From Semiconductor Crystals"

Moscow, Radiotekhnika, Vol 27, No 12, 1972, pp 83-84

Abstract: The vigorous search in the past decade for effective methods of fabricating field-emission semiconductor cathodes applicable to qualitatively new electric vacuum instruments has led to the development of various cold cathodes which operate in a strong variable electric field and generate up to 1 mA electron currents per pulse, which restricts their application to low power instruments. This article notes certain attempts to increase this current through "hot" electron emission, where a germanium or silicon single-crystal surface is coated with cesium or barium oxide films. But the results could not be reproduced, and an analysis revealed the curious fact that under a strong microwave field, electrons are emitted more readily from a crystal surface not treated with the above films. Two important conditions are required: 1) a thin (several dozen Å) oxide layer of the same semiconductor should be on the emitter surface and 2) a definite microwave field pattern.

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MITSKIS, A.-YU. YU, Radiotekhnika, Vol 27, No 12, 1972, pp 83-84

should be maintained in the cathode volume and on its emitter surface. The field emission is explained by the effect of a superpowerful a.c. field in the oxide region and higher electron concentration in the surface levels, where stable capture levels appear and the surface barrier is diminished simultaneously with the electric field across the emitting surface. The author terms this "cold" (as opposed to field) emission and notes that such conditions were first obtained in a cathode assembly he patented, which has set a new trend in semiconductor electronics. Semiconductor crystals have been applied where only thermionic cathodes were previously used. The cold emission electron currents produced (several A) and several A/cm<sup>2</sup> density allow powerful new microwave devices with a cold inertialess cathode to be fabricated.

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1/2 034

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PROCESSING DATE--13NOV70

TITLE--MEAN FREQUENCY OF EXTREMES AND MEAN ELECTROCOROTICOGRAM AMPLITUDE IN THE DYNAMICS OF THIOPENTAL INDUCED ANESTHESIA, DATA DERIVED FROM CHRONIC AUTHOR-(03)-MITSKIYENE, V., MILIAUSKAS, R., MITSKIS, A.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(1), 3-7

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BRAIN, BIOPOTENTIAL, ELECTRODE, ELECTROPHYSIOLOGY, EYE, REFLEX, ELECTROMYOGRAPHY, ANESTHESIA, PENTOBARBITAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/0089

STEP NO--UR/0390/70/033/001/0003/0007

CIRC ACCESSION NO--AP0119085

UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0119085

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHANGES IN THE AV. FREQUENCY OF THE EXTREMES AND THE AV. AMPLITUDE OF THE ELECTROCOR TICOG RAM WERE STUDIED IN RABBITS WITH IMPLANTED ELECTRODES DURING NA THIOPENTAL NARCOSIS (20-30 MG-KG I.V.). THE DIAM. OF THE PUPILS, EYELIDS, AND CORNEAL REFLEXES, ELECTROMYOGRAM OF THE OCCIPITAL MUSCLES, RESPIRATION FREQUENCY, AND MOVEMENT OF THE RABBITS WERE SIMULTANEDUSLY MEASURED AND COMPARED WITH THOSE FROM ACUTE EXPTS. ON CURARIZED RABBITS. THE AV. EXTREME FREQUENCY WAS SIMILAR DURING BOTH CHRONIC AND ACUTE EXPTS. AND VARIED INVERSELY WITH THE DEPTH OF ANESTHESIA. THE ELECTROCOR TICOG RAM PARAMETERS COULD BE USED TO MEASURE THE DEPTH OF ANESTHESIA. THE AV. AMPLITUDE OF THE ELECTROCOR TICOG RAM WAS HIGHER IN ACUTE THAN IN CHRONIC EXPTS., BUT THE CHARACTER OF CHANGES UNDER THIOPENTAL ACTION WAS SIMILAR. FACILITY: LAB. ELEKTRODENTSEFALOGR., KAUNAS. MED. INST., KAUNAS, USSR.

UNCLASSIFIED

USSR

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"Annual General Meeting of the Chemical Sciences Branch of the BSSR Academy of Sciences"

Minsk, Vestsi Akademii Navuk Belaruskay SSR, No 3, 1970, pp 118-119

Abstract: At a meeting of the Chemical Sciences Branch of the BSSR Academy of Sciences held 18 March 1970, Academician M. I. MITSKYEVICH reported on the advances of chemistry and the effectiveness of research in the Republic. Among many significant advances mentioned were: development of aluminum catalysts in physico-organic chemistry; new antiviral combinations; thermostable sorbents of gases; stabilization of donor's blood in transfusions; refining of oil with increased octane content, and a method for recovering valuable amines by flotation of potassium salts.

The Institute of Peat uses biochemical and hydrolytic processes in obtaining useful proteins from peat, developing edible yeast on peat, developing thermal uses of peat, and using peat humus as manure.

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Vestsi Akademii Navuk Belaruskay SSR, No 3, 1970, pp 118-119

MITSKYEVICH said that in 1969 the Belorussian chemical institutes published two collected works, four monographs, and over 270 scientific articles, and that their department had a number of new discoveries.

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USSR

UDC 577.4

KARAGODOVA, YE. A., ~~NITSMACHER, YU. D.~~, BOSIS, A. I., SHIBRIK, I. V.

"An Algorithm for Optimal Distribution of Resources"

Vychisl. i prikl. mat. Mezhd. nauch. sb. (Computation and Applied Mathematics. Interdepartmental Scientific Collection), 1972, vyp. 16, pp 99-103 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V516)

Translation: A version of the R. Bellman method is discussed for optimizing the distribution of limited resources of a specialized construction organization. The computation flow chart of the algorithm and an example are presented.

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1/2 008 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SYNTHESIS OF D, ERYTHRO, DIHYDROSPHINGOSINE -U-  
AUTHOR--(04)-ELLER, K.I., ZVONKOVA, YE.N., MITSNER, B.I., PREOBRAZHENSKIY,  
N.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(4), 665-8  
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--EPOXY COMPOUND, ORGANIC SYNTHESIS, AMINO ALCOHOL, GLUTAMIC  
ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/2043

STEP NO--UR/0366/70/006/004/0665/0668

CIRC ACCESSION NO--APO125631

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 006

CIRC ACCESSION NO--AP0125631

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EPOXIDN. (SHOWN ON MICROFICHE).  
RACEMIC II WAS RESOLVED INTO ITS OPTICAL ANTIPODES WITH L AND D, GLUTAMIC  
ACIDS (H. E. CARTER, ET AL., 1953). FACILITY: MOSK. INST.  
TONKOI KHIM. TEKHNL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 547.915.5

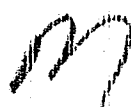
*M*  
~~MILONER~~, B.I., SYRISOVA, ZH.S., KOPYLOV, V.M., ZVONKOVA, YE.N., and ANDRIANOV, K.A.  
Moscow Institute of Fine Chemical Technology imeni M.V. Lomonosov, Moscow,  
Ministry of Higher and Secondary Specialized Education RSFSR

"Studies in the Field of Complex Lipids. New Synthesis of Erythro-2-N-stearoyl-sphinganyl-1-O-aminoethyl Phosphate"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 942-943

Abstract: A new general method is suggested for the synthesis of erythro-2-N-stearoyl-sphinganyl-1-O-aminoethyl phosphate, based on the use of potassium organosilylamide. The method may also be used for sphingenine derivatives.

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172 009 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--DISTRIBUTION AND PROPERTIES OF AZOTOBACTER VINELANDU HYDROGENASE  
-U-  
AUTHOR--(02)-YAKOVLEV, V.A., MITSOVA, I.Z.   
COUNTRY OF INFO--USSR  
SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 2,  
PP 283-290  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ENZYME ACTIVITY, HYDROGEN, REDUCTION, NITROGEN  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1990/1384 STEP NO--UR/0216/70/000/002/0283/0290  
CIRC ACCESSION NO--AP0109454  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109454

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AZOTOBACTER VINELANDU HYDROGENASE WAS STUDIED. ENZYMATIC HYDROGEN REDUCTION OF TETRAZOL DERIVATES DIFFERING IN THEIR CHEMICAL COMPOSITION AND DISPLAYING DIFFERENT OXIDATION, REDUCTION POTENTIALS WAS EXAMINED. DISTRIBUTION OF THE ENZYME AMONG FRACTIONS OF SUBCELLULAR PARTICLES, SOME OF ITS KINETIC PROPERTIES AS WELL AS THE INFLUENCE OF MOLECULAR NITROGEN ON THE REACTION OF ENZYMATIC REDUCTION OF ARTIFICIAL ACCEPTORS BY MOLECULAR HYDROGEN WERE ELUCIDATED. IT WAS FOUND THAT MAXIMAL HYDROGENASE ACTIVITY IS CONNECTED WITH THE FRACTION OF CELL FREE. AZOTOBACTER VINELANDU PREPARATION OBTAINED AFTER CENTRIFUGATION AT 144000 G FOR ONE HOUR. THE RATE OF ENZYMATIC REDUCTION WITH MOLECULAR HYDROGEN OF TETRAZOL SALTS POSSESSING A HIGHER OXIDATION, REDUCTION POTENTIAL AND BECOMING INCORPORATED INTO THE RESPIRATORY CHAIN AT ITS BEGINNING IS BY ONE ORDER HIGHER THAN THE RATE OF REDUCTION OF TETRAZOL SALTS HAVING A MORE NEGATIVE POTENTIAL AND BECOMING INCORPORATED AT THE END OF THE RESPIRATORY CHAIN. THE VALUES OF MICHAELIS CONSTANTS OF THE PARTICLES FRACTION HYDROGENASE AND THE INTACT CELLS HYDROGENASE WERE CALCULATED WITH REFERENCE TO HYDROGEN AND TETRAZOL. IT WAS SHOWN THAT THE TETRAZOL SALTS REDUCTION RATE WITH MOLECULAR HYDROGEN IN THE PRESENCE OF BOTH THE INTACT CELLS AND THE CELL FREE FRACTIONS LACKING ENDOGENOUS TETRAZOL REDUCTIVE ACTIVITY IS HINDERED BY MOLECULAR NITROGEN.  
FACILITY: INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF SCIENCES USSR.

UNCLASSIFIED

USSR

UDC: 621.317.726(088.8)

OSTROUSHKO, A. I., MITSUK, V. I., ZUBTSOVSKIY, A. N., KUZNETSOV, V. D.

"An Amplitude-Time Converter"

USSR Author's Certificate No 256391, filed 6 Jul 68, published 23 Apr 70  
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A312 P)

Translation: This Author's Certificate introduces an amplitude-time converter which may be used for measuring the amplitudes of isolated pulses of various durations. The unit contains a storage capacitor, matching stages, switching diodes, a current-stabilizing discharge circuit, and a nonlinear divider controlled through an amplifier and multivibrator by the discharge voltage of the storage capacitor in the converter. As a distinguishing feature of the patent, the error of undercharging the storage capacitor is reduced by incorporating a delay line in the converter with its input connected to the output of the nonlinear divider, while the output and taps of the delay line are connected to the storage capacitor through the series-connected matching stages and the switching diodes.

E. I.

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M

USSR

UDC 621.317.726(088.8)

KUZNETSOV, V. D., OSTROUSHKO, A. I., LIPATOV, V. N., MITSUK, Y. I.

"Meter for Measuring the Peak Values of Single Pulses"

USSR Author's Certificate No 250304, Filed 23 Mar 66, Published 13 Jan 70 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8A534 P)

Translation: Meters which measure the peak values of pulses containing a divider, a measuring converter with negative feedback consisting of a series included amplifier and a diode-capacitive storage element with an output circuit and a terminal recorder are known. In place of these meters with low reliability and insufficient accuracy, another meter is proposed which has the following distinguishing attributes: it is equipped with a "forbidden" circuit in the feedback circuit executed from a thyatron which is connected by the anode circuit to the input and by the control grid, through a switch, with the output of the measuring converter. The output circuit of the latter is assembled from a phantastron with a Schmidt trigger connected to the screen grid.

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USSR

UDC:534.1.014.5: 539.43

KIL'DIBEKOV, I. G., and MITSYUK, A. A.

"Investigation of Load Carrying Capacity of Reinforced Panels  
in Acoustic Field"

Kiev, Prikladnaya Mekhanika, Vol 7, No 12, 1971, pp 82-86

Abstract: Cylindrical panels reinforced by stiffeners and subject to axial load in an acoustic field were investigated. The spacing between axial stiffeners was ten times the geometric mean between the radius of curvature and the wall thickness. The sound pressure level was 164-168 decibel, the frequency was about 300 hertz, which was close to resonance. The following results were obtained:

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USSR

KIL'DIBEKOV, I. G. et al, Prikladnaya Mekhanika, Vol 7, No 12, 1971 pp 82-85

1. The acoustic field resulted in the reduction of load carrying capacity by 5 to 7%.
2. The maximum vibrations of the panel in the acoustic field occur under axial load causing local buckling.
3. Fatigue cracks appear at the stress concentration areas such as the riveted joints.

Photographs of static and fatigue failures are given.

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D. Programming and Theory of Mathematical Machines

USSR

GOROSHCHENKO, A. G. and MITULINSKAYA, M. A.

"Minimization of the Number of Simple and Complex Connections by the Method of Sectioning of a System"

Konstruirovaniye i Vnedreniye Novykh Sredstv Vychisl. Tekhn. T. 1 [Design and Introduction of New Computer Equipment. Part 1 -- Collection of Works], Kiev, 1971, pp 142-154 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V608).

Translation: The minimization of the number of simple and complex connections by sectioning of a model and an electrical schematic diagram is studied. The difference between systems with simple connections and systems with complex connections is that there is one matrix of connections for systems with simple connections, while systems with complex connections require more than one, since there are many versions of the complex connections to be replaced by an equivalent sequence of simple connections and each version has its own matrix. The method of composition of matrices of connections is formalized and can be extended to combined systems where in addition to electrical connections there are, for example, pneumatic, hydraulic, optical or

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USSR

Goroshchenko, A. G. and Mitulinskaya, M. A., *Konstruirovaniye i Vnedreniye Novykh Sredstv Vychisl. Tekhn. T. 1*, Kiev, 1971, pp 142-154.

other connections. It is noted that repeated application of the method for minimization of connections can achieve results closer to optimal, and sometimes even optimal results.

O. Belkin

2/2

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USSR

UDC 621.385.6

DANOVICH, I. A., MITUS, A. F.

"Calculation and Simulation of Periodic Magnetic Systems of Microwave Devices. Part II. Calculation of Shielded Magnetic Periodic Focusing Systems"

Kiev, Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 969-976

Abstract: Results are presented from an experimental investigation of the accuracy of the analytical calculations of shielded periodic magnetic systems comprising axially magnetized ring magnets. The primary sources of error are defined from analysis of the assumptions made when calculating the MPFS [magnetic periodic focusing systems], and the possibility of eliminating these sources of error is investigated. Graphs are presented which permit simplification of the calculation of magnetic systems and improvement of the calculation accuracy. The relations were obtained for calculating a magnetic periodic focusing system with shunting rings to create a nonsinusoidal axial induction distribution. These systems and the MPFS with a sinusoidal field are compared with respect to the maximum attainable induction levels on their axis. The discussion includes calculation of MPFS with sinusoidal and nonsinusoidal fields.

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Vacuum tubes

USSR

UDC 621.385.6

DANOVICH, I. A., MITUS, A. F.

"Calculation and Simulation of Periodic Magnetic Systems of Microwave Devices. Part I. Simulation of Magnetic Systems"

Kiev, Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 959-968

Abstract: A study was made of a simulation procedure for magnetic systems based on stabilized axially magnetized magnets with  $\mu_r \approx 1$  in an electrolytic bath.

An experimental check is made of the results of simulating shielded periodic and reversible magnetic systems. Examples are presented for using simulation to solve some standard problems arising when designing magnetic periodic focusing systems. The discussion includes a description of the electrolytic bath and measuring circuit, the method of determining the similarity coefficients and the simulation procedure, simulation of the field of the MPFS [magnetic periodic focusing system] cell, simulation of the field distribution along the MPFS and simulation of magnetic systems with a reversible field. Comparison of the results of simulating magnetic systems with experimental and calculation data leads to the following conclusions: 1) the investigated simulation procedure provides sufficient accuracy for practical solution of the problems arising when designing periodic and reversible systems; 2) it is most expedient to use simulation to take into account the boundary effects, to select

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USSR

DANOVICH, I. A., et al., Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 959-968

the magnet dimensions and parameters insuring a given induction distribution along the system, to determine the effect of the gun shields or other ferromagnetic elements on the field distribution in the MPFS and also for planning and designing reversible systems.

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USSR

UDC 621.791.55:/661.857+669.14/

BEREZHNIISKIY, S. N., BATAKSHEV, A. F., MITUS, A. K., ARTEMOV, N. S., and OFITSEROV, A. M., Engrs.

"Welding of Silver to Steel"

Moscow, Khimicheskoye i Neftyanoye Mashinostroyeniye, No 11, Nov 71, p 21

Abstract: Ag cannot be welded to steel directly, because it forms no compounds or solid solutions with Fe. Use of an intermediate layer of pure Cu is unsatisfactory, because deoxidizers and modifiers are absent in Cu, so that pores and cracks develop in the welded joints. Use of standard welding wires of Cu alloyed with Si, Ni, Mn, Ti, and Fe was tried in the lap and butt welding of Ag to steel in experiments in which pure Ag 2 mm thick was welded with steel St. 3 2-11 mm thick. Welding wires with a diameter of 2-3 mm that consisted of bronze Br. KMts 3-1 or bronze Br. MNZh KT5 - 1-0.2-0.2 were used. Welding was carried out manually in Ar with a direct current arc (150-200 A, 15-18 V) at a rate of 15-20 m/hr. The joints that formed had a sufficient mechanical strength and retained their tightness in vacuo at temperatures up to 779°, the melting point of the Ag-Cu eutectic. Microstructural analysis on etching with 4% HNO<sub>3</sub> showed that defects (cracks, 1/2



USSR

BEREZHNITSKIY, S. N., et al., *Khimicheskoye i Neftyanoye Mashinostroyeniye*,  
No 11, Nov 71, p 21

pores, and lack of joining) were absent in the transitional zone between Ag and steel. The procedure that has been developed is being applied in the experimental production of equipment made of Ag and Ag-clad steel and welded with Br. MNZh KT5-1-0.2-0.2.

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USSR

UDC 669.71.018.9.4

GOGIN, V. B., MAKAROV, G. S., MITVOL', L. S., MITIN, V. P.

"Some Problems of Processing a Melt of Aluminum Alloys in a Vacuum"

Metallved. splavov legkikh met. -- V sb. (Physical Metallurgy of Alloys of Light Metals -- collection of works), Moscow, Nauka Press, 1970, pp 87-91 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G204)

Translation: Results are presented from degassing alloys based on aluminum in a six-ton vacuum mixer. Mixing the liquid bath during the evacuation process reduces the H content in the melt. It is necessary to select the vacuum treatment parameters beginning with the presence of volatile components in the alloys. There are 5 illustrations, 2 tables, and a 6-entry bibliography.

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USSR

UDC 669.71'781.018.9

NAPALKOV, V. I., KHODAKOV, P. Ye., and MITVOL', A. I., S.

"Preparation of Aluminum-Boron and Aluminum-Titanium-Boron Alloys"

Tekhnol. legkikh splavov. Nauchno-tekhn. byul. VILSa (Technology of Light Alloys. Scientific and Technical Bulletin of All-Union Institute of Light Alloys), 1970, No 3, pp 95-97 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No G240 by S. KRIVONOSOVA)

Translation: The article considers the increasing of boron assimilability during the preparation of alloys. The assimilability of boron into aluminum from  $B_2O_3$  under a layer of cryolite at  $1200^\circ$  in a 30-minute period if 50% (with a 1:1 ratio of these substances), and from  $KBF_4$  under a layer of KCl at  $950-970^\circ$  in a 60-minute period, 75-92%. An alloy of aluminum with titanium and boron is made by introducing titanium and  $KBF_4$  shavings under a layer of KCl. Two tables.

1/1

USSR

UDC 669.716:621.745.55:66.067

GOGIN, V. B., MAKAROV, G. S., MITVOL', L. S., and MITIN, V. P.

"Some Problems in the Vacuum Processing of the Melt of Aluminum Alloys"

Metallovedeniye Splavov Legkikh Metallov-Sbornik, Moscow, "Nauka", 1970,  
pp 87-91, resume

Translation: Results of degassing aluminum alloys in a vacuum holding furnace of 6 tons capacity are presented. It was found that mixing the liquid bath in the vacuum evaporation process decreases the hydrogen content in the melt. It is demonstrated that the selection of the parameters of vacuum processing must be made proceeding from the presence of highly volatile components in the alloys. Five figures, two tables, six bibliographic references.

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USSR

UDC 632.95

ARNOL'DOV, Ye. M., MITYAKINSKIY, V. I., GLADILIN, I. N., YAKUBA, A. R.,  
KOSTITSIN, B. A., KIYASHKO, V. K., KAZ'MIN, M. F., SHUL'MAN, V. N.

"A Method of Making the Discharge Form of Copper 2,4,5-Trichlorophenoxide"

USSR Author's Certificate No 345121, filed 14 Feb 69, published 9 Aug 72  
(from RZh-Khimiya, No 9, May 73, abstract No 9N509P by T. G. Chekareva)

Translation: A method is proposed for making a commercial form of copper, 2,4,5-trichlorophenoxide (I) used in making poisons. A wet paste of compound I is filtered, pressed to a moisture content of 50-55%, loaded into a crank mixer, and mixed with talc and kaolin in a ratio of 1:1:2 respectively. The mixture is agitated for 1-2 hours. It is then loaded as a powder containing 16-20% moisture into a drier with a fluidized bed of inert material. The degree of moisturizing of the dry product in the cyclone is of the order of 96-97%.

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USSR

UDC 621.371.029.55 /C

BENEDIKTOV, Ye. A., GETMANTSEV, G. G., YEZHOV, A. I., KOROBKOV, ~~Yu. S.~~, MALYSHEV, S. K., MATYUGIN, S. N., MITYAKOV, N. A., SAZONOV, Yu. A., CHERNOV, V. A., BEN'KOVA, N. P., BEREZIN, Yu. M., BUKIN, G. V., KOLOKOLOV, L. Ye., and PEREKHVATOV, Yu. K.

"Results of an Experiment in Shortwave Radio Propagation"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 3. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 3--collection of works) "Nauka," 1972 pp 73-76 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A367)

Translation: Results of experiments on investigating the characteristics of wave propagation in the decameter range (5.7-15.0 MHz) are analyzed; the communications took place between the following magnetically adjacent points: an ionospheric station in Gor'kiy and two science research ships in the Indian Ocean. In particular, the possibility of communication over the Peterson beam was estimated. Two illustrations, bibliography of one. N. S.

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USSR

UDC 621.357:621.79.027

CHEREPANOV, YU. P., MITYASHKIN, D. Z.

"Study of the Effect of the Process Parameters on the Precision of the Electrochemical Method of Machining Holes"

V sb. Novoye v elektrofiz. i elektrokhim.obrabotke materialov (What's New in Electrophysical and Electrochemical Treatment of Materials -- collection of works), Leningrad, Mashinostroyeniye Press, 1972, pp 38-43 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L305)

Translation: In order to determine the possibility of electrochemical machining of deep holes with precision classes 2-3 in the materials Br. KhO, S, 1Kh18N9T, SN2A, and 38KhMYuA in the self-regulation mode, the effect of a number of parameters on the hole-making precision was defined. These parameters included the height of the operating bead of the cathode tool, the uniformity of the cathode feed, the variation in voltage at the electrode, the variation in the electrolyte temperature, the nature of the flow of the electrolyte in the operating zone, the pressure and the flow velocity of the electrolyte in the cathode spacing, the variations in chemical composition of the machined material and the electrolyte used. It is demonstrated that the basic effect on the precision of making holes by the electrochemical method comes from nonuniformity of the chemical composition of the machined material, variations in voltage on the electrode and the electrolyte temperature.

1/1

Electrochemistry

USSR

UDC 621.357.035.4:621.79.027(088.8)

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DAVYDOV, A. D., KAMKIN, A. N., KASHCHEYEV, V.D., MITYASHKIN, D. Z., KLOPOVA, S. V.

"Electrolyte for Electrochemical Machining of Niobium and Its Alloys"

USSR Author's Certificate No 315558, filed 13 Apr 70, published 30 Nov 71 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L311P)

Translation: An electrolyte has been patented for electrochemical machining of Nb and its alloys. It is distinguished by the fact that in order to increase the process stability and the quality of the surface subjected to anodic solution, a bromide salt, for example, NaBr, a nitrate salt, for example,  $\text{NaNO}_3$ , a base, for example, NaOH,  $\text{H}_3\text{BO}_3$  and water are introduced into its composition. The components are taken in the following proportions (in % by weight): bromide salt 30-50, nitrate salt 0.5-2, alkali 0.5-2,  $\text{H}_3\text{BO}_3$  3, the rest water.

The proposed electrolyte has been tested on an experimental setup. Flat specimens produced by turning with an area of  $8 \text{ cm}^2$  and a class 4-5 surface finish were machined. The machining was carried out in a solution of the following composition (% by weight), KBr 45,  $\text{NaNO}_3$  1, KOH 1. The electrode gap is maintained within the limits of 0.3 mm, and the electrolyte pressure at the intake to the operating gap is  $8 \text{ kg/cm}^2$ . When applying a voltage of 6 volts to the

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USSR

DAVYDOV, A. D., et al., USSR Author's Certificate No 315553, filed 13 Apr 70, published 30 Nov 71

system, destruction of the film of Nb pentoxide takes place, and the current strength increases sharply. The rate of anodic solution increases linearly with an increase in  $D_a$ . The  $BT_a$  is ~70%. The electrolyte temperature is kept within the limits  $20 \pm 3^\circ$  by means of a special refrigerating unit. After machining, a smooth light surface with 6-7 class finish was obtained. After passage of 10 a/hour, the pH of the electrolyte decreases from 13 to 9, and the machining quality becomes worse. This can be eliminated by adjusting the electrolyte with alkali, but it is expedient to introduce 3% boric acid into the composition which has a buffering effect and to increase the alkali content to 2% in order not to lower the initial pH value.

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USSR

UDC: 621.179.16

VLADIMIROVA, D. V., MITYAYEV, V. S.

"A Device for Checking the Formation of a Fused Core in Resistance Welding"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 10, Apr 73, Author's Certificate No 369483, Division G, filed 24 Dec 69, published 8 Feb 73, p 127

Translation: This Author's Certificate introduces: 1. A device for checking the formation of a fused core in resistance welding. The device contains an electrode holder with ultrasonic heads located in water-filled cavities of the welding electrodes and connected to a flaw detector, which is connected in turn to control, signalling and registration units. As a distinguishing feature of the patent, inspection effectiveness is improved by making the bottom of the electrode cavity in the form of a cone with a vertex angle which provides effective transformation of the ultrasonic wave on the conical surface from longitudinal to transverse during emission and the reverse during reception. The distance between the bottom and the working surface of the electrode is chosen to depend on the angle  $\psi$ , equal to the difference between the angles of refraction and incidence of the diam-

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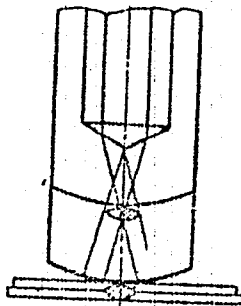
USSR

VLADIMIROVA, D. V., MITYAYEV, V. S., USSR Author's Certificate No 369483

eters of the head  $d$  and  $D$  of the core from the condition:

$$D < 2H \tan \psi < D + d.$$

2. A modification of this device distinguished by the fact that it is equipped with a time calibrator and a unit for measuring the amount of energy of the transverse ultrasonic vibrations passing through the inspection zone during welding. These additional units are connected to the flaw detector.



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C. Application of Theoretical Probability and  
Statistical Methods

USSR

UDC: 519.2

MITYUGOV, V. V., MOROZOV, V. P.

"Concerning the Quantum Mechanics Approach to Problems of Reconstructing  
Optical Images"

Probl. peredachi inform., 1973, 9, No 1, pp 108-111 (from RZh-Kibernetika,  
No 7, Jul 73, abstract No 7V207 by the authors)

Translation: Among problems of the physical theory of signal transmis-  
sion in recent years more and more attention is being given to questions  
involving the acquisition of data on the spatial distribution of light  
sources according to given statistical properties of the radiation re-  
ceived from them. In this regard we should note first of all the ad-  
vances in holography which is generating ever increasing interest, the  
experiments of Hanbury, Brown and Twiss on measuring the angular dimen-  
sions of stars, as well as certain other questions, specifically problems  
of reconstructing poorly focused optical images. This paper attempts to  
construct a united quantum approach to problems of the given type in the  
formalism of linear canonical transformations of field variables. For  
the sake of simplicity, the treatment is limited to monochromatic

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USSR

MITYUGOV, V. V., MOROZOV, V. P., Probl. peredachi inform., 1973, 2, No 1,  
pp 108-111

sources of a single frequency  $\omega$ . However, the formalism used permits  
extension to the more general case.

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MITYUGOV, V.V.

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TECHNICAL TRANSLATION

AKM / ESTC-JIT-23-2035-72

29 Jul 72

ENGLISH TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION  
PROCEEDINGS OF THE FIRST ALL-UNION CONFERENCE, KIEV,  
SEPTEMBER 1968

FOREIGN TITLE: ПРОБЛЕМЫ ПЕРЕДАЧИ ИНФОРМАЦИИ ЛАЗЕРНЫМ ИЗЛУЧЕНИЕМ

AUTHOR: I. A. DERUGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY  
HEMIL T.G. SCHERCHENKO

Translated for ESTC by AGSI

NOTICE

The contents of this publication have been translated as presented in the original text. No attempt has been made to verify the accuracy of any statement contained herein. This translation is published with a minimum of copy editing and graphics preparation in order to expedite the dissemination of information.

Approved for public release. Distribution unlimited.

- First Page -

(15)

1/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--INTERACTION OF GALLIUM ARSENIDE WITH COMPOUNDS OF THE AIBVI TYPE  
-U-  
AUTHOR--(03)-VOYSEKHOVSKIY, A.V., PASHUN, A.D., MITYUREV, V.K. *M*  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, NEORGANICHESKIE MATERIALY, VOL. 6,  
FEB. 1970, P.379, 380.  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS  
  
TOPIC TAGS--GALLIUM ARSENIDE, CADMIUM SULFIDE, SELENIDE, TELLURIDE, ZINC  
COMPOUND, SOLID SOLUTION, INTERMETALLIC COMPOUND  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/0952 STEP NO--UR/0363/70/006/000/0379/0380  
  
CIRC ACCESSION NO--AP0118118  
UNCLASSIFIED



2/2 017

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118118

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE POSSIBILITY OF PRODUCING SOLID SOLUTIONS OF GAAS WITH INTERMETALLIC COMPOUNDS COMPOSED OF ELEMENTS OF THE SECOND B AND SIXTH A GROUPS OF THE PERIODIC SYSTEM. THE GAAS ALLOYS CONTAINING UP TO 20 MOL PERCENT CDS, CDSE, CDTF, ZNS, AND ZNTE WERE SUBJECTED TO INVESTIGATIONS USING METALLOGRAPHIC AND X RAY ANALYSES. THE RESULTS OBTAINED ARE TABULATED. FACILITY: KIEVSKII GOSUDARSTVENNYI PEDAGOGICHESKII INSTITUT, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--18SEP70

1/2 025

TITLE--EFFECTIVE CROSS SECTIONS OF THE FORMATION OF EXCITED MERCURY IONS DURING THE IONIZATION OF MERCURY ATOMS BY ELECTRON IMPACT -U-

AUTHOR--(031)-VARSHAVSKIY, S.P., MITYUREVA, A.A., PENKIN, N.P.

M

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(1) 26-30

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--MERCURY, ELECTRON BOMBARDMENT, IONIZATION CROSS SECTION

MARKING--NO RESTRICTIONS

07/20/2001 1028/001/0026/0030

CIRC ACCESSION NO--AP0049487

UNCLASSIFIED

PROCESSING DATE--18SEP70

2/2 025

CIRC ACCESSION NO--AP0049487  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

SECTION OF THE FORMATION OF EXCITED HG IONS BY THE IMPACT OF ELECTRONS ON HG ATOMS HAVE BEEN CALCD. EXCITATION FUNCTIONS AND ABS. VALUES OF EFFECTIVE CROSS SECTION OF STATES S, P, D CORRESPONDING TO NORMAL TERMS OF HG II, AND ALSO TO THE 4 LOWER STATES OF THE BUTLER SYSTEMS HAVE THE SAME ORDER OF MAGNITUDE (10 PRIME NEGATIVE 18 MINUS 10 PRIME NEGATIVE 19 CM PRIME 2). EXCITATION CROSS SECTION OF THE RESONANCE STATE 6 PRIME 2 P SUBONE

UDC: 656.25-50

USSR

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"A System for Continuously Checking the Reliability of Transmitted Information"

Moscow, Avtomatika, Telemekhanika i Svyaz', No 6, Jun 72, pp 12-14

Abstract: A system is described for continuously checking the reliability of data transmission in railway communications systems. The system covers the entire communication channel from the primary document to the computer storage unit. The basis of the procedure is guarding against errors in the primary document by introducing a mod 10 check. A check digit is computed and entered in the primary coded documentation. The check digits give the information of the primary document a certain immunity to interference inasmuch as they make error detection possible. Three versions of the mod 10 check system are examined on the basis of a digital message made up of six digits. A block diagram for data transmission with continuous reliability check is presented and described in detail.

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MITYUSHIN, L. G."One Markov Process with Local Interaction"

Probl. Peredachi Inform. [Problems of Information Transmission], 1973, 9, No 2, pp 81-85 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V23)

Translation: A Markov process with continuous time is studied in the space of  $X$  of infinite bilateral  $(0,1)$ -sequences. We represent  $x^t = \{x_i^t\} \in X$  as the state of the process at moment  $t$ . The rule of transition is fixed by equations homogeneous with respect to  $i$  and  $t$ :

$$P\{x_i^{t+\tau} = 1 / \{x_a^t\}, x_i^t = 0\} = \tau \cdot \pi_{x_{i-1}^t x_{i+1}^t} + o(\tau)$$

$$P\{x_i^{t+\tau} = 1 / \{x_a^t\}, x_i^t = 1\} = 1,$$

where  $\pi_{ab} \geq 0$  ( $a, b = 0, 1$ ) are fixed numbers. Where  $t = 0$ , we consider  $\{x_i^t\} \equiv 0$ .

USSR

MITYUSHIN, L. G., Probl. Peredachi Inform., 1973, 9, No 2, pp 81-85

These processes represent a particular case of Markov processes with locally interacting components as studied by Dobrushin (RZHMat, 1971, 12V460, 12V461).

It is shown in this article that with each  $t$ , sequence  $\{x_i^t\}$  has several Markov-type processes with respect to parameter  $i$ . This allows the calculation of probabilities  $P\{x_i^t = a_i, i \in I\}$  to be simplified, particularly in the special case  $\pi_{00} + \pi_{11} = \pi_{10} + \pi_{01}$ .

Author's view

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113121v Content of mercury found in amalgam scrubber decomposers. Rybkin, V. I.; Kubasov, V. L.; Mityushina, K. A. (USSR). Zh. Prikl. Khim. (Leningrad.) 1970, 43(2), 327-31 (Russ). A vertical 300-mm diam. by 2.52-m long amalgam decomposer scrubber loaded to heights of 840, 1680, and 2520 mm with 5-10, 15-20, and 40-50 mm graphite particles was used in an efficiency study at Hg flow rates of 8-221/min. Equations relating decomposer efficiency to the above parameters were developed. Amts. of Hg required for amalgam decompn. were calcd. and the results agreed to ±10% with exptl. detns. Decomposer scrubbers loaded with 15-20-mm particles were most efficient since they required the least amt. of Hg. DPJR me

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USSR

MITYUSHIN, V. M., BESPALOVA, L. A., (Institutes of Biophysics, Ministry of Health USSR, Moscow)

"Change in the Ultrastructure of Dog Myocardium at Different Periods After Total Gamma-Ray Irradiation."

Moscow, Kardiologiya, Vol 10, No 6, Jun 70, pp 95-99

Abstract: The ultrastructure of myocardial cells of the left ventricle was studied in dogs at different stages of acute radiation sickness caused by whole-body gamma-ray irradiation in a dose of 350 r. Electron microscope investigation revealed a varying degree of sensitivity and susceptibility to injury of the myocardial intracellular structures; the most labile components were the mitochondria. Destructive changes in mitochondria were already noted during the first hours after gamma-ray irradiation. The most resistant components were myofibrils and muscle nuclei, which were damaged only in the late periods of the experiment.

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USSR

UDC: 621.515-253.5:539.4.001.5

ALEKSEYEV, S. A., MITYUSHKIN, YU. I., and PILATOV, V. I.

"The Effect of Axial Clearance and Non-Radial Positioning of the Blades of a Guide-Vane Assembly on the Vibration Strength of the Working Blades of a Compressor"

Tr. Leningr. korablestroit. in-ta (Works of the Leningrad Ship-Building Institute), 1972, vyp.82, pp 15-19 (from RZh-Turbostroyeniye, No 5, 1973, Abstract No 5.49.131)

Translation: The authors present a study made on a model compressor stage involving the effect of the axial clearance between the working wheel and the guide-vane assembly on the level of dynamic bending stresses of the working blades under conditions of first tone resonance oscillations which are evoked by the reverse action of the guide-vane assembly, both in the case of a radial setting of the guide blades with respect to the intake edge and with respect to their slanting with concave side to the compressor axis. Original article: 3 illus., 7 bibl. entries.

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UDC 621.438

USSR

KURZON, A. G., MITYUSHKIN, Yu. I., YUSUPOV, E. I., and SOKOLOV, B. G.

"Investigation of Conventional Single-Row, Single-Row With Repeated Admission and Double-Row Supersonic Turbine Stages With Low-Rate Injection"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 3, 1971, pp 69-74

Abstract: The results are presented of a detailed experimental investigation of the efficiency of single-row supersonic stage with repeated admission and of its comparison with a double-row and single-row supersonic stages with low rate injection, at various operating conditions, characterized by values of injection rates  $\xi$ , degree of expansion  $\pi_r = P_0^*/p_2$  and velocity characteristic  $u/c_{ad}$ . The basic data on all stages investigated are presented in a table. The comparison of experimental data obtained at  $\xi \leq 0.11$  rate of injection shows that: 1) a repeated admission substantially increases the efficiency of a single-row supersonic stage with low rate of injection at  $u/c_{ad} < 0.26$ , and can be approached up to efficiency of double-row supersonic stage at other similar conditions; 2) a single-row stage with repeated admission at  $u/c_{ad} > 0.16$  and  $\pi_r > 14$  is more efficient than the double-row stage

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KURZON, A. G., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 3, 1971, pp 69-74

with the same rate of injection. This means that in cases when the simplicity of low power turbine construction, reduction in weight and production cost, and high reliability of turbine engine play a decisive role, the single-row with repeated admission can be considered a basic type of turbine stage for driving auxiliary mechanisms and compressors.

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Marine and Shipbuilding

USSR

UDC 62-135-253.5-226.3-86:629.12

KORZUNOV, YU. L., MITYUSHKIN, YU. I.

"Application of Certain Means of Mechanization of a Wing in Nozzles and Working Grids of Ship Turbines"

Tr. Leningr. korablestroit. in-ta (Works of Leningrad Shipbuilding Institute), 1970, No. 70, pp 43-53 (from RZh-Turbostroyeniye, No 8, Aug 71, Abstract No 8.49.24)

Translation: Theoretical solutions of the application of certain means of wing mechanization to nozzles and working grids of axial turbines in order to raise their economy in operating regimes characterized by low values of the velocity characteristics  $v/c_{ad}$  are considered. The following versions are discussed:

a nozzle blade with a fixed flap, a nozzle blade with a movable flap, a multi-slit nozzle blade, a two-step nozzle blade, a two-step nozzle grid, a nozzle blade of variable geometry, and a nozzle blade of controlled geometry. The mechanization of the blade diffuser of an axial turbine stage and the application of means of mechanization of the wing to the working lattice are discussed. Thorough aerodynamic studies must be carried out to evaluate the effectiveness of these means of mechanization of nozzle and working blades. 7 ill., 9 ref.

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