

USSR

UDC: 519.21

KOROLYUK, V. S., TURBIN, A. F., Institute of Mathematics, Academy of Sciences of the Ukrainian SSR

"Concerning a Method of Proving Limit Theorems for Certain Functionals of Semi-Markov Processes"

Kiev, Ukrainskiy Matematicheskiy Zhurnal, Vol 24, No 2, 1972, pp 234-240

Abstract: Many characteristics of Markov chains, semi-Markov processes, Markov recovery processes, and so forth satisfy an equation of the form

$$(I - P - Q(z))f_\xi(z) = q(z),$$

where P is the matrix of probabilities of transformation of the imbedded Markov chain, matrix Q(z) and vector q(z) are defined by the conditions of the problem,  $f_\xi(z)$  is the unknown characteristic of the process  $\xi(t)$  being investigated. This paper proposes a method of proving limit theorems of the form

$$\lim_{z \rightarrow 0} v(z) f_\xi(z) = \bar{f}_\xi(0),$$

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KOROLYUK, V. S., TURBIN, A. F., Ukr. Mat. Zh., No 2, 1972,  
pp 234-240

where  $v(z)$  is a defined normalizing function. The idea behind the method is that the principal part of the operator

$$(I - P - Q(z))^{-1} = P(z) + o(\|P(z)\|)$$

can be isolated when completely natural restrictions are made on the initial process. Bibliography of nine titles.

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UDC: 519.21

KOROLYUK, V. S., TKACHENKO, E. P.

"Asymptotic Expansions for the Generating Function of the Time of Stay of a Generalized Poisson Process in a Strip with Delaying Shield"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1971, vyp. 5, pp 62-70 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V141)

Translation: Algorithms are constructed for deriving asymptotic expansions in powers of a small parameter for the generating function of the time of stay of a generalized Poisson process in a strip with a delaying shield at the zero. Two cases are considered: a) when the parameters of the process are independent of  $\epsilon$ ; b) when the parameters of the process depend on  $\epsilon$  in such a way that the limiting process is a Wiener process with reflection at the zero. Authors' abstract.

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UDC: 519.2

KOROLYUK, V. S.

"Concerning the Time of Stay of a Generalized Poisson Process in a Strip With Delaying Screen"

Dopovidi AN URSR, 1973, A, No 3, pp 200-202, 284 (from *RZh-Kibernetika*, No 7, Jul 73, abstract No 7V103 by the author)

Translation: Let  $\xi(t)$  be a generalized Poisson process with characteristic function

$$M \exp (i s [\xi(t) - \xi(0)] - \exp \left[ -i s t + \lambda t \int_0^{\infty} (e^{i s x} - 1) dF(x) \right].$$

Assuming the existence of a maximum of process  $\xi(t)$ , a limit theorem is formulated for distribution of the time of stay of  $\xi(t)$  in a strip with delaying screen, where the screen extends to infinity.

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UDC 519.21

KOROLYUK, V. S., Corresponding Member of the Academy of Sciences Ukrainian SSR, Institute of Mathematics, Academy of Sciences Ukrainian SSR

"On the Elapsed Time of a Generalized Poisson Process in a Band With a Delaying Barrier"

Kiev, Dopovidi Akademii Nauk Ukrain's'koi RSR -- Seriya A. Fluyko-Tekhnichni ta Matematychni Nauky, No 3, Mar 73, pp 200-202

Abstract: Let  $\xi(t)$  be a generalized Poisson random process with the characteristic function

$$M \exp \{is[\xi(t) - \xi(0)]\} = \exp \left[ -isat + \lambda \int_0^{+\infty} (e^{isx} - 1) dF(x) \right].$$

In a previous article the author studied the asymptotic behavior of  $Z_x^0$  -- the elapsed time of the process  $\xi(t)$  in the band  $[0, c]$  in the presence of a delaying barrier at  $x = 0$  and an absorbing barrier at  $c \rightarrow \infty$ , assuming that  $H\xi(t_1) \geq 0$  ( $t_1$  is the moment of the first discontinuity of the process  $\xi(t)$ ).

The present article establishes the asymptotic behavior of  $Z_K^0$  when  $M\xi(t_1) < 0$ . A peculiarity of the problem considered here is that when  $M\xi(t_1) < 0$ ,

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KOROLYUK, V. S., *Dopovidi Akademiya Nauk Ukrayins'koyi RSR --- Seriya A. Fizyko-Tekhnichni ta Matematychni Nauky*, No 3, Mar 73, pp 200-202

$\xi = \max_t \xi(t)$ . A limit theorem is formulated for the distribution of the elapsed time.

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UDC: 519.217

GUSAK, D. V., KOROLYUK, V. S.

"Asymptotic Behavior of Semi-Markov Processes With a Split Set of States"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1971, No 5, pp 43-50 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V90)

Translation: The authors study conditions under which a semi-Markov process defined on a discrete or compact set of states may be approximated by a Markov chain. It is assumed that the characteristics of the semi-Markov process depend on a small parameter, and thus that the entire space

of states  $E$  is split into nonintersecting classes  $E = \bigcup_{i=1}^n E_i$ , such that the

probabilities of departure from each class tend to zero along with  $\epsilon$ . In this connection, transfers between classes at the limit (as  $\epsilon \rightarrow 0$ ) are described by an embedded Markov chain with  $m$  states, and the times of stay

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GUSAK, D. V., KOROLYUK, V. S., Teoriya verovatnostey i mat. stat. Mezhd. nauch. sb., 1971, No 5, pp 43-50

in each class are exponentially distributed. The corresponding Markov chain with continuous time on glued states may be considered the limiting case for the semi-Markov process. An algorithm is proposed for constructing asymptotic expansions in powers of  $\epsilon$  for some characteristics of the semi-Markov process. Authors' abstract.

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UDC 519.217

KOROBYUK, V. S., TURBIN, A. F.

"Asymptotic Behavior of the Time Which a Semimarkov Process Spends in a Reducible Set of States"

Teoriya Veroyatnostey i Mat. Statist. Mezhd. Nauchn. Sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], No 2, 1970, pp 133-143 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V37 by the authors).

Translation: An algorithm for construction of asymptotic expansions for the generating function of the time spent by a Semimarkov Process (SMP) in a fixed subset of states, suggested by V. S. Korolyuk (RZhMat, 1970, 7 V50), is extended to the case of SMP with nonreturning states.

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UDC 612,821.2

YORONIN, I. G., KONOVALOV, V. F., and SERIKOV, I. S., Institute of Biophysics  
Academy of Sciences USSR, Pushchino-on-Oka

"Role of Reinforcement in the Formation and Short-Term Retention of Trace  
Processes in Man"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, No 5, 1971, pp 891-897

Abstract: The dynamics of the formation and retention of traces of indifferent stimuli with changes in the parameters of reinforcement was studied in 36 subjects age 14 to 24. The conditioned stimuli were sound or a contact stimulator and reinforcement was light lasting 0.5, 3, or 6 sec. In 3 series of experiments the subjects kept their eyes open while the light was on; in the 4th series, the subjects kept their eyes closed while the light was on for 3 sec. The conditioned and unconditioned responses were manifested by the galvanic skin reflex. In the first 3 series, the immediate and trace processes were most stable when reinforcement lasted 0.5 or 6 sec. The trace was reproduced for 100 to 120 sec and in some cases for 140 to 160 sec. However, it was reproduced for a much shorter period an average of 73 sec, after reinforcement lasting 3 sec. When the subjects kept their eyes closed, the galvanic skin reflex was quickly extinguished and drowsiness set in. Judging by the dynamics of the alpha and rolandic rhythms in the visual and rolandic areas, reproduction of the trace on the EEG lasted 18 to 36 sec, sometimes as long as 56 sec.

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USSR

KATS, G. I. and KORONKEVICH, A. I.

"Frobenius Theorem for Functions of Commuting and Anticommuting Arguments"

Moscow, Funktsional'nyy Analiz i Yego Prilozheniya, Vol 5, vyp 1, 71, pp 73-80

Abstract: 1. The authors examine the ring  $Q_x = Q_{x_1, \dots, x_{n+m}}$  of polynomials of the anticommuting generatrices  $x_i$  ( $n < i \leq n+m$ ) with coefficients which are  $R^n$  infinitely differentiable functions. 2. Then still another ring,  $Q_{x'} = Q_{x'_1, \dots, x'_{n'+m'}}$ , is studied, and each is discussed. 3. The authors then give the equation  $\omega(x, dx) = 0$ , and the ring  $Q_{t,u} = Q_{t_1, \dots, t_{f+l}, u_1, \dots, u_q}$  ( $g(t_i) = 0$  ( $1 \leq i \leq f$ ),  $g(t_i) = 1$  ( $f < i \leq f+l$ ),  $g(u_i) = 1$ ), is examined. The generatrices  $u_i$  are termed parameters, and  $du_i = 0$  is assumed by definition from differentiation of the elements of  $Q_{t,u}$ . Then  $s = f+l$  and the  $n+m$  elements of  $x_i(t, u) \in Q_{t,u}$  are termed the  $s$ -dimensional solution to the equation  $\omega(x, dx) = 0$  if certain cited conditions are satisfied. 4. Then a system of equations  $\omega_j(x, dx) = 0$  ( $j = 1, 2, \dots, N$ ) is studied, relative to which it is proposed that the rank of the matrix  $\|\delta \omega_{ji}(x_1, \dots, x_n)\|$  is identically equal to  $N$ . This system is termed completely integrable if for all numbers  $x_1^{(0)}, \dots,$

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KATS, G. I., et al, Funktsional'nyy Analiz i Yego Prilozheniya, Vol 5, vyp 1, 71, pp 78-80

$x(0)$  the system has an  $r = n+m-N$ -dimensional solution with the initial conditions  $v_i = x_i^{(0)}$  ( $1 \leq i \leq n$ ),  $v_i = u_i$  ( $n+1 \leq i \leq n+m$ ), where  $u_{n+1}, \dots, u_{n+m-m}$  are odd parameters. 5. Omitting the technical details, the authors give proof of the Frobenius theorem, deriving it as in the classical case. Two cases are examined and proven here: that is, the odd and the even cases. The article cites one literature reference.

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USSR

UDC 621.375.82

DUBNISHCHEV, Yu. N., KORONKEVICH, V. P., SOBOLEV, V. S., STOLPOVSKIY, A. A.,  
SENIN, A. G., UTKIN, Ye. N., VASILENKO, Yu. G., SHMOYLOV, N. F.

"Development of the Doppler Method for Measuring Flow Rate"

V sb. Konf. po avtomatiz. nauch. issled. na osnove primeneniya ETsUM, 1972  
(Conference on the Automation of Scientific Research on the Basis of Com-  
puter Applications, 1972 -- Collection of Works), Novosibirsk, 1972,  
pp 63-70 (from RZh-Fizika, No 11, Nov 72, Abstract No 11D976)

Translation: A two-channel compensation circuit for a laser Doppler device for measuring velocity is proposed. Use of this device makes it possible to lower considerably the level of the low-frequency component of the signal, which causes disturbance in processing the signal. The potential possibilities of the method of electronic processing of a Doppler signal are considered theoretically from the aspect of the accuracy of the measurements. The possibilities of the device are illustrated by an autocorrelation function for different average flow rates. A. I. Serbin.

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UDC 621.385:530.145.6:621.317.17

KORONKEVICH, V. P., LENKOVA, G. A.

"A Laser Interferometer for Length Measurement"

Avtometriya (Autometry), 1971, No 1, pp 4-9 (from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11D554)

Translation: With the development of lasers, it has become possible to use interference methods of length measurement in industrial applications. A laser interferometer has been developed in the Institute of Automation and Electrometry, Siberian Department, Academy of Sciences of the USSR which can be used as a device for measuring displacements. A helium-neon laser stabilized on the Lamb minimum is used as the light source. The operating principle of the laser interferometer is considered as well as a method of introducing corrections for atmospheric conditions. The index of refraction of air and wavelength under normal conditions are calculated for helium-neon lasers, and a formula is given for introducing corrections. Test results are presented for a laser interferometer used under laboratory and industrial conditions.

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1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EFFECT OF NON PLANE PARALLELISM OF AN INTERFEROMETER ON OPTICAL  
MULTIPLICATION OF LENGTHS -U-  
AUTHOR-(02)-KORONKEVICH, V.P., SOLCHAKHA, D.A.

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CIRC ACCESSION NO--AP0118550

ABSTRACT/EXTRACT--(U) GP-U- ABSTRACT. STUDY OF THE EFFECT OF IMPERFECTIONS IN THE REFLECTING SURFACES ON INTERFEROMETERS OF TRADITIONAL PLANE PARALLEL GEOMETRY. THE MAXIMUM POSSIBILITIES OF CLASSICAL SCHEMES FOR OPTICAL MULTIPLICATION OF LENGTHS ARE ESTIMATED, AND AN ATTEMPT IS MADE TO ASCERTAIN THE MEASUREMENT ERRORS CAUSED BY DEPARTURES OF THE REFLECTING SURFACES FROM PLANE PARALLELISM. IT IS SHOWN THAT THE CONTRAST OF THE SUPERPOSITION BANDS AND THE ACCURACY OF MEASURING THE MULTIPLIED LENGTH ARE LIMITED BY DEVIATIONS FROM PLANE PARALLELISM IN A FABRY-PEROT INTERFEROMETER.

UNCLASSIFIED



USSR

UDC 632.95

MANDEL'BAUM, Ya. A., LOMAKINA, V. I., KORNOUKHOVA, M. V., and MEL'NIKOV, N. N.

"Synthesis of Bis[ $\beta$ -alkyl(aryl)sulfonylhydrazides] of Thiophosphoric Acids"

USSR Author's Certificate No 332093, filed 26 Feb 70, published 17 Apr 72 (from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, L-S), No 1(II), 1973, Abstract No LN452P by T. A. Belyayeva)

Translation: A compound with a general formula  $RP(S)(NHNHSO_2R')_2$  (I) (R = alkoxyl, aroxyl, or amino group; R' = alkyl or aryl) is synthesized by the reaction of  $RP(S)(NHNH_2)_2$  (II) with  $R'SO_2Cl$  (III) in the presence of HCl acceptor in solvent ( $C_6H_6$ , alcohol). Example. To 0.25 mole II (R = EtO) in 150 ml  $C_6H_6$  0.5 mole  $Et_3N$  is added at 40°C followed by a slow addition of 0.25 mole III (R' = Et). The reaction mixture is stirred for 2 hr at 60°, and for 1 hr at 80°C, filtered at 70°C, and concentrated by evaporation. The yield of I (R = EtO, R' = Et), m.p. 158-160°C, is 50%. Compound I prepared in the same manner were characterized by (R, R', m.p. in °C, yield %, in that order): EtO, Ph, 102-105 (alc.), 30; PhO, Me, 173-175 (ether), 45; PhO, Ph, 168-170, 56. Compound I possesses acaricidal and fungicidal properties.

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UDC 537.324

OSIPOV, E.V., KORNYUSHIN, YU.V., VSEVOLODSKIY, P.F.

"Production Of Cooling Because Of Anisotropy Of Thermoelectric Properties"

Elektron.tekhnika. Nauch.-tekhn.sb. Kriogen.elektronika (Electronics Technology. Scientific-Technical Collection. Cryogenic Electronics), 1971, Issue 1(3), pp 111-115 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972, Abstract No 10B220)

Translation: In an analytical manner the possibility is determined of the production of a temperature difference because of anisotropy of the thermoelectric properties of crystals in the absence of a magnetic field. In contrast to a Peltier cooler in which cooling is achieved because of the flow of an electric current across a contact between two different materials, in the case considered the cooler can be made from one material. For single crystals of the solid solutions Bi-Sb at a temperature of 100° K the temperature difference amounts to ~ 12.5° K

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KOROP, B. V.

SCIPY'S SENT  
31 Jan 73

Subscriber's Telegraph Equipment

Article 24 of the Constitution of the USSR, Article 10 of the Law on the USSR Ministry of Communications, and the USSR Government's Decree on the Development of the USSR City Telegraph Network, Moscow, August 1971, pp. 27-31

In order to organize the transmission of data via a telephone telegraph network it is necessary to include a large number of terminal installations for the relay of data to the switching telegraph stations. Since most of such installations will be located in cities, city telephone exchange cable lines will be used to connect them. The complex of subscriber's telegraph equipment of the APT type worked out at the Research Division of the Central Scientific Research Communications Institute of the USSR Ministry of Communications, will make it possible to utilize practically any number of circuits in city telephone exchange cables for the transmission of data at a speed of up to 200 baud.

New Equipment Developed in the Five-Year Plan

At the present time the transmission of telegraph signals via city telephone exchange subscriber's lines is carried out with the aid of subscriber's pairs of electronic transition devices of the EOP and OT-11 type installed in exchange switchboards. Inasmuch as direct current signals are transmitted from these devices directly to the electrograph of the telegraph apparatus, sources of high linear voltage of 250 volts are used in them with a grounded central point.

Utilization of voltage sources with a grounded central point tends to decrease in transitional attenuation between the telegraph circuit and other circuits in the cable by 13-17 decibels. As a result of the combination of two factors: high linear voltage and a decrease in transitional attenuation telegraph communication exhibits a substantive

...the need to improve in ...

...the need to improve in ...

...the need to improve in ...

...the need to improve in ...

The "direct current" strength is usually ...

KOROP, Ye. D.

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JPRS 60651  
20 November 1973

DOC 333-0-07

Acceleration of Ions by a Relativistic Electron Beam  
Article by A. A. Efremov, K. V. Shul'da, S. N. Tschin, G. A. Zhodde,  
to B. A. G. A. Jakhadya and I. V. Gelyon; Moscow, Zhurnal teoreticheskoy  
fiziki, Moscow, Vol. 63, No. 5, 1972, reprinted to press 22 June 1973,  
pp. 1877-1887.

Abstract

The effect of ion acceleration by a relativistic electron beam was investigated. Protons were accelerated to 6 - 7 million electron volts for an energy of an electron beam of approximately one million electron volts. The beam composition and its energy distribution were studied. It was demonstrated that the energy of protons accelerated by electron rivers were roughly three times that of protons accelerated by electron rivers. The 0.1 - 1 million electron volt range.

The effect of ion acceleration in an electron beam was observed initially when obtaining nonrelativistic electron beams from a plasma emitter. It was recorded in the following experiments for an average of 250 - 280 eV increase in the energy of electrons was observed in the range of 10 - 100 kV. This accelerating voltage was observed in the range of 10 - 100 kV. This opened up the possibility of creating an electron jet ion accelerator at 10 - 100 MeV using 1 - 2 MeV relativistic electron beams. Some theoretical solutions in this direction were conducted using high current electron streams for accelerators.

Arrangement of Experiments

Ion acceleration by means of electrons was done by using a variable accelerating voltage oscillating with a frequency of 0.3 megahertz and an initial amplitude of 0.2 - 1 megavolt applied to the accelerating gap. The high

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UDC 621.375.4

KOROPETS, G. D.

"Stabilization of the Operating Conditions of a Transistor Amplifier"

Sb. nauch. tr. Leningrad. Fil. TsNII svyazi (Collected Scientific Works of the Leningrad Branch of the All-Union Scientific Research Communications Institute), 1970, vyp. 4, pp 172-175 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4D98)

Translation: A diode in the forward direction connected to the base circuit is used to stabilize the operating conditions of an amplifier for a telephone set. This stabilization procedure is used for power supplies with quite large internal resistance with significant variation of the feed voltage and a broad range of transistor gain coefficients.

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UDC 546.289.02:539.238

SAKHAROV, YU. G., KOROSTELEV, V. F., KUZNETSOV, L. I., GHEANOBROVKIN, D. I., and PUKHA, P. N., Omsk Polytechnical Institute

"Electron Microscope Study of the Structure of GeO Films"

Moscow, Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy, Vol 6, No 10, Oct 70, pp 1821-1823

Abstract: The article considers the effect of specific process regimes on the existence of the amorphous and crystalline states of GeO films, as well as structural changes in GeO as a result of temperature and elevated humidity. An EM-7 electron microscope was used to study the structure of the GeO films. The films were deposited on substrates of sital ST 50-1 at 100 and 200° C. Deposition rate was 0.50 Å/sec. Crystalline inclusions of GeO are observed in the initial deposition stages. Films deposited on different substrates under the same conditions can have different inclusion sizes and shapes, while films deposited on the same substrate under different conditions dis-

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SAKHAROV, YU. G., et al., Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy, Vol 6, No 10, Oct 70, pp 1821-1823

play the same structure. Two forms of crystalline formations are found, viz. flat tablets and needles. An increase in film thickness intensifies the effect of substrate temperature and deposition rate. Films 1-2 microns thick display the crystal phase at deposition rates of  $\sim 5 \text{ \AA}/\text{sec}$ , but have an amorphous structure at rates above  $20 \text{ \AA}/\text{sec}$ . The size of the crystal formations increases at a substrate temperature of  $200^\circ \text{ C}$ . Vacuum annealing at  $450^\circ \text{ C}$  results in the transition of GeO from the amorphous to the crystal phase. The amorphous phase is stable below  $350^\circ \text{ C}$ . GeO undergoes structural changes in a humid atmosphere.

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USSR

KOROSTELEV, A. P.

"Probabilistic Representation of the Solution of a Problem with a Directional Derivative"

Teoriya Veroyatnostey i Ego Primeneniya [Theory of Probabilities and its Applications], 1973, Vol 18, No 1, pp 172-176 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V61, by the author).

Translation: Studying the classical problem of Neuman in a circle with  $D = \{\Sigma(x^i)^2 \leq 1\}$

$$\Delta u(x) = 0, \quad \left. \frac{\partial u}{\partial l} \right|_{\partial D} = f, \quad (1)$$

where  $\Delta$  is a spherically symmetrical operator,  $\partial/\partial l$  represents differentiation with respect to a direction with a constant angle to the normal, N. Ikeda found the probabilistic representation of the solution

$$u(x) = \int_0^{\infty} M_x f(\xi_s) \delta_{\partial D}(\xi_s) ds. \quad (2)$$

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Korostelev, A. P., Teoriya Veroyatnostey i Ego Primeneniya, 1973, Vol 18, No 1, pp 172-176.

where  $\delta_{\partial D}$  is the delta function of the boundary,  $\xi_s$  is Brownian motion with reflection in direction  $\ell$ . The method of his work does not extend to the general case.

In section 1 of the present work, a probabilistic representation similar to (2) is presented for the solution of more general problem (1), where  $A$  is a nondegenerating elliptical differential operator in a certain area  $D$ ;  $\partial/\partial t$  is differentiation with respect to the direction of smooth field  $\ell$ , not tangent to  $\partial D$ .

In section 2, a central limit theorem is proven for a functional of the local time type at the boundary.

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USSR

UDC 536.46+662.217

FROLOV, YU. V., DUBOVITSKIY, V. F., KOROTKOV, A. I., KOROSTELEV, V. G., Moscow

"Convective Combustion of Porous Explosives"

Novosibirsk, Fizika goreniya i vzryva, Vol 8, No 3, 1972, pp 368-378

Abstract: A study was made of some of the steps in the development of the process of combustion of porous systems of limited length. The experiment in the development of convective combustion was carried out primarily in a constant-pressure device with a free volume of two liters equipped with a peephole for optical recording of the process, a series of electric leads for the thermocouples and a piezoelectric pressure-sensitive sensor. A mixed condensed stoichiometric system of polystyrene and ammonium perchlorate was used. The general nature of the development of the combustion processes along the length of the porous sample as a function of its length with different porosity is plotted. Under other equal conditions, the general level of the propagation rate of the convective combustion increases as the porosity of the specimen increases. Under the effect of a critical pressure drop it is possible to isolate three characteristic regimes in which the predominant one is: a) the filtration process (the initial segment of the charge); b) the process of development of convective combustion and c) the effect of creating a counter pressure as a result of compression of the filtered gas filling the pores in advance. The presence and  
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FROLOV, YU. V., et al., Fizika goreniya i vzryva, Vol 8, No 3, 1972, pp 368-378

commensurableness of the indicated regimes depends primarily on the length, porosity and physical-chemical properties of the sample and also on the initial pressure drop in the pores and the surrounding volume.

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UDC 62-135-253.5:534.08.629.7.03

ZABLOTSKIY, I. Ye., KOROSTELEV, Yu. A., SVIBLOV, L. B.

"Contactless Measurement of Oscillations of Power Blades of Turbines"

Lopatochn. Mashiny i Struyn. Apparaty [Blade Machines and Jet Apparatus -- Collection of Works], No 6, Moscow, Mashinostroyeniye Press, 1972, pp 106-121, (Translated from Referativnyy Zhurnal, Turbostroyeniye, No 8, 1972, Abstract No 8.49.168).

Translation: The principles of the discrete-phase method are presented, allowing measurement of oscillations of the working fluids in an axial compressor to be measured with contactless impulse sensors. A block diagram of a cathode ray device for recording the amplitude of working fluids (ELURA) is presented, and the operating principle of the device is explained. Methods of measurement of the amplitudes of oscillations and amplitudes of oscillation velocities of the ends of blades, phase shift of oscillations of neighboring blades and various methods of measurement of resonant oscillations, the frequencies of which are strict multiples of the rotating frequency of the compressor blade wheel are described. A theoretical foundation is presented for these methods. Examples of measurement of various types of blade oscillations are presented. The advantages of the contactless method of measurement are noted. 10 figures; 10 bibliographical references.

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USSR

UDC: 537.226+537.311.33]:539.16.04

ARIFOV, U. A., MIKHAELIAN, V. M., SINYUKOV, V. A., KOHOSTELEV, Yu. A.,  
LYUTOVICH, A. S.

"Alloying of Silicon by Bombardment With Thermal Neutrons"

Kristalliz. Tonkikh Plenok [Crystallization of Thin Films -- Collection of Works], Tashkent, Fan Press, 1970, pp. 136-139 (Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract No. 11 Ye 1100 by T. B. Karashev)

Abstract: Specimens of p-type Si with specific impedance approximately 1200 ohm·cm were bombarded by a stream of reactor neutrons  $1.8 \cdot 10^{13} \text{ cm}^{-2} \cdot \text{sec}^{-1}$  for one hour. After annealing at 800°C for four hours, the bombarded specimens had n-type conductivity and  $\rho = 600 \text{ ohm} \cdot \text{cm}$ . Analysis of the variation, with temperature of concentrations and mobilities of carriers showed that the conductivity resulted from the donor impurity, giving a fine level. The alloying effect is related to the phosphorus formed as

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UDC:537.226+537.211.33]:539.16.04

ARIFOV, U. A., MIKHAELIAN, V. M., SINYUKOV, V. A., KOKOSTELEV, Yu. A.,  
LYUTOVICH, A. S., Kristalliz. Tonkikh Plenok [Crystallization of Thin  
Films -- Collection of Works], Tashkent, Fan Press, 1970, pp. 136-139  
(Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract  
No. 11 Ye 1100 by T. B. Karashev)

a result of nuclear transformation. The possibility of producing high-  
resistance n-type Si crystals with even volumetric properties by this  
method is noted; this is difficult to achieve by other methods.

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1/2 030 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--A CONTACTLESS DISCRETE PHASE METHOD OF MEASURING TURBINE BLADE  
VIBRATIONS -U-  
AUTHOR--ZABLOTSKIY, I.YE., KOROSTELEV, YU.A. K  
COUNTRY OF INFO--USSR  
SOURCE--ENERGOMASHINOSTROENIE, VOL. 16, JAN. 1970, P. 11-14  
DATE PUBLISHED----JAN70  
  
SUBJECT AREAS--METHODS AND EQUIPMENT, ENERGY CONVERSION (NON-PROPULSIVE)  
TOPIC TAGS--MEASUREMENT, VIBRATION, TURBINE BLADE, PHYSICS LABORATORY  
INSTRUMENT  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1983/0275 STEP NO--UR/0114/70/014/000/0011/0014  
CIRC ACCESSION NO--AP0053262

UNCLASSIFIED



2/2 030

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0053262

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A CONTACTLESS METHOD OF MEASURING TURBINE BLADE VIBRATIONS, BASED ON THE TIME QUANTIZATION OF A SIGNAL CHARACTERIZING THE PARAMETER TO BE MEASURED. MEASUREMENTS BY THIS METHOD ARE NOT CONTINUOUS BUT ARE MADE ONLY WHEN THE BLADES PASS A PAIR OF SENSORS FIXED INSIDE THE TURBINE CASING. BY APPROPRIATELY POSITIONING PULSE SENSORS IN THE CASING, IT IS POSSIBLE TO MEASURE THE DISPLACEMENT AMPLITUDES AND FLUTTER SPEEDS OF THE BLADE TIPS, AND THEREBY TO DETERMINE THE STRESSES IN THE BLADES AS WELL AS THE VIBRATION FREQUENCIES AND THE PHASE SHIFT BETWEEN THE VIBRATIONS OF ADJACENT BLADES.

UNCLASSIFIED

AA0046399

K

UR 0482

Soviet Inventions Illustrated, Section II. Electrical, Derwent.

1/76

242472 DEFECTIVE BLADE DETECTOR for axial compressors of aircraft gas turbines is an inductive or capacitive pick-up which receives pulses from the blades. The pulses are amplified in the first stage and passed to a valve-type sawtooth generator. The output from the latter is applied to a valve incorporating two cathode followers. As soon as a defective blade disturbs the periodicity of the signals a diode D<sub>2</sub> will be turned on an an amplified pulse admitted to a thyatron relay (last stage) to operate an electromagnetic relay and light up a signal lamp.

19.12.64 as 962471/24-6. A.S. ZHIZHOVA et alia. (1.9.64)  
 Bul 15/25.4.69. Class 42k. Int.Cl.G 01 n.

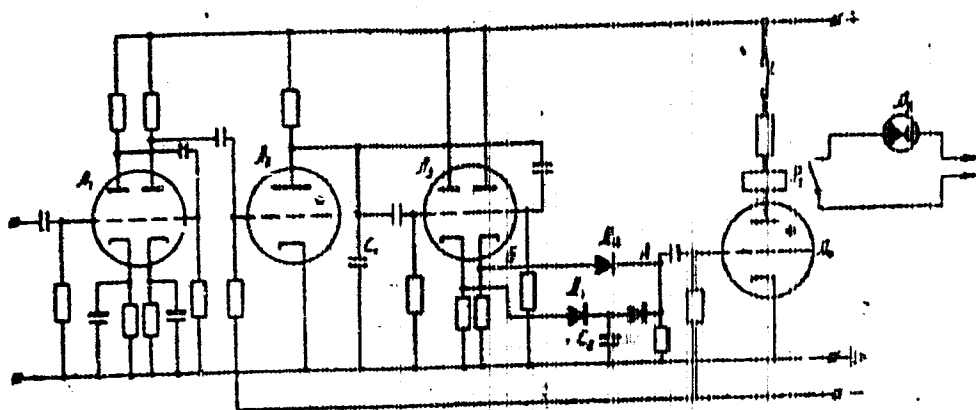
AUTHORS: Zhizhova, A. S.; Zablotskiy, I. Ye.;  
Korostelev, Yu. A.; Svirblov, L. B.

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19781590

AA0046399



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19781591

1/2 008 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--SEPARATION OF P XYLENE FROM MIXTURES USING WERNER COMPLEXES -U-

AUTHOR--(02)-PANCHENKOV, G.M., KOROSTELEVA, A.I.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (5), 30-3

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--XYLENE, NICKEL COMPLEX, PYRIDINE, THIOCYANATE, HYDROCARBON  
SEPARATION, CHEMICAL PURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605012/809 STEP NO--UR/0318/70/000/005/0030/0033

CIRC ACCESSION NO--AP0140251

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140251

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MIXT. CONTG. ETHY 13.5, M 49.5, P 21.2, AND O XYLENE 15.8 WT. PERCENT, WAS TREATED WITH NI(4,METHYLPYRIDINE) SUB4 (SCN) SUB2 DISSOLVED IN 32:56:12 ETHY SUB2,H SUB2 O,AMMONIUM OXALATE TO OBTAIN A CLATHRATE PPT., FROM WHICH WAS OBTAINED P XYLENE OF 96-8PERCENT PURITY. BY REPEATING THE TREATMENT, P XYLENE OF 99.6PERCENT PURITY WAS OBTAINED. THE COMPLEX COULD BE 75-80PERCENT REGENERATED TO OBTAIN A PRODUCT MORE EFFECTIVE THAN THE ORIGINAL COMPLEX.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE—30OCT70  
TITLE—REACTION OF ADAMANTANE WITH OLEFINS —U—  
AUTHOR—(03)—KAZANSKIY, B.A., SHOKOVA, E.A., KOROSTELEVA, T.V.  
COUNTRY OF INFO—USSR  
SOURCE—DOKL. AKAD. NAUK SSSR 1970, 191(4), 831-4  
DATE PUBLISHED—70  
SUBJECT AREAS—CHEMISTRY  
TOPIC TAGS—ADAMANTANE, ALKENE, CHEMICAL REACTION, ALUMINUM COMPOUND,  
CHEMICAL SYNTHESIS  
CONTROL MARKING—NO RESTRICTIONS  
DOCUMENT CLASS—UNCLASSIFIED  
PROXY REEL/FRAME—2000/0689 STEP NO—UR/0020/70/191/004/0831/0834  
CIRC ACCESSION NO—AT0124361  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124361

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PASSING GASEOUS OLEFINS (C SUB2 H SUB4, ME SUB2 C:CH SUB2 OR MECH:CH SUB2) INTO A MIXT. OF ADAMANTANE AND EITHER ALCL SUB3 OR ALBR SUB3 IN HEXANE AT NEGATIVE 10 DEGREES, WITH EXCESS ADAMANTANE ALWAYS PRESENT TO AVOID MUCH POLYALKYLATION, GAVE A VERY COMPLEX SET OF PRODUCTS, THE COMPN. OF WHICH WAS TABULATED FOR VARIOUS PROPORTIONS OF THE CATALYSTS INsofar AS IDENTIFICATION WAS POSSIBLE, BUT SOME 50PERCENT OF THE PRODUCTS REMAINED UNIDENTIFIED IN MOST CASES. ALL THE OLEFINS USED GAVE AT LEAST SOME 1,ETHYLADAMANTANE, 1,PROPYLADAMANTANE, 1,ISOBUTYLADAMANTANE AND 1,SEC,BUTYLADAMANTANE, BUT ONLY ME SUB2 C:CH SUB2 GAVE 1,ISOPROPYLADAMANTANE. THE TOTAL YIELDS WERE NOT OVER 22-5PERCENT. THE RESULTS INDICATED THAT ADAMANTANE IS ALKYLATED NOT ONLY BY C SUB2 H SUB4 PER SE BUT ALSO BY ITS DIMERIZATION PRODUCTS, WHILE MECH:CH SUB2 YIELDS MAINLY THE 1,PROPYLADAMANTANE IN YIELDS OF 22-32PERCENT OF THE TOTAL ALKYLATE AND 11-9PERCENT RUE YIELD. PROBABLE SCHEMES FOR FORMATION OF THE IDENTIFIED PRODUCTS WERE SHOWN. ALBR SUB3 CATALYST GAVE UP TO 22PERCENT ALKYLATES, WHILE ALCL SUB3 GAVE NOT OVER 4.5PERCENT. CHROMATOGRAPHICALLY UP TO 20 PRODUCTS WERE DETECTED IN TYPICAL RUNS; EVIDENCE FOR DI AND POLYALKYLATION WAS INDICATED. FACILITY: MOSK. GOS. UNIV. IN. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 620.172.22.05

BARANOV, V. M., KOROSTIN, Q. S., and MILOSERBIN, Yu. V.,  
Moscow Engineering Physics Institute

"Device for Measuring Elasticity and Internal Friction Constants  
of Small Specimens in a Wide Temperature Range"

Moscow, Zavodskaya Laboratoriya, Vol 38, No 9, 1972,  
pp 1143-1144

Abstract: The construction of a device for measuring the modulus of elasticity  $E$ , Poisson's ratio  $\mu$ , and the internal friction  $Q^{-1}$  on circular plates (1-5 mm thick, 10-20 mm diam) in vacuum of  $10^{-4}$  mm Hg-column is described by reference to its schematic drawing. The measuring principle is based on the resonance-pulse method. Constants of elasticity  $E$  were calculated from resonance frequencies and values of  $Q^{-1}$  were determined from the width of the resonance line or from standard formulas. The calculation exactness

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USSR

BARANOV, V. M., et al., Zavodskaya Laboratoriya, Vol 38, No 9, 1972, pp 1143-1144

of E and of  $Q^{-1}$  were 2.5-3 % and 7-10 %, respectively. The systematic error in determining  $Q^{-1}$  decreases with increasing diameter and increasing mass of the specimen. Values of E and  $Q^{-1}$  for Nb, Zr, and Ta, determined with the help of the described device, proved its efficiency at temperatures up to 2200 °C. Two figures, two bibliographic references.

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USSR

UDC: 621.374.4

TRAPEZNIKOV, A. N., KOROSTIN, V. B.

"Automatic Synchronization of a Group of Ferrotransistor Frequency Dividers"

Tr. metrol. in-tov SSSR (Works of Metrology Institutes of the USSR), 1972, vyp. 116(176), pp 46-48 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 6, Jun 72, Abstract No 6.32.493)

Translation: The paper describes the principle of action and the operation of a device for automatic synchronization within a group of dividers whose input signal comes from a 100 kHz quartz crystal controlled oscillator. To this end, a phase analysis is made of second-by-second signals; a phasing pulse is formed in the case of desynchronization of one of the dividers. The phasing error is no greater than  $1 \cdot 10^{-6}$  s. A simple and reliable circuit is given for such a device. Adding a quartz clock to the device is useful in the event that the dividers are considerably removed from the oscillator, and in the presence of interference which may cause malfunctions of the dividers. Introduction of the proposed device improves the reliability of time scale storage. A logic circuit for construction of the given device is considered on the example of a single synchronization channel, and

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USSR

TRAPEZNIKOV, A. N., KOROSTIN, V. B., Tr. metrol. in-tov SSSR, 1972, vyp. 116(176), pp 46-48

the operation of the principal elements of the device is analyzed. Two illustrations, bibliography of two titles. Resumé.

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USSR

UDC: 621.317.089.68

K  
KOROSTIN, V. B.

"On the Use of Buffer Amplifiers in a Time and Frequency Standard"

Dokl. Nauchno-tekhn. seminara "Metrologiya v radioelektronike". Tezisy. Ch. 2  
(Reports of the Scientific and Technical Seminar on Metrology in Radio Electronics. Summaries. Part 2), Moscow, 1970, pp 6-10 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7A208)

Translation: Specific requirements are given for the buffer amplifiers used in a time and frequency standard. It is pointed out that transistors should be used as the amplifying element in virtue of their durability and economy, and considerations are given on the selection of transistors and the amplifier circuit. A complete amplifier circuit is given together with a report on test results. The error introduced by the amplifier when the supply voltage changes at a rate of 2.8 mV/sec is of the order of  $10^{-11}$ . E. L.

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1/3 011 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--REACTION OF 1,3-DIOXOLANES WITH ACETYLENE UNDER IOTSICH REACTION  
CONDITIONS -U-  
AUTHOR--(05)--SHOSTAKOVSKIY, M.F., ATAVIN, A.S., TROFIMOV, B.A., KORDSTOVA,  
YE. S. NEKRASOVA, L.P.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 668-73  
DATE PUBLISHED--70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--COMPLEX COMPOUND, ACETYLENE, HYDROXYL RADICAL, ETHER, DIOXANE,  
CYCLIZATION, CYCLOHEXANE, CHEMICAL REACTION TEMPERATURE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1762 STEP NO--UR/0062/70/000/003/0668/0673  
CIRC ACCESSION NO--AP0123562  
UNCLASSIFIED

.2/3 011

UNCLASSIFIED

PROCESSING DATE--300CT70

CIRC ACCESSION NO--AP0123562

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 1,3-DIOXOLANES REACT AT 80-120DEGREES WITH THE LOTSICH COMPLEX OF C SUB2 H SUB2 AND GIVE LOW YIELDS OF HYDROXYETHYL ETHERS OF ACETYLENIC HC COMPOS. FROM IR DATA IT WAS EVIDENT THAT IN A NO. OF CASES CYCLIZATION TO 1,4-DIOXANE DERIVS. TOOK PLACE. 2,METHYL,1,3,DIOXOLANE (9 ML) AND REACTION PRODUCT OF ETHGBR AND C SUB2 H SUB2 (FROM 4.8 G MG) GAVE AFTER 3 HR, ON A STEAM BATH IN MEPH 16.7PERCENT 3,METHYL,3,(2,HYDROXYETHYL),1,PROPYNE, B SUB24 68-71DEGREES; A SIMILAR REACTION IN WHICH THE ORIGINAL COMPLEX WAS PREPD. AT 37-50DEGREES AND THE REACTION WAS RUN IN A STREAM OF C SUB2 H SUB2 2 HR AT REFLUX GAVE SEC-BU CELLOSOLVE, B SUB19 60-30DEGREES. WHEN THE ABOVE REACTION WAS RUN IN THF THERE WAS FORMED AFTER 3 HR AT 120DEGREES CRUDE HC TRIPLE BOND COMPOUND SUB2 CH SUB2 OH, B SUB19 50-62DEGREES. 2,METHYL,2,ETHYL,1,3,DIOXOLANE IN A SIMILAR REACTION COMPLETED BY HEATING 3 HR AT 120DEGREES GAVE 18.2PERCENT 3,METHYL,3,ETHYL,3,(2,HYDROXYETHYL),1,PROPYNE, B SUB15 82-50DEGREES, CONTG. IMPURITIES, ALONG WITH 8.9PERCENT 3,6,DIMETHYL,3,6,BIS(2,HYDROXY,ETHYL),4,OCYTYNE, B SUB1 118-20DEGREES. WHEN THE REACTION WAS RUN IN A CONTINUED STREAM OF C SUB2 H SUB2, FINALLY AT 80DEGREES, IT GAVE 19PERCENT 2,METHYL,2,ETHYL,3,METHYLENE,1,4,DIOXOLANE MIXED WITH MEET SUB2 COCH SUB2 CH SUB2 OH, B SUB3 50-50DEGREES, WHILE THE REACTION RUN 3 HR AT 0-50DEGREES, THE 3 HR AT 100DEGREES IN MEPH GAVE MAINLY THE LAST ETHER (IMPURE).

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

3/3 011

CIRC ACCESSION NO--A0123562

ABSTRACT/EXTRACT--PASSING C SUB2 H SUB2 5 HR INTO ETMGBR IN ET SUB2 0 AND  
 TREATING THE MIXT. WITH 0.5 MOLE SPIRO(4.4)1,4-DIOXODIMANE IN NEPH GAVE  
 AFTER 3 HR AT 60-95DEGREES 18.2PERCENT MIXED  
 1,ETHYL,1,(2,HYDROXYETHOXY)CYCLOPENTANE AND HIGH SUB2 CH SUB2 ACETIC  
 SUB5 H SUB10-CYCLO) SUB2, B SUB1 60-3DEGREES, AS WELL AS SOME  
 BIS(1,(2,HYDROXYETHOXY),1,CYCLOPENTYNYL)ACETYLENE, B SUB1 140-53DEGREES.  
 SIMILARLY SPIRO(4.5),1,4-DIOXODECANE GAVE  
 1,ETHYL,1,(2,HYDROXY,ETHOXY)CYCLOHEXANE CONTG.  
 1,ETHYNYL,1,(2,HYDROXYETHOXY)CYCLOHEXANE, B SUB3 89-90DEGREES; REACTION  
 RUN AT LOWER TEMP. ALSO GAVE THE LATTER PRODUCTS. FACILITY:  
 IRKUTSK. INST. ORG. KHIM., IRKUTSK, USSR.

UNCLASSIFIED

# KOROSTOV'TSEVA, T.A.

# metallurgy

IMPROVEMENT OF CHARACTER, MANUFACTURE, AND TREATMENTS OF HEAT TREATMENT IN THE COLD-STRONGNESS OF THE TRENCHING STEEL

UDC 619.56.1669.76/77:621.765

27/10 1977  
28.10.77

Article by Yuliya Vasileva, T.A. Korostov'tseva, ~~Yakovlevsk, Leningradskiy, Serbiya, SSSR, Central Scientific Research Institute, Leningrad, 1970, pp. 171-181~~

The study of cold-roughness was done on medium-alloy cast steel type 30Kh2M2 by the method of determining the magnitude of the impact strength on Charostan test bars 10 x 10 x 55 mm in size at test temperatures of +20, -10, -40, and -60°C and energy of static bending on the specimen 10 x 10 x 95 mm in size with an indenter notch (angle of opening, 90°, depth of notch 2 mm, r = 0.2 mm) at test temperatures of -50, -60, -80, and -90°C.

The steel was melted in a 75-ton basic open-hearth furnace.

The specific energy of deformation during static bending was determined by the method of planimetry of the areas of the diagrams obtained by testing samples on a 12-ton machine from the TsVITsKhG (Central Scientific Research Institute of Technology and Mechanical Engineering).

By analyzing the test results on static bending, we determined the magnitude of the specific energy of the individual segments of the bending diagram and the presence of a crystalline component in the fractures of the test bars.

1. Loading Velocity and Impact Strength

As we know, the reliability of a metal functioning at low temperatures or at high loading velocities (under impact) is characterized mainly by the tendency to brittle fracture.



USSR

UDC 624.07:534.1

SUSLOV, V. P., KOROSTYLEV, L. I.

"Stability of the Walls of Beams With Reinforced and Unreinforced Cuts"

V sb. Kratk. tezisy dokl. k Konf. po povrezhdeniyam i ekspluat. nadezhnosti sudovykh konstruktsiy. 1972 (Brief Subjects of Papers at the Conference on Failure and Operational Reliability of Ship Designs, 1972 -- Collection of Works), Vladivostok, 1972, pp 104-108 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V321)

Translation: Semiempirical formulas are obtained on the basis of theoretical and experimental data for determining critical loads of the walls of beams with a centrally located opening, the height of which is not more than half the height of the beam. 7 ref. N. A. Kulakov.

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USSR

UDC 621.357.12

KOROSTYSHEVSKIY, N. B., TAGUNOV, A. A.

"Obtaining Sodium Amalgam by Electrolysis of a Solution of Caustic Soda in a Bath With a Mercury Cathode"

Kolyma, 1972, No 1, pp 24-25 (from RZh-Khimiya, No 12, Jun 72, Abstract No 121283)

Translation: The procedure and setup for electrolytic production of an Na-amalgam from Hg and an aqueous solution of NaOH are described. The setup is designed to obtain 50 kg of 2% Na amalgam in one charge. The electrolysis of the NaOH solution (300-400 g/liter) is carried out with a current of 185 a and a voltage of 3.5-4 volts for 7 hours. The cathode is a layer of Hg 20 mm high, and the anode is a steel grid. The power of the electrolyzer is 0.74 kilowatts. The consumption of electric power per kilogram of amalgam is 0.11 kilowatt-hours. The consumption of NaOH per kilogram of amalgam with repeated use of the electrolyte is 45-50 g. The device can be manufactured under local conditions and insures safe production of the required amount of Na-amalgam when it is operated two or three times a month.

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USSR

UDC 669.25:539.292

TSINENKO, O. V., PSHEMINA, L. S., TYUMENTSEV, A. N., BUSHNEV, L. S., and  
KOROTAYEV, A. D., Siberian Physico-Technical Institute named V. D. Kuznetsov

"Features of Discontinuous Decomposition in Co-Ni-Ti Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 32, No 1, Jul 71, pp 58-64

Abstract: From data obtained by conventional and electron microscopy and x-ray analysis of aging, discontinuous decomposition in a Co-Ni-Ti alloy was studied where it was shown that by means of discontinuous decomposition there occurs precipitation of the same ordered gamma-prime phase which is a case of continuous decomposition. Kinetics of discontinuous decomposition depend substantially on the state of the continuous decomposition of the matrix ahead of the front of the growing cell. It was shown that coalescence of the finely dispersed phase after continuous and discontinuous decomposition occurs as a result of secondary discontinuous decomposition so that by means of discontinuous decomposition there occurs not only precipitation of stable and metastable phases but also their coalescence. Five figures, 22 bibliographic references.

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USSR

UDC: 669.25:539.425

TSINENKO, O. V., TYUMENTSEV, A. N., BUSHNEV, L. S. and KOROTAYEV, A. D.  
Siberian Physicotechnical Institute imeni V. D. Kuznetsov

"Study of a Modulated Structure in Co-Ni-Ti Alloys"

Sverdlovsk, Fizika metallov i metallovedeniye, Vol 32, No 4, Oct 71,  
pp 758-766

Abstract: The initiation of a modulated structure during the decay of Alnico-, Ticonal- and Nimonic-type alloys determines the shaping of their high physical, mechanical and high-temperature properties governing extensive utilization of these alloys. Some of the properties are related to the finely disperse segregations of the nonmetallic phase. Discussed here are measurements of the kinetic of changes in resistivity, x-ray and electron microscopic patterns (both of replicas and thin foils) applied to the study of the decay pattern of Co-Ni-Ti alloys I comprising 54% Co + 42% Ni + 4% Ti and II — 53% Co + 40% Ni + 7% Ti, wt. %. The alloys with various Ti contents were selected to determine the effect of the bulk share of finely disperse segregations on the development of a modulated structure at various temperatures. The kinetics of changes in resistivity

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USSR

TSINENKO, O. V., et al, Fizika metallov i metallovedeniye, Vol 32, No 4, Oct 71, pp 758-766

during aging of Co-Ni-Ti alloys following quenching from 1050°C and the structural patterns at various stages of decay are reflected in curves and radiographs. The early stages of aging reveal a zone-type decay. The coagulation of particles of the new phase results in the development of a three-dimensional periodic modulated structure. The modulation periods at different temperatures are measured. It is shown that the particles of the new phase represent an ordered phase of  $\text{Co}_3\text{Ti}$ . (6 illustrations, 28 bibliographic references).

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1/2 026

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--INTERMITTENT DECOMPOSITION IN HARDENED AND DEFORMED ALLOYS -U-

AUTHOR--(05)-KOROTAYEV, A.D., BUSHNEV, L.S., PROTASOV, A.T., TYUMENTSEV,  
A.N., PSHENINA, L.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED. FIZ. 1970, 13(1), 108-12

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CRYSTALLIZATION, COPPER ALLOY, TITANIUM ALLOY, ELECTRON  
MICROSCOPY, METAL DEFORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1938/0960

STEP NO--UR/0139/70/013/001/0103/0112

CIRC ACCESSION NO--AT0105829

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0105829

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPECIMENS OF CU-TI 4.3PERCENT ALLOY WERE HARDENED, DEFORMED, AND THEN STUDIED BY METALLOGRAPHY AND ELECTRON MICROSCOPY. WITH SMALL DEFORMATION DEGREES (LESS THAN OR EQUAL TO 20PERCENT) THE FORMATION OF AN INTERNAL STABLE PHASE WAS NOT OBSD. SINCE THIS FORMATION USUALLY IS PRECEDED BY RECRYSTN., IT WAS ASSUMED THAT THE RECRYSTN. CAUSED DISCONTINUOUS DECOMP. INSIDE OF GRAINS. AT THE DEFORMATION DEGREE OF 20PERCENT THE DISCONTINUOUS DECOMP. SHOULD BE EXPECTED AT GREATER THAN OR EQUAL TO 450DEGREES; IN ACTUAL EXPTS. THIS DECOMP. WAS OBSD. AT 550DEGREES.

UNCLASSIFIED

1/2 036

UNCLASSIFIED

PROCESSING DATE--11SEP70

TITLE--DISLOCATION STRUCTURE AND MECHANICAL TWINNING IN AGED  
COPPER, TITANIUM AND COPPER, TITANIUM, ALUMINUM ALLOYS --U-

AUTHOR--PROTASOV, A.T., BUSHNEV, L.S., KOROTAYEV, A.D.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1), 192-6

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--TWINNING, CRYSTAL DISLOCATION, COPPER ALLOY, ALUMINUM ALLOY,  
TITANIUM ALLOY, ELECTRON MICROSCOPY, X RAY DIFFRACTION, METAL  
DEFORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0659

STEP NO--UR/0126/70/029/001/0197/0196

CIRC ACCESSION NO--AP0105638

UNCLASSIFIED



2/2 036

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105638

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISLOCATION STRUCTURE AND MECH. TWINNING IN QUENCHED AND AGED CU PLUS 4.3PERCENT TI AND CU PLUS 2.3PERCENT TI PLUS 2PERCENT AL ALLOYS WERE STUDIED BY THIN FILM ELECTRON MICROSCOPY. THE CHARACTERISTIC FEATURE OF THE DISLOCATION STRUCTURE OF QUENCHED ALLOYS IS THE PRESENCE OF FLAT DISLOCATION CLUSTERS. THESE SHOWED UP TO A LESSER DEGREE IN THE TERNARY ALLOYS THAN IN THE CU-TI ALLOYS. THE BROAD TWIN INTERLAYERS AS OBSD. THROUGH METALLOGRAPHY ARE INDEED MICROTWIN BUNDLES WHICH HAVE A RATHER PERFECT STRUCTURE. MECH. TWINNING WAS OBSD. BOTH AT THE STAGE CORRESPONDING TO THE APPEARANCE OF THE SATELLITES ON X RAY DIFFRACTION PATTERNS AND ON THE STAGE OF THE DEVELOPMENT OF THE METASTABLE BETA PRIME PHASE. THE RESULTS OBTAINED DO NOT ALLOW THE CONCLUSION TO BE MADE THAT THE PPTS. ARE NOT BEING SLIT THROUGH BY THE DISLOCATIONS; THIS FACT IS CONFIRMED ALSO BY THE FACT THAT MECH. TWINS ALSO PASS THROUGH THE PPTS. THE PPTN. OF THE METASTABLE PHASE FIRST LEADS TO SLIP HOMOGENIZATION, AND SECONDLY, DETS. THE APPEARANCE OF A NEW DEFORMATION MECHANISM, NAMELY MECH. TWINNING. IN THE CU PLUS 2.3PERCENT TI PLUS 5PERCENT AL ALLOY, NUCLEATION OF THE STABLE PHASE ON THE DISLOCATIONS WAS OBSD. THE PRESENCE OF THE LATTER LEADS TO THE FORMATION OF A DISLOCATION STRUCTURE CHARACTERIZED BY UNIFORM DISTRIBUTION OF THE DISLOCATIONS THROUGH THE BULK OF THE MATERIAL. THE OBSD. CHANGES DUE TO THE AGING PROCESS ARE ASSOC. NOT ONLY WITH THE CHANGE IN THE LOCALIZATION AND MULTIPLICITY OF SLIP BUT ALSO WITH A CHANGE IN THE FREE PATH OF THE DISLOCATIONS.

UNCLASSIFIED

USSR

UDC 621.472:602.997

LUKOMSKIY, S. M. and KUROTAIYEV, A. M.

"Thermoelectrical Heat Insulation for Outer Protection"

Tashkent, Geliotekhnika, No. 4, 1971, pp 59-75

Abstract: The deficiencies of thermal pumps using solar energy for heating and cooling are examined, and measures which can be taken to ameliorate those deficiencies are considered. These deficiencies, which exist both in foreign and Soviet machines, are primarily the energy losses due to the irreversible heat exchange between the operating agent and the upper and lower heat sources in the condenser and the vaporizer, or between the seams and the heat sources in semiconductor heat pumps. The use of air and of "absolute" outer insulations is discussed, and the directions of heat flows in thermoelectric heat insulators as well as the effect of types of construction of the latter on their efficiencies are considered. Also given are the results of research on the efficiency of thermoelectrical heat insulators during the hot seasons in Krasnoyarsk, Riga, and Eaku. Calculations performed with this data for the three cities showed that, through the use of semiconductors with an efficiency

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USSR

LUKOMSKIY, S. M. and KOROTAYEV, A. M., *Cellotekhnika*, No 4, 1971, pp 69-75

of  $2 \cdot 10^{-3}$  per degree, the average economy in electrical energy was from 1.4 to 2.4 times that of direct heating. The authors are associated with the State Scientific Research Power Institute imeni G. M. Krzhizhanovskiy.

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USSR

UDC: 8.74

KOROTAYEV, N. A.

"Algorithm for Analysis of Free Vibrations of Linear Branched Chain Systems"

Minsk, Teoriya i primeneniye mat. mashin--sbornik (Theory and Application of Mathematical Machines--collection of works), Belorussian University, 1972, pp 66-71 (from *RZh-Kibernetika*, No 5, May 73, abstract No 5V785 by the author)

Translation: The paper deals with problems of automating the analysis of free oscillations of linear branched chain systems by using modern digital computers. An algorithm and working program are proposed for calculating the frequencies and modes of free vibrations of such systems on the "Minsk-22" computer.

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USSR

UDC 77

KOROTAYEV, N.N., MEYKLYAR, P.V.

"Variation of the Absorption Spectrum and Spectral Sensitivity of Photographic Layers with Temperature"

V sb. Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Perioda fotogr. chuvstvitel'nosti (International Congress on Photographic Science, Moscow, 1970, Nature of Photographic Sensitivity -- Collection of Works), no place of publication given, Vneshtorgizdat, no year given, pp 102-104 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1319)

Translation: The spectral change in the reflection coefficient  $R$ , transmission  $T$ , and absorption  $K = 1 - T - R$  for a series of AgBr- and AgBr(I)-photocemulsions was measured at temperatures of 15-150°C in the region 400-550 mμ. The growth in  $R$  and  $T$  and the drop in  $K$  to approximately 480 mμ were found. Data on the difference in optical densities  $D = \lg(1-R)/T$  for different  $\lambda$  at 20 and 120°C showed the presence of a maximum on the curves  $\Delta D = f(\lambda)$  located at 440 mμ for AgBr and at 480 mμ for AgBr(I). The temperature changes of the absorption are reversible over the entire range studied. The change in the spectral sensitivity

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USSR

1970, Priroda fotogr. chuvstvitel'nosti, no place of publication given, Vnesh-torgizdat, no year given, pp 102-105

curves of these layers with the rise in temperature was selective: the greatest growth was observed for  $\lambda$  corresponding to a maximum  $\Delta D$ , and there is a clear maximum on the curves at 80-100°C. The value of  $\lg D$  in the long-wave edge of the band increases linearly with  $h\nu$ , as for single crystals; for the latter (and hence for photolayers), this is a consequence of electron transition into the conductivity zone from local levels. The nature of the additional band is unclear but the defects associated with it cannot be  $Br^-$  ions on the surface, since the concentration of the latter does not change with temperature. In addition, in special experiments the change in their concentration had almost no effect on the height and position of the maximum observed. A. L. Kartuzhanskiy.

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1/2 035

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--STUDY OF DYNAMICS OF BUBBLE BOILING OF WATER ON FINE WIRES UNDER  
CONDITIONS OF FREE CONVECTION -U-

AUTHOR--(05)-SUBBOTIN, V.I., KAZONVSKIY, S.P., KOROTAYEV, S.K., SVIRIDENKO,  
V.YE., SELIVANOV, YU.F.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. (USSR) 28, 9-13 JAN 1970

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--BOILING, FLUID DYNAMICS, GAS DYNAMICS, CONVECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1079/1596

STEP NO--UR/00089/70/028/000/0000/0013

CIRC ACCESSION NO--AP0047918

UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--11 SEP 70

CIRC ACCESSION NO--AP0047918

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CINEMATOGRAPHIC STUDY OF THE PROCESS OF BUBBLE BOILING ON FINE WIRES UNDER THE CONDITIONS OF FREE CONVECTION WAS CARRIED OUT. DIRECTIONS OF ESCAPING OF BUBBLES FROM THE SURFACE OF A HEATER WERE DETERMINED. ON THE BASIS OF SOLVING THE EQUATION OF MOTION OF A BUBBLE AND BY A MEASUREMENT OF THE DISTANCE PASSED BY IT IN THE DIRECTION OPPOSITE TO THAT OF THE ACTION OF THE LIFTING FORCE, FROM THE MOMENT OF ESCAPING TILL FULL STOP, THE VALUE OF KINETIC ENERGY NECESSARY FOR OVERCOMING THE GRAVITATIONAL FORCES IS DETERMINED. THE CONCLUSION IS MADE ABOUT A NONGRAVITATIONAL NATURE OF FORCES, CAUSING ESCAPING OF A VAPOR BUBBLE FROM THE SURFACE OF A HEATER. SOME HYPOTHESES CONCERNING THE NATURE OF THESE FORCES HAVE BEEN PROPOSED.

UNCLASSIFIED



1/2 035 UNCLASSIFIED PROCESSING DATE--20NOV70  
 TITLE--EFFECT OF THE AMPLITUDE OF TORSIONAL VIBRATIONS ON THE TENSILE  
 STRAIN STRESS CURVE OF ALUMINUM -U-  
 AUTHOR--(04)-POSTNIKOV, V.S., KOSILOV, A.T., KOROTAYEV, YE.A., MESHKOV,  
 S.I.  
 COUNTRY OF INFO--USSR  
 SOURCE--FIZIKA METALLOV I METALLOVEDENIE, VOL. 29, MAR. 1970, P. 655-657  
 DATE PUBLISHED--MAR70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--STRESS STRAIN DIAGRAM, ALUMINUM, CRYSTAL DISLOCATION,  
 BIBLIOGRAPHY, TENSILE TEST, TORSIONAL VIBRATION, STRESS ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--2000/1460

STEP NO--UR/0126/70/029/000/0659/0657

CIRC ACCESSION NO--APO125090

UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125090

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE EFFECT OF THE  
AMPLITUDE OF TORSIONAL VIBRATIONS ON THE STRAIN STRESS CURVE OF  
POLYCRYSTALLINE ALUMINUM SUBJECTED TO A UNIAXIAL TENSILE TEST. IT IS  
SHOWN THAT THE STRAIN STRESS CURVE EXHIBITS A STEPWISE BEHAVIOR WHICH IS  
EXPLAINED IN TERMS OF THE DISLOCATION THEORY. FACILITY:  
VORONEZHSKII POLITEKHNICHESKII INSTITUT, VORONEZH, USSR.

UNCLASSIFIED

UDC 539.67

USSR

POSTNIKOV, V. S., KESHKOV, S. I., KOSILOV, A. T., YELIKIN, Ya. K., and  
KOROTENYEV, Ye. A.

"On Amplitude Dependence of Internal Friction in Uniaxially Stretchable Metals"

Sb. "Vnutrenneye treniye v metallicheskih materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 76-79

Abstract: Results of a study on internal friction in aluminum are presented. The data obtained are discussed on the basis of concepts on thermally activated overcoming of short-range barrier by dislocations, taking into account the supplementary periodical stresses in slip planes, produced by torsional vibrations.

A relation is obtained which characterizes the amplitude dependence of  $Q^{-1}$  in the tensile process. The magnitude of activation volume for a proposed mechanism is determined. The activation volume vs. elongation velocity is plotted. 3 figures, 7 references.

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1/2 032 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--DETERMINATION OF HYDROGEN IN A SODIUM HEAT TRANSFER AGENT -U-  
AUTHOR--(03)-KOPYLOV, V.S., KOROTAYEVA, M.N., KUNOVALOV, E.YE.  
COUNTRY OF INFO--USSR  
SOURCE--AT. ENERG. 1970, 28(3), 241-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--LIQUID METAL COOLED REACTOR, SODIUM, METAL IMPURITY, HYDROGEN,  
THERMAL ANALYSIS, HYDRIDE, HYDROXIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1998/0054 STEP NO--UR/0089/70/028/003/0241/0242  
CIRC ACCESSION NO--AP0120754  
UNCLASSIFIED

272 032

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0120754

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TOTAL H CONTENT IN THE HA USED AS COOLANT IN NUCLEAR REACTORS IS DETD. BY A THERMAL DECOMPN. METHOD (IVANOVSKII, ET AL., 1968); THE H BOUND AS HYDRIDE IS DETD. BY THE METHOD OF WHITE, ET AL. (1954); AND THE H BOUND AS HYDROXYL IONS IS DETD. BY THE DIFFERENCE. A STATISTICAL ANAL. OF THE RESULTS OF 39 DETNS. (AT A TOTAL H CONTENT OF 4.7 TIMES 10 PRIME NEGATIVE4 MINUS 3.6 TIMES 10 PRIME NEGATIVE2 WT. PERCENT) SHOWS THAT THE RELATIVE ERROR RANGES FROM 6 TO 24PERCENT, THAT THERE IS NO SYSTEMATIC ERROR, AND THAT THE SENSITIVITY OF DETN. OF HYDRIDE AND HYDROXYL H IS 1 TIMES 10 PRIME NEGATIVE4 AND 2 TIMES 10 PRIME NEGATIVE4 WT. PERCENT. RESP.

UNCLASSIFIED

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USSR

UDC: 8.74

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

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

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

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

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

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

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1/2 009 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--EFFECT OF COPPER ON THE FERMENTATIVE CONVERSION OF MOLASSES TO  
CITRIC ACID -U-  
AUTHOR--(05)--PECCSEYEV, V.F., ALEXSEYEV, I.N., KORDICHENKO, A.V.,  
KULBASKIKOVA, A.N., SVIRIDOVA, T.V.  
COUNTRY OF INFO--USSR

K

SOURCE--KHLIBCEK. KUNITER. FROM. 1970, 14(1), 33-5

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SUCROSE, FERMENTATION, ASPERGILLUS, CITRIC ACID, COPPER  
SULFATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FNAME--3004/0539

STEP NO--UR/03447/07014/001/0031/0035

CIA ACCESSION NO--AP0131244

UNCLASSIFIED



272 CC9 UNCLASSIFIED PROCESSING DATE--20NOV70  
CIRC ACCESSION NO--AP0131244  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LAB. EXPTS., VERIFIED AT THE  
INDUSTRIAL SCALE, REVEALED THAT ADDN. OF CUSO4 SUB4 AT CONCNS.  
CORRESPONDING TO 4-7 MG-100 G MOLASSES, RESULTED IN BETTER FERMENTATIVE  
CONVERSION OF THE LATTER TO CITRIC ACID (4-23PERCENT HIGHER YIELDS) BY  
*ASPERGILLUS NIGER* (SURFACE CULTURE).

Acc. Nr.

AP0050765

Abstracting Service:  
CHEMICAL ABST. 5/70

Ref. Code

4R0368

K

105401w Infrared spectra of insoluble products of  $\gamma$ -irradiated starch. Zhabankov, R. G.; Komar, V. P.; Kapitchenko, K. A. (USSR). *Zh. Prikl. Spektrosk.* 1970, 12(1), 149-151 (Russ.). The ir spectra ( $600-3800\text{ cm}^{-1}$ ) of insol. particles isolated from corn starch  $\gamma$ -irradiated with 15-80 megarad dose (300 R/sec) were studied. In the regions of CH stretching and deformation vibrations, the spectra of the particles coincide with those of albumin and  $\gamma$ -globulin and are very similar to the spectrum of *Escherichia coli* bacterium. A relatively intense band at  $\sim 1100\text{ cm}^{-1}$ , characteristic of sugars, was obsd. The N content in the materials studied was 5.9-10.6%. Vachiv Sara

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REEL/FRA  
ME 19810765

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1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--MICRIBIOLOGICAL QUANTITATIVE DETERMINATION OF INOSITOL IN YEASTS  
-U-  
AUTHOR--(03)--KOROTCHENKO, N.I., BENDOSSENKO, V.A., KONEVA, N.K.  
COUNTRY OF INFO--USSR *K*  
SOURCE--PRIKL. BIOKHIM. MIKROBIOL. 1970, 6(2), 243-7  
DATE PUBLISHED--70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--YEAST, MICROBIOLOGY, QUANTITATIVE ANALYSIS, ALCOHOL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/1806 STEP NO--UR/0411/70/006/002/0243/0247  
CIRC ACCESSION NO--AP0127220

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127220

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO DET. INOSITOL (I) IN YEASTS, A 1 G ALIQUOT OF THE DRIED MATERIAL IS AUTOCLAVED WITH 20 ML OF 20PERCENT HCL FOR 1 HR UNDER 1 ATM TO LIBERATE I, THE HYDROLYZATE NEUTRALIZED TO PH 5.2-5.7 AND DILD. TO A CONC. OF 1-2 MU G-ML I. TO DET. I MICROBIOL., A 48 HR CULTURE OF SCHIZOSACCHAROMYCES POMBE IS ADDED TO THE HYDROLYZATE, THE MIXT. INCUBATED 48 HR AT 35DEGREES, THE INTENSITY OF GROWTH MEASURED PHOTOCOLORIMETRICALLY, AND THE RESULT COMPARED TO A STD. CURVE MADE WITH KNOWN CONCNS. OF I. THE CONTENT OF I IN DRY YEASTS AS DETD. BY THIS METHOD IS, FOR DIFFERENT CANDIDA SPECIES, 1268-4792 MU G-G. THE LEVEL OF I DEPENDING PRIMARILY ON THE NATURE OF THE NUTRIENTS SUPPLIED. FACILITY: ALL UNION RES. INST. PROTEIN BIOSYN., USSR.

USSR

UDC 547.118

NIFANT'YEV, E. Ye., KOROTEYEV, M. P., and RABOVSKAYA, N. S.

"Arbuzov Reaction With Carbohydrate Phosphites and Amidophosphites as a Method of Synthesizing Halodesoxysugars"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 8, Aug 73, pp 1806-1811

Abstract: Arbuzov reaction with carbohydrate phosphites and amidophosphites was applied to the synthesis of halodesoxysugars. Sugar phenylenephosphites are not suitable for the synthesis of halodesoxysugars because of the low electron density at the phosphorus atom. Replacement of an oxygen atom in the starting phosphite by nitrogen changes drastically the reactivity of the molecule; the temperature required for the alkylation drops by about 15°, the duration of the reaction being cut in half. The best model compounds for this reaction are sugar tetraalkyldiamidophosphites. In spite of the fact that stable quasiphosphonium salts can be obtained when, under normal conditions, the reaction is stopped at the first stage of Arbuzov rearrangement, when heated, the process goes to completion, giving satisfactory yields of the final products.

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USSR

JULY 1971

NOROSYEV, N. F. and NEFENKIN, L. YE.; Moscow State University and  
M. V. Lomonosov

"Reaction of Neutral Phosphites and Aridophosphites of Carbohydrates with the  
Diethyl Acetoacrylate"

Leningrad, Zhurnal Obshchey Khimii, Vol. XLII, No. 11, Nov 1971, pp 2237-2239

Abstract: These reactions were studied in connection with specific epimerization of sugars. The reactions of 11 different compounds were studied, with the following conclusions: 1) In the reaction of the 1,2:3,4-diisopropylidene- $\alpha$ -D-galactopyranose with the ethyl acetoacrylate, there was formal amidophosphorylation of galactose, with result distinguishing the amidophosphites of galactose from the amidophosphites of glucose; 2) a phosphorane is formed in the reaction of acetylphosphite with 1,2:3,4-diisopropylidene- $\alpha$ -D-galactopyranose with mesomeric ester; and 3) the phosphite amidophosphites of 1,2:3,4-diisopropylidene- $\alpha$ -D-galactopyranose can be used in addition, the authors suggest a new, convenient method synthesizing the diethylamide of O-aminophosphorous acid.

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USSR

UDC 911.3:616.9-022.39(477)

KOROTICH, A. S.

"The Problem of Zoonotic Infections in the Ukrainian SSR and Prospects for Their Extermination"

V sb. Materialy XV Vses. svezda epidemiologov, mikrobiologov i infektsionistov, Tezisy Dokl. Ch. 1 (Proceedings of the 15th All Union Conference of Epidemiologists, Microbiologists, and Infectious Disease Specialists, Theses Reports, Part 1 -- collection of works), Moscow, 1970, pp 95-98 (from RZh-Meditsinskaya Geografiya, No 3, Mar 71, Abstract No 3.36.69)

Translation: At present special attention is paid in the Ukrainian SSR to the prophylaxis of five zoonotic infections: brucellosis, rabies, anthrax, tularemia, and leptospirosis.

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USSR

MALINOV, L. S., SOKOLOV, K. N., KOROTICH, I. K. and ZANNES, A. N.

"Influence of Alloying Elements and Heat Treatment on Hardening of Low-Nickel Martensite-Aging Steel"

Dnepropetrovsk, Metallurgicheskaya i Gornorudnaya Promyshlennost', No 6, Nov-Dec 73, pp 24-26

Abstract: The study of low-nickel martensite-aging steels performed showed that they are a promising structural material with a good combination of mechanical properties. The best properties are those of steels types GOKh2N5MFYu and GOKh2N5AFDYu. The nature of hardening in the steels studied is similar to the hardening of high-nickel martensite-aging steels. It results from dispersion hardening of the carbon-free martensite. Softening of the steels is related to loss of the coherent bonding between intermetallides and the martensite matrix, coagulation of intermetallides and the processes of polygonization and recrystallization of the matrix.

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UDC 669.141.241-412:658.562

USSR

OSTROUSHKO, A. V., KAZACHKOV, Ye. A., KOROTICH, I. K., KULIK, V. A., and  
YEVYUTOV, V. P., Zhdanov Metallurgical Institute; Plant imeni Il'ich

"Improving the Surface of Heavy Plate Ingots"

Moscow, Metallurg, No 1, Jan 71, pp 23-25

Abstract: Use was made of production data on 1825 melts of carbon and low-alloy steels to study the effect of technological parameters of metal pouring on the surface quality of heavy plates produced from ingots of low-alloy steel. The processing of these data failed to establish a link between the technological parameters and the extent of the defect (double skin) on the plates. It was found that double skin is caused primarily by the oxidation of metal splashes adhering (in the process of pouring) to the inner surface of the corrugated faces of the ingot molds; the secondary cause of double skin formation are subcutaneous blowholes which are close to the surface of the ingot. The use of a graphite sulfite cellulose suspension for lubricating the ingot mold and simultaneous increase in the pouring rate make it possible to reduce the number of double-skin rejects on plates.

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I/2 007 UNCLASSIFIED PROCESSING DATE--11SEP70.  
TITLE--UNIFORMITY OF A SINTER CHARGE -U-  
AUTHOR--KOROTICH, V.I., BUTIVCHENKO, V.N., KOMORNIKOV, G.I., STARIKOV,  
M.A.  
COUNTRY OF INFO--USSR  
SOURCE--STAL' 1970, 30(1), 1-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--SINTER, IRON ORE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1987/0143 STEP NO--UR/0133/79/030/001/0001/0007  
CIRC ACCESSION NO--AP0103822  
UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103822

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM THE MACRONON UNIFORMITY STANDPOINT, AN IDEALLY MIXED SINTERING CHARGE CAN BE CONCEIVED AS A NO. OF ADJOINING ELEMENTARY CELLS, FOR EXAMPLE CUBES, THE EDGE OF WHICH IS EQUAL TO THE DISTANCE L BETWEEN NEIGHBORING SIMILAR PARTICLES HAVING DIAM. A. THIS DISTANCE IS GIVEN AS L EQUALS  $A/P \times 10^{PRIME7-GAMMA}$  AF)PRIMEONE HALF WHERE P IS D., GAMMA IS CHARGE D., A IS THE PERCENTAGE OF A GIVEN COMPONENT, AND F IS THE PERCENTAGE OF A GIVEN FRACTION OF THE COMPONENT. THIS DISTANCE VARIES LARGELY AS A FUNCTION OF PARTICLE SIZE, THUS DEFINING THE CELL REQUIRED FOR THEORETICAL NONUNIFORMITY, WHICH IS NONUNIFORMITY IN THE CASE OF IDEALLY UNIFORM DISTRIBUTION OF SEP. PARTS IN A VOL. OF CHARGE. EXAMPLES OF DIMENSIONS OF THESE CELLS FOR DIFFERENT SIZES OF VARIOUS MATERIALS OF A SINTERING CHARGE ARE GIVEN. ACTUALLY THEY HAVE TO BE MARKEDLY INCREASED, ON ACCOUNT OF INADEQUATE MIXING, TO PROVIDE SUFFICIENT SAMPLES. THE NO. OF SAMPLES OF THIS SIZE NEEDED TO PROVIDE THE AV. COMPN. DECREASES WITH THEIR LARGE VOL.; FOR THE CONDITIONS DESCRIBED, 30-50-CM PRIME3 SAMPLES ARE SUFFICIENT. MACRONONUNIFORMITY IS A FUNCTION OF MIXING, WHICH REDUCES IT WITHOUT ELIMINATING IT.

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USSR

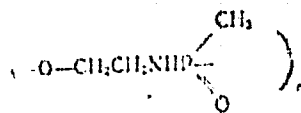
UDC: 547.26\*118.07

KHARIE, Ya. A., ZAVLIN, P. M., SEVANS, A. S., ANDRUSOV, V. P., ZAMORA, V. A.,  
KOROTKAYA, L. I., Leningrad Institute of the Textile Industry and Light Industry  
imeni S. M. Kirov

"A Method of Producing Polyphosphonates"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzy, Izobremeniya, No 26,  
1970, Soviet Patent No 276692, Class 12, filed 23 May 69, p. 24

Abstract: This Author's Certificate introduces: 1. A method of producing poly-  
phosphonates of the formula



1. As a distinguishing feature of the patent, diethylphosphonate of  
phosphonic acid is interacted with ethandiamine in the presence of heat with  
subsequent isolation of the goal product by conventional methods. 2. A modification  
of the process is distinguished by the fact that the process is carried out at a tem-  
perature of 100-120°C.

172 020 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--SYNTHESIS OF RESINS BASED ON SULFANILAMIDE AND VARIOUS ALDEHYDES  
-J-  
AUTHOR--(04)-KOROTKAYA, L.I., KHARIT, YA.A., SHVARTS, A.S., MELNIKOVA,  
YE.P.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. LEGK. PROM. 1970, (1), 59-63  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--SULFANILAMIDE, FURFURAL, ALDEHYDE, SCHIFF BASE, RESIN,  
ACRYLATE, ADHESIVE, THERMAL SHOCK  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/1106 STEP NO--UR/0323/70/000/001/0059/0063  
CIRC ACCESSION NO--AT0134792  
UNCLASSIFIED

272 020 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AT0134792  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ARYLSULFANILAMIDE RESINS WERE  
SYNTHESIZED FROM SULFANILAMIDE, FURFURAL, AND PARALDEHYDE VIA THE  
INTERMEDIATE SCHIFF BASES. RESINS OBTAINED BY THIS METHOD DEMONSTRATED  
BETTER THERMAL SHOCK RESISTANCE THAN THOSE OBTAINED BY THE DIRECT  
CONDENSATION OF SULFANILAMIDE AND FURFURAL OR PARALDEHYDE. SOLNS. OF  
THESE RESINS IN NH SUB4 OH WERE COMPATIBLE WITH ACRYLIC EMULSIONS,  
SUGGESTING APPLICATIONS AS COMPONENTS IN ACRYLIC COATINGS AND ADHESIVES  
OF INCREASED THERMAL SHOCK RESISTANCE. FACILITY: LENINGRAD,  
INST. TEKST. LEK. PRG. IM. KIROVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 012

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TITLE--MODIFIED P TOLUENESULFONAMIDE, FORMALDEHYDE RESINS -U-

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ABSTRACT. HCHO RESINS ARE PREPD. BY  
COPOLYCONDENSATION OF HYDROXYMETHYL DERIVS. OF P-TOLUENESULFONAMIDE,  
HCHO, AND A MODIFIER, SUCH AS CYCLOHEXANONE OR M-SULFAMOYL BENZOIC ACID  
(1).

FACILITY: INSTITUTE OF HIGH MOLECULAR WEIGHT COMPOUNDS,  
ACADEMY OF SCIENCES, U.S.S.R.

UNCLASSIFIED



Therapy

USSR

UDC 615.849.19.015:616-091

KHROMOV, B. M., KOROTKEVICH, N. S., OKSOVA, Ye. Ye., KRILOV, K. I.,  
PROKOPENKO, V. T., and BOGDANOV, M. P., Leningrad Institute of Postgraduate  
Medicine imeni S. M. Kirov, Leningrad Institute of Precision Optics and  
Mechanics, and Institute of Psychoneurology imeni V. M. Bekhterev

"Organ Changes Following Experimental Resection With a Laser Beam"

Moscow, Eksperimental'naya Khirurgiya i Anestaziologiya, No 2, 1973, pp 45-48

Abstract: The liver, spleen, and kidneys of rats were resected with a laser beam (energy density 10 to 18 J/cm<sup>2</sup>). Immediately after the operation, a linear area of coagulated tissue could be seen on the surface of the organs. Histologic examination from 1 to 33 days after the operation revealed several distinct zones of altered tissues in the 3 operated organs. Under a surface zone of coagulated tissue was a zone of necrosis and then a zone of reactive changes. Still deeper was normal tissue with solitary hemorrhages. A leukocyte reaction became apparent on day 3. Edema and hemorrhages were most pronounced in the spleen. Connective-tissue fibers began to proliferate in the necrotic zone of the spleen on day 3 after the operation and in the liver and kidneys on day 7. The amount of connective tissue gradually increased and formed a scar.

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USSR

UDC 621.985:980.145.6:57

KHROMOV, B.M., KRYLOV, A.I., KOROZHEVICH, N.S., ORSOVA, M.YE., PROKOPENKO, Y.T.,  
BOGDANOV, M.P.

"Test Of The Use Of A Laser During Surgical Operations (Experimental Studies)"

[Nauch.tr.] Leningr. in-ta usoversh. vreshny im. S.M. Kirova ([Scientific Works]  
Leningrad Institute For The Improvement Of Doctors Imeni S.M. Kirov), 1971, Issue  
97, pp 64-67 (from REB--Radiotekhnika, No 9, Sept 1971, abstract No 98509)

Translation: The paper describes the use of a laser for dissection of soft tissues and organs of animals with the aid of a laser at the Department [of] of Operational Surgery of the Leningrad Institute For The Improvement Of Doctors. The continuous operation CO<sub>2</sub> laser with a power up to 20 watts had a 3.5 mm wide beam. The depth of the cut amounted to 18 mm (liver of a dog). Cutting off parts of the organs took place unscathed; the surface of the cut was dry and of a chestnut brown color with longitudinal stripes proceeding into the interior. Coagulated tissue is disposed on the line of the cut and in the adjoining tissues necrotic and necrobiotic changes develop with subsequent replacement of their connecting tissues and formation of a scar. 1 ill. 1 tab. V.I.

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USSR

UDC 577.391

KOROTKIKH, I. M., and TARASOV, V. A., Institute of General Genetics, Academy of Sciences USSR, Moscow

"The Cytogenetic Effect Produced by the Combined Action of X-Rays and thioTEPA on Human Embryo Cells Cultivated in Vitro"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 528-536

Abstract: A cell culture of fibroblasts of human embryo was irradiated with x-rays in a dose of 50 r and then subjected to the action of thioTEPA in concentrations of  $3 \times 10^{-5}$ ,  $1 \times 10^{-4}$ , and  $3 \times 10^{-4}$  M. Chromosome aberrations in the anaphase and early telophase stages of mitosis were counted. The combined action of the x-rays and the chemical mutagen in all of the concentrations used resulted in a cytogenetic effect greater than that corresponding to enhancement of the actions of x-rays and thioTEPA applied separately. The maximum increase above the effect corresponding to enhancement was observed in early periods after the combined action.

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USSR

UDC: 539.374

KOROTKIKH, Yu. G., SADYRIN, A. I.

"Thermal Shock in Elastoplastic Shells"

Uch. zap. Gor'kov. un-t (Scientific Notes. Gor'kiy University), 1971, vyp. 142, pp 51-58 (from RZh-Mekhanika, No 5, May 72, Abstract No 5V401)

Translation: The authors study wave processes which take place during heat shock in an elastoplastic reinforced material with regard to the temperature dependence of the mechanical characteristics of the material. It is assumed that the given material may be described by the Kadashevich-Novozhilov-Palley plasticity theory with translational reinforcement. In this regard, the moduli, yield stress and coefficient of linear expansion are assumed to be functions of temperature. The equations of motion are integrated by successive calculations for small time steps. For this purpose the defining equations are presented in finite-difference form on a space-time Lagrange grid. AMG-3 aluminum alloy is chosen as the research material. The authors consider problems on rapid heating of the thin inner layer ( $\delta = 0.2$  mm) of a shell with rise in heating temperature to  $700^{\circ}$  C in  $t = 0.5$   $\mu$ s, and on heating of centrally symmetric spherical shells uniformly with respect to thickness.

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KOROTKIKH, Yu. G., SADYRIN, A. I., Uch. zap. Gor'kov. un-t, 1971, vyp. 142,  
pp 51-58

In analyzing the solutions, an investigation was made into the processes of development in time of plastic deformations in different points of the shell which were found to be cyclic in nature; this is attributed to the interaction of waves of rarefaction and compression. Yu. V. Suvanova.

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USSR

UDC: 539.374

KOROTKIKH, Yu. G.

"Mathematical Model of an Elastoplastic Medium Developed on the Basis of the Concept of Kinematic and Isotropic Reinforcement, and Realization of This Model in Static and Dynamic Problems"

Tr. 2-y Vses. konf. po chisl. metodam resheniya zadach teorii uprugosti i plastichnosti, 1971 (Works of the Second All-Union Conference on Numerical Methods of Solving Problems in the Theory of Elasticity and Plasticity), Novosibirsk, 1971, pp 156-169 (from RZh-Mekhanika, No 7, Jul 72, Abstract No 7V420)

Translation: A survey is given of some existing models of deformation of elastoplastic bodies, principally under dynamic conditions. A model of an elastoplastic body is described in which the body is assumed to be elastically compressible, elastic deformations follow a generalized Hooke law, and the increments in the tensor of residual microstresses  $\Delta\rho_{ij}$  and in the tensor of plastic deformations  $\Delta\epsilon''_{ij}$  are related by the expression  $\Delta\rho_{ij} = g\Delta\epsilon''_{ij} + \theta\rho_{ij}$ , where  $g$  is some scalar function of invariants of the tensors of microstresses and deformations, absolute tem-

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USSR

KOROTKIKH, Yu. G., Tr. 2-y Vses. konf. po chisl. metodam resheniya zadach teorii uprugosti i plastichnosti, 1971, Novosibirsk, 1971, pp 156-169

perature, the reinforcement parameter and hydrostatic pressure,  $\theta$  is a function of the same arguments which depends on the course of the recrystallization process. The relations between the assumed expression and Prager's reinforcement law are discussed. For the solution of boundary value problems the author proposes using a mixed variational principle in conjunction with some principle of discretization, such as the method of finite elements or the method of natural approximation of derivatives. A number of numerical examples of solution of static and dynamic problems are considered on the basis of the described law of deformation. Among the problems considered are a doubly connected plate in the plane stressed state with a circular hole stretched by a uniform load, a thick aluminum spherical shell in which a square pulse induces stress waves, and also the problem of waves of stresses and plastic deformations caused by a source of internal energy moving at a velocity equal to half the speed of sound. The effect of the strain rate is evaluated on graphs. Bibliography of 33 titles. M. I. Reytman.

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• LSSR •

UDC 539.374

KOROTKIKH, YU. G., RUZANOV, A. I.

"Study of the Reaction of a Spherical Shell to Force and Thermal Shock"

Uch. zap. Gor'kov. un-t (Scientific Notes, Gor'kiy University), 1971, No. 134, pp 91-102 (from RZh-Mekhanika, No 3, Mar 72, Abstract No SV562)

Translation: Processes occurring in a spherical aluminum shell under a force impulse and thermal effects are investigated. An impulse external load of triangular shape distributed over the generatrix according to a cosine law is applied to the shell. The phenomenon of dynamic splitting off under the reflection of the compression shock wave from the inner surface was studied for this form of load. The potential strain energy of distortion was applied as a strength criterion. Two possible types of breakdown are indicated by the authors: splitting off caused by strong tensile stresses and a shift in the plane of maximum tangential stresses with subsequent plastic deformation. The direction of the crack arising for the first type of breakdown is determined and the behavior of the material with the crack is described in detail. Graphs are given showing the change in stresses in the meridional cross section in terms of angle and time. Next investigated was the stress-deformation state of a spherical shell caused by the action of a thermal shock

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USSR

KOROTKIKH, YU. G., RUZANOV, A. I., Uch. zap. Gor'kov. un-t, 1971, No. 134,  
pp 91-102

$$T = (T_0 + T_1 \cos \varphi) \left( 1 - e^{-\frac{t}{T_c k}} \right)$$

where  $T_0$  and  $T_1$  are constants,  $t$  is the time in  $\mu$ /sec,  $T_c$  is the period of the natural frequencies of the shell;  $k$  is a constant characterizing the rates of heating;  $\varphi$  is the angular coordinate. The elastic-plastic model of the material was used for the calculations. The mechanical properties are shown graphically as functions of temperature. The distribution of stresses and plastic deformations in the cross sections  $\varphi = 0$  and  $\varphi = \pi/2$  is shown. The change in stresses and plastic deformations under rapid heating without a temperature drop over the thickness is of a clearly cyclic nature. 7 ref. A. V. Borodin.

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USSR

UDC 539.3

UGODCHIKOV, A. G., KOROTKIKH, Yu. G.

"Some Methods of Solving Physically Nonlinear Problems From the Theory of Plates and Shells by Digital Computer"

Nekotorye Metody Resheniya na ETSVM Fizicheski Nelineynykh Zadach Teorii Plastin i Obolochek [English Version Above], Naukova Dumka Press, Kiev, 1971, 219 pages.

Translation of Annotation: Several methods for numerical solution of physically nonlinear problems for plates, thin slabs, and shells by digital computer are presented, allowing the heterogeneity and anisotropy of the material, creep on the basis of the theory of aging, the influence of temperature and radiation effects and changes in mechanical properties during cyclical loading to be considered.

General algorithms are presented for the solution of physically nonlinear problems, and the principles of automation of the computational process are described from the composition of finite difference operators to determination of fields of stresses and deformations, zones of plasticity, etc.

The book is designed for scientific workers and engineers working in the area of investigation of the stress and deformation state of structural elements (plates, slabs, and shells). It can also be used as a text for students

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USSR  
UGODCHIKOV, A. G., KOROTKIKH, Yu. G., Nekotorye Metody Resheniya na ETSYM  
Fizicheski Nelineynykh Zadach Teorii Plastin i Obolochok, Naukova Dumka Press,  
Kiev, 1971, 219 pages.

and graduate students of the corresponding specialties in universities and  
higher technical schools.

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USSR

UGODCHIKOV, A. G., KOROTKIKH, Yu. G., Nekotorye Metody Resheniya na ETSVM  
Fizicheski Nelineynykh Zadach Teorii Plastin i Obolochek, Naukova Dumka Press,  
Kiev, 1971, 219 pages.

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