

USSR

NIKOLAYEV, K. G.

"Application of Discrete Methods in the Search for Solutions to Problems of Automatic Planning"

Ekon.-mat. Metody i Programmir. Plan-ekon. Zadach. [Mathematical Economic Methods and Programming of Planning and Economic Problems -- Collection of Works], Moscow, 1972, pp 239-247 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V718 by Yu. Finkel'shetyn).

Translation: Following the work of Mitten [RZhMat, 1970, 9V404], and also using some materials from a monograph by A. A. Korbut and the abstractor (RZhMat, 1969, 12V435K), the author presents a general plan of branches and bounds type for solution of an extremal problem in a finite set. It is indicated that this type of problem is frequently encountered in planning and control. Some statements of the author are debatable, for example his affirmation that in solving problems of integer linear programming by the method of branches and bounds, the method of calculation of boundaries used is always effective, or his statement that it is possible to find a permissible solution in a rather general case comparatively easily.

1/1

USSR

UDC 541.183

DUBININ, M. M., NIKOLAYEV, K. M., POLYAKOV, N. S., and PETROVA, L. I.,
Institute of Physical Chemistry, Academy of Sciences USSR

"Study of Adsorption Dynamics in a Wide Range of Penetration Concentrations.
2. Examination of the General Picture of the Adsorption Dynamics Process"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 72, pp
1265-1269

Abstract: The article examines the general picture of the dynamics of benzene vapor adsorption in a wide range of penetration concentrations (from 10^{-5} mg/l to initial concentration) and with varying adsorbent layer lengths (from one grain to 16 cm). It was found that the adsorption process taking place in a layer can be conditionally divided into three stages in the movement of the concentration front over the layer. The first (initial) stage is characterized by the practically instantaneous distribution of concentrations over the length of the layer, resulting in the penetration of the vapor a certain layer length. The second (and longer) stage includes the movement of the concentration front over the layer at various velocities which are characteristic of each concentration and which change during the process. This stage is characterized by non-stationarity of the process, which tends in the limit to a stationary regime (i.e., the third stage).

1/1

USSR

UDC 541.183

ZOLOTAREV, P. P., DUBININ, M. M., NIKOLAYEV, K. M., POLYAKOV, N. S., and
RADUSHKEVICH, L. V., Institute of Physical Chemistry, Acad. Sc. USSR

"Study of the Adsorption Dynamics in a Wide Range of Concentrations.
3 Communication. Fundamentals of the Theory of the Process"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72,
pp 1484-1489

Abstract: In previous papers the general picture of the adsorption dynamics of a series of compounds on active carbon was analyzed. This study is devoted to theoretical considerations. To make the analysis possible, the process has been broken down into three stages: the first stage with instantaneous distribution of the concentrations along the layer; the second -- with various concentrations being shifted at different rates, changing during the process; and the third in which the entire adsorption wave is shifted at a practically constant rate. Mathematical expressions have been derived for the distribution of concentrations along the layer of adsorbent grains for short times with consideration of the effect of longitudinal diffusion. A method has been proposed for the determination of the coefficient of internal mass exchange from the known coefficient of longitudinal diffusion and distribution

1/2

USSR

ZOLOTAREV, P. P., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 72, pp 1484-1489

of passage concentrations along the layer. A formula was derived describing the initial portion (area of low concentrations) of the output curves under conditions of stationary front. This curve appears to be a straight line in coordinates: logarithm of relative concentration -- time.

2/2

- 4 -

1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--EQUILIBRIUM ADSORPTION OF VAPORS FROM SUBSTANCES WITH RELATIVELY
LARGE MOLECULES. I. METHODS FOR DETERMINING ISOTHERMS OF ADSORPTION OF
AUTHOR--(04)-NIKOLAYEV, K.M., DUBININ, M.M., POLYAKOV, N.S., SEREGINA, N.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (4), 761-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GAS ADSORPTION, ISOTHERM, DECANE, BENZENE, ACTIVATED CARBON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3008/0993

STEP NO--UR/0062/70/000/004/0761/0767

CIRC ACCESSION NO--AP0138021

UNCLASSIFIED

2/2 013
CIRC ACCESSION NO--AP0138021

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADSORPTION ISOTHERMS WERE REPORTED FOR DECANE, C SUB6 H SUB6 AND ME SUB3 CPH ON ACTIVATED C SPECIMENS FROM ROOM TEMP. TO MINUS 195DEGREES. THE WT. DETG. APP. FOR SUCH DETN. IS DESCRIBED IN DETAIL. THE RELATIVELY POORLY VOLATILE SUBSTANCES IN SUCH ADSORPTION TEND TO DISPLACE FROM THE UNHEATED APP. WALLS ANY FOREIGN MATERIALS THAT HAD BEEN PREVIOUSLY ADSORBED THERE AND AS A RESULT, THE ASCENDING AND THE DESCENDING BRANCHES OF THEIR ISOTHERMS ARE NOT COINCIDENT, UNDER SUCH CONDITIONS. FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

USSR

N UDC: 541.183

DUBININ, M. M., NIKOLAYEV, K. M., POLYAKOV, N. S., and SEREGINA, N. I., Institute of Physical Chemistry, Moscow, Academy of Sciences USSR

"Study of Equilibrium Vapor Adsorption of Substances with Relatively Large Molecules
Communication I. Methods for Determination of Isotherms of Vapor Adsorption of Substances with High Boiling Points"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, Vol 4, Apr 1970, pp 761-767

Abstract: An apparatus and methodology for determination of the adsorption and desorption isotherms of nonvolatile vapors at normal temperatures is described. The method consists of evacuation of the adsorbent used at 350-400° for 5-6 hours, cooling to room temperature followed by "washing" of the system with vapors of the material to be adsorbed, to remove from the system gaseous impurities which are adsorbed to a lesser degree. Then the adsorbent is again evacuated as before, until the original weight is obtained. In such a system the adsorption isotherms show an identical adsorption and desorption course.

1/1

NIKOLAYEV, M. I.

SPMS 59208
6-73

XI-6b. BEHAVIOR OF ALLOYING ADMIXTURES IN THE PRESENCE OF LIQUID EPITAXY OF GALLIUM ARSENIDE IN CONNECTION WITH THE DIAGRAMS OF STATE OF THE TERNARY SYSTEMS Ga-As-ADMIXTURE

Article by O. V. Pelevin, M. G. Mi'vidskiy, B. G. Grich, M. I. Nikolayev, Moscow; Novosibirsk, III Simpozium po Protezhanu Bostia i Sluzhba Poluzovodnykh Khranilov i Pismak, Kuznetsov, 12-17 June 1973, p. 1523

A study was made of the diagrams of state of the ternary systems of gallium arsenide and admixtures. The standard alloying elements were selected as the admixtures — tin-donor, germanium-acceptor and iron-deep acceptor. In the investigated systems, within the framework of the quasi-chemical representations of the theory of solutions, the liquidus isotherms were calculated in the region of primary crystallization of gallium arsenide.

The characteristic features of the behavior of the alloying admixtures are discussed in connection with triangulation of the diagrams of state of the corresponding systems.

The alloyed epitaxial films of gallium arsenide were grown from liquid solutions the compositions of which corresponded to the liquidus isotherms.

The study of the epitaxial layers by methods of radioactive indicators and Hall measurements permitted investigation of the nature of the isothermal cross sections of the solidus surface in the region of primary crystallization of gallium arsenide.

USSR

~~NIKOLAYEV, M. N.~~, et al.

"Calculation of Neutron Propagation Taking Into Account the Resonance Structure of Cross Sections"

Moscow, Atomnaya Energiya, July 1973, pp 29-32

Abstract: In this article results of numerical calculations of neutron propagation through a shielding slab, taking into account the resonance structure of cross-sections by the subgroup method, are described. Model examples to the $2D_N$ -approximation indicate that by means of subgroup cross-sections one can significantly improve the calculation accuracy of the spacial distribution of mean-group neutron fluxes as compared with the conventional multi-group method of calculating cross-sections. Subgroup constants provide "spatial shielding" of the total neutron cross-section. An example of the calculation for an iron slab by the subgroup method -- and, for comparison, by the group method -- is presented. (5 figures, 6 references.)

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- 87 -

1/2 010
TITLE--BEFORE THE START -U-

UNCLASSIFIED

PROCESSING DATE--02OCT70

AUTHOR--NIKOLAYEV, N.

COUNTRY OF INFO--USSR

N

SOURCE--VYSHKA, JULY 2, 1970, COLS 3-7

DATE PUBLISHED--02JUL70

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

TOPIC TAGS--SHIPBUILDING ENGINEERING, INDUSTRIAL FACILITY, SHIPYARD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1995

STEP NO--UR/9059/70/000/000/0001/0001

CIRC ACCESSION NO--AN0109927

UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--ANO109927

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PLANT IMENI PARIS COMMUNE, ONE OF THE OLDEST PLANTS OF BAKU, HAS BEEN KNOWN AS A SHIP REPAIR PLANT. HOWEVER, THE LAUNCHING OF A 33 METER CUTTER, THE FIRST OF A TEN CUTTER SERIES, HAS STARTED ITS SHIPBUILDING CAREER. THE 300 HP CUTTER, CAPABLE OF DOING 15 KNOTS, IS OFFICIALLY KNOWN AS "THE FIRST CUTTER OF THE PROJECT 1430", AND WILL BE USED AT NORTH CAUCASIAN RESORTS. THE CUTTER WAS DESIGNED BY ODESSA DESIGNERS HEADED BY V. GARKUNOV.

UNCLASSIFIED

USSR

UDC 541.183.12

TUNITSKII, N. N.; KALININA, M. D., POPKOV, YU. M., NIKOLAYEV, N. I.,
Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov,
Moscow, State Committee for Chemistry

"Ion-Exchange Kinetics on Ion-Exchange Resins in Solutions of
Medium Concentrations"

Moscow, Doklady Akademii Nauk SSSR, Vol 193, No 3, 21 Jul 70,
submitted 6 Jan 70, pp 649-652

Abstract: A simple equation is introduced for the mean desorption
time and experiments are described, on the basis of which the de-
pendence of the diffusion coefficients of ions in a cationic ion-
exchange resin on the concentration of the solution can be cal-
culated. The steady flow method was used for calculation of the
mean desorption time. The calculations were tested in an experi-
ment of self-diffusion of sodium and copper ions on a cation-
exchange resin of 0.6 mm particle diameter in the swollen state.
It was found that the self-diffusion coefficients of Na^+ and Cu^+
increase with increasing concentration of the surrounding solution.
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- 25 -

UDC 532.7

USSR

NIKOLAYEV, N. I., KALININA, M. D., and CHUVILEVA, G. G., Scientific Research
Physico-Chemical Institute imeni L. Ya. Karpov, Moscow

"Effect of the Concentration of the External Electrolyte Solution on the
Diffusion of Counter Ions within Cationites"

Moscow, Zhurnal Fizicheskoy Khimii, Vol XLIV, No 12, Dec 70, pp 3110-3114

Abstract: Current attempts to explain observed variations in the mobility
of ions in ionites by the sinuosity of the ion diffusion route alone are
adequate in the case of the self-diffusion of water, the diffusion of an
inert substance, or even the diffusion of co-ions; however, this approach
will not explain the sharp shift in diffusion coefficients within the
ionite phase of an external electrolyte.

The authors determined systematically the diffusion coefficients in the
cation KU-2, with varying content of divinylbenzene, during the exchange
of copper ions with hydrogen and sodium ions.

1/2

- 19 -

USSR

NIKOLAYEV, N. I., et al., Zhurnal Fizicheskoy Khimii, Vol XLIV, No 12,
Dec 70, pp 3110-3114

It was found that the interdiffusion coefficients rise as the concentration of the external equilibrium solution increases. This is explained on the basis of a model of a friable quasi-crystal. Graphs are included to illustrate the experimental data.

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1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SEPARATION OF LIQUID ORGANIC MIXTURES IN THERMAL DIFFUSION COLUMNS
-U-
AUTHOR--(03)-NIKOLAYEV, B.I., NIKOLAYEV, N.I., TUBIN, A.A.
COUNTRY OF INFO--USSR
SOURCE--TEOR. OSN. KHIM. TEKHNOL. 1970, 4(3), 432-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HYDROCARBON SEPARATION, THERMAL DIFFUSION SEPARATION,
CHLOROBENZENE, HEXANE, HEPTANE, CARBON TETRACHLORIDE, CYCLOHEXANE,
TOLUENE, XYLENE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605012/F08 STEP NO--UR/0455/70/004/003/0432/0435
CIRC ACCESSION NO--AP0140340

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140340

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LIQ. ORG. MIXTS. WERE SEPD. IN THE 2 DIFFERENT THERMAL DIFFUSION COLUMNS EACH CONSISTING OF 2 COAXIAL TUBULAR CYLINDERS OF DIFFERENT DIAMS. AND LENGTHS: PHCL,N,HEXANE, PHCL,N,HEPTANE, PHCL,N,OCTANE, PHCL,N,DODECANE (COLUMN 1), CCL SUB4,N,HEXANE, CYCLOHEXANE,N, HEXANE, C SUB6 H SUB6,N,HEXANE, PHME,N,HEXANE, O,XYLENE,N,HEXANE (COLUMN 2). THE EFFICIENCY OF SEPN. IS DETD. BY THE DIFFERENCE IN STRUCTURES OF MOL. OF MIXT. COMPONENTS. IF THERE IS NO DIFFERENCE, THE EFFICIENCY OF SEPN. DEPENDS ON THE DIFFERENCES OF MOL. WTS., B.P., AND OTHER PHYS. PROPERTIES OF MIXT. COMPONENTS. FACILITY: NAUCH.-ISSLED. FIZ.-KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

PROCESSING DATE--23OCT70

UNCLASSIFIED

1/2 030

TITLE--KINETICS OF THE ABSORPTION OF OXYGEN DISSOLVED IN WATER BY REDOX

ANION EXCHANGER -U-

AUTHOR--(02)-POPKOV, YU.M., NIKOLAYEV, N.I.

COUNTRY OF INFO--USSR

N

SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 261-2

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--REDOX REACTION, ANION EXCHANGE RESIN, GAS DIFFUSION, GAS ABSORPTION, OXYGEN, CHEMICAL KINETICS, CHEMICAL REACTION RATE, SULFITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1253

STEP NO--UR/0076/70/044/001/0261/0262

CIRC ACCESSION NO--AP0116725

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116725

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REDOX ANION EXCHANGER IN ITS SULFITE FORM WAS USED TO FOLLOW THE KINETICS OF SORPTION OF O₂ DISSOLVED IN H₂O. THE DIFFUSION OF O₂ INTO THE EXCHANGER IS NOT A RATE CONTROLLING STEP. THE RATE OF SORPTION OF O₂ IS DETD. BY THE RATE OF CHEM. REACTION ON THE SURFACE OF THE EXCHANGER AND BY THE RATE OF DIFFUSION OF O₂ THROUGH THE SOLN. ORG. ADDITIVES STRONGLY INHIBIT THE REACTION OF OXIDN. OF SULFITES BY THE MOL. O₂. WHEN A CATALYST IS ADDED, THEN THE SORPTION RATE IS DEPENDENT ONLY ON THE DIFFUSION THROUGH THE FILM OF LIQ. ENCLOSING EXCHANGER PARTICLES. FACILITY: NAUCH. ISSLED. FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

GRIGORYAN, G. V., NIKOLAYEV, N. N., and OKUN', L. B., Institute of Theoretical and Experimental Physics, State Committee on the Use of Atomic Energy

"Electromagnetic Interaction of Muon and $K_L \rightarrow 2\mu$ Decay"

Moscow, Yadernaya Fizika, Vol 15, No 5, May 72, pp 995-998

Abstract: Calculations of the lower bound for the probability of $K_L \rightarrow 2\mu$ decay usually assume that the amplitude of the $2\gamma \rightarrow 2\mu$ transition is described by quantum electrodynamics. It is this amplitude of two photons with $J^P = 0^-$ at a c.m.s. energy equal to the K meson mass which determines the imaginary part of the $K_L \rightarrow 2\gamma \rightarrow 2\mu$ amplitude. The article considers how justified the hypothesis concerning the validity of quantum electrodynamics is in this case and whether it can be discarded in order to explain the contradiction between experiment (A. E. CLARK, T. ELLIOTT, R. C. FIELD, et al.: $\Gamma(K_L \rightarrow 2\mu)/\Gamma_L < 1.8 \cdot 10^{-9}$) and theory (L. M. SENEGAL: $\Gamma(K_L \rightarrow 2\mu)/\Gamma_L > 5.6 \cdot 10^{-9}$). Five types of experimental data are discussed: viz., 1) $K_L \rightarrow 2\mu$

1/2

USSR

GRIGORYAN, G. V., et al., Yadernaya Fizika, Vol 15, No 5, May 72, pp 995-998

decay; 2) anomalous magnetic moment of muon; 3) mu pair photoproduction on nuclei; 4) formation of so-called "tridents": $\mu \rightarrow 3\mu$ transition in nuclear field; 5) $\eta \rightarrow 2\mu$ decay. Conclusion: Data on $g-2$ and mu pair photoproduction rule out the breakdown of muon electrodynamics as an explanation of the CLARK et al. experiment provided this breakdown does not fall in the narrow energy region near the K meson mass and does not decline rather quickly towards larger or smaller energies.

The authors thank V. N. GRIBOV, A. D. DOLGOV, V. I. ZAKHAROV, B. L. IOFFE, and I. YU. KOBZAREV for useful discussions.

2/2

- 42 -

1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ACUTE GASTRODUODENAL EROSIONS AND ULCERS -U-
AUTHOR--(03)-VASILENKO, V.KH., MATVEYEV, N.K., NIKOLAYEV, N.O.
COUNTRY OF INFO--USSR
SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 4, PP 33-40
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DIGESTIVE SYSTEM DISEASE, DUODENUM, LESION, PATHOGENESIS,
PROPHYLAXIS, DIAGNOSTIC MEDICINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0746 STEP NO--UR/0497/70/048/004/0033/0040
CIRC ACCESSION NO--AP0131341
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--20NDV70

CIRC ACCESSION NC--AP0131341

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS COMMIT TO PAPER LITERATURE DATA AND AN ANALYSIS OF THE CASE HISTORIES OF 264 PATIENTS WITH ACUTE GASTRODUODENAL EROSIONS AND ULCERS. SPECIAL ATTENTION IS DRAWN TO THE INCIDENCE, CAUSES OF DEVELOPMENT AND PATHOGENESIS OF ACUTE ULCERS, CLINICAL PICTURE AND DIAGNOSIS, AS WELL AS THE PROPHYLAXIS OF THESE SEVERE COMPLICATIONS. FACILITY: VSESOYUZNYY N-I INSTITUT GASTROENTEROLOGII MZ SSSR, MOSCOW.

UNCLASSIFIED

USSR

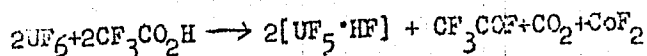
UDC 546.791.6-386

SADIKOVA, A. I., NIKOLAYEV, N. S., RASSKAZOVA, I. A., Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Moscow. USSR Academy of Sciences

"Reaction of Uranium Hexafluoride with Trifluoroacetic Acid"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 7, 1970, pp 2012-2013

Abstract: The study examines the behavior of uranium hexafluoride in trifluoroacetic acid. Experiments showed that initially the hexafluoride dissolves readily in the acid (15 gm UF₆ in 100 ml CF₃CO₂H), forming a weakly colored solution, but then, upon standing, green crystals of composition UF₅·HF are formed according to the following scheme:



After precipitation of crystals, reaction products and excess trifluoroacetic acid were removed from the reaction vessel by vacuum evacuation and collected in two traps at -72 and -196°C (temperature of liquid nitrogen). It was found that uranyl fluoride dissolves poorly in trifluoroacetic acid; its solubility at 20°C is less than 0.01 percent.

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- 86 -

USSR

NIKOLAYEV, O.

"On a Recovery From a Virus"

Moscow, Komsomol'skaya Pravda, 23 Nov 71, p 2

Translation: People talk about influenza on trolleys and buses, at plants and institutions, with a nervous smile and a sense of alarm.

Science can predict the date on which an epidemic will appear in one area or another. Not only can a prediction be made, but preparations can be carried out. Clinics, pharmacies, and sanitary epidemiological stations prepare for it, just like those who will be the first to encounter the epidemic -- polyclinic physicians.

The 151st Polyclinic of Tushinskiy Rayon in Moscow is an ordinary medical institution, of which there are hundreds. Let us open the doors of the polyclinic.

In the registration office there is a line of people with numbers. Patients sitting by the doors of the offices, waiting to be seen, are having ordinary conversations. It is an ordinary day and the circumstances are not unusual. An attentive glance, however, shows that on the wall there is a
1/4

USSR

NIKOLAYEV, O., Komsomol'skaya Pravda, 23 Nov 71, p 2

color bulletin and a multitude of brochures aimed at the mass reader -- they are all on the same subject, influenza. Except for this it seems that nothing points to a possible epidemic. Only in the office of Deputy Chief Physician Aza Vasil'yevna Sidorenko does it become clear that preparations are already under way. It should be noted that it will be more difficult for physicians of the 151st Polyclinic than for their colleagues from other therapeutic institutions. Why? The polyclinic must serve 55,000 persons. The staff and equipment were designed for this many people. In practice the polyclinic serves twice as many. Next to it Polyclinic No 126 is being built, which should assume half of the load. But it is being built rather slowly.

At present, during a "quiet" period, there is a very great load on section physicians at the 151st Polyclinic. During an outbreak of influenza this load will sharply increase. What is to be done? The mobility of physicians could be improved by assigning a motor vehicle to each, but this is unrealistic. A total of three motor vehicles have now been assigned to the polyclinic, of which just one serves section physicians directly. One vehicle per 30 physicians is too few. The other two cannot be used (one carries specialists, the other the duty physician). The motor pool sometimes sends only two of these three, and these are often late. The administration's

2/4

USSR

NIKOLAYEV, O., Komsomol'skaya Pravda, 23 Nov 71, p2

complaints are countered by the motor pool with one argument -- there are no spare parts. Still, through intensive efforts, the polyclinic is coping with its work. How will matters stand during an outbreak of influenza? Credit must be given to the Rayon Department of Public Health of Tushinskiy Rayon. During the previous influenza epidemic taxis were hired. This experience will be used this time as well.

The preparations for a possible epidemic which are unseen by patients, do not slow down for a moment. Over 2,000 inoculations have already been made, and negotiations are under way with the pharmacy that has an outlet at the polyclinic to insure that its work stops not at 1600, as is usually the case, but at 2000. It is much more convenient to purchase a needed medicine here, at the polyclinic, than to travel all over the city in search of it. As in previous years, students from medical higher educational institutions who will help section physicians are expected here. Nearly half of the polyclinic physicians, who by the nature of their activity conduct outpatient reception, will participate directly in treating patients at home. During the epidemic an office for the discharge of patients will be in operation.

"Of course, the optimal alternative is to treat each person suffering from flu at home," says Aza Vasil'yevna. "But after all, there are always 'heroes' 3/4

USSR

NIKOLAYEV, O., Komsomol'skaya Pravda, 23 Nov 71, p 2

who, despite high temperatures, consider calling a physician to their homes something shameful. Such thoughtless people harm not only themselves, but also those around them by spreading the infection. Of course, for all the tremendous explanatory work that is being done in the press and over the radio and television, there still are such people and we must deal with them. Therefore, at any given time there is a duty physician in the polyclinic who will render required aid. A unique headquarters -- a duty post where a representative of the administration or one of the department heads will be located -- has now been set up at the polyclinic. The goal of this post is immediately to grasp the nature of the situation that has taken shape and rapidly to make a decision. As practice has shown, a majority of patients are treated on an outpatient basis, but there may be cases in which immediate hospitalization or the assistance of a specialist will be required. Everything has been foreseen in these cases as well."

4/4

USSR

NIKOLAYEV, O.A., SEMENOV, Yu. V., and TARUSHKINA, L.T.

"Constructing a Stochastic Diagnostics Test of Digital Computers in the Process of Solving Linear Differential Equations"

Moscow, V sb. Tekhn. diagnostika (Technical Diagnostics -- collection of works) "Nauka," 1972, pp 261-264 (from RZh -- Matematika, No 8, 1972, Abstract No 8V631)

Translation: The authors examine a stochastic diagnostics method for digital computer devices in the process of diagnostics method for digital computer devices in the process of solving linear differential equations with the help of the introduction of additional random action with Gaussian distribution and known statistical characteristics. The diagnosis is conducted on the basis of the system reaction to a given stimulus. Authors' abstract

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USSR

UDC: 8.74

NIKOLAYEV, O. A., SEMENOV, Yu. V., TARUSHKINA, L. T.

"On Construction of a Stochastic Test for Diagnosis of Digital Computer Devices in the Process of Solving Linear Differential Equations"

V sb. Tekhn. diagnostika (Technical Diagnostics--collection of works), Moscow, "Nauka", 1972, pp 261-264 (from RZh-Kiber-netika, No 8, Aug 72, Abstract No 8V631)

Translation: The article deals with synthesis of a stochastic method of diagnosing digital computer devices in the process of solving linear differential equations by introducing an additional random action with Gaussian distribution and unknown statistical characteristics. The diagnosis is done on the basis of reaction of the system to the given action.
Authors' abstract.

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AA0040728

N

Nikolayev, O. B.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

242337 INGOT MOULD increases the thickness of the band or rim and makes it from steel with higher yield limit in order to prevent clearances forming between it and the mould body. The band is also crimped in order to prevent plastic strain occurring. In each mould the radius of the crimp of the band is selected so that $\Delta l_n = \Delta 16$, thus for any one material used for the band, there will be maximum pressure between it and its mould. As the mould is teemed, the band deforms simply by straightening out its crimps. The crimp gradually becomes less curved and there is a rise in the stress in the band, pressure between this and the mould also rising.

21.12.66 as 1120047/22-2. ABRAMOV, V.V. et al(2.9.69)
Bul 15/25.4.69. Class 31b². Int.Cl:B 22d.

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20

1/2

19750381

AA0040728

AUTHORS: Abramov, V. V.; Nikolayev, O. B.; Makarenko, A. K.; and
Simkov, A. I.

19750382

AA0044790

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243259 MEASURING, THE ADHESION OF PARTICLES to a prepared electrode by imposing a powerful electrical field is effective by loses accuracy if the exact breakaway point cannot be observed. The proposed design offers observation by making the electrode transparent. The diagram shows the upper transparent electrode 1 carrying a transparent conducting coating 2, on the lower surface of which are deposited the particles 12, of which the breakaway force is to be determined; these are distributed not less than 2-3 diameters apart. The lower electrode 6, in net form, is replaced, with ring 7, after inserting the particles,

AUTHORS: Myazdrikov, O. A.; Nikolayev, O. S.; Puzanov, V. N.;
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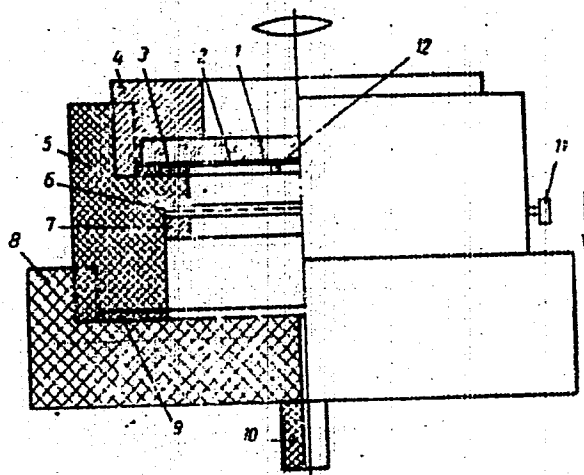
sealing cap 8 replaced and the cavity filled with some gas at required pressure via nipple 10. The assembly is then placed under the microscope and a high voltage applied between terminal 11 of 6, and 4. Under the microscope the largest particles are selected for observation and their mean diameter estimated. As the specification shows mathematically, the adhesion force is a function of the square of the breakaway voltage and, inversely, the particle mean radius. These functions are observed by microscope, hence the force can be calculated.

23.12.67 as 1205295/26-25 O.A.MYAZDRIKOV et al.
(LENINGRAD) AVIATION INSTRUMENTATION INST. (23.9.69)
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19771612

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1/2 028 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--THE SURGICAL TREATMENT OF DIFFUSE TOXIC GOITER -U-
AUTHOR--(02)-NIKOLAYEV, O.V., TITOV, V.N. N
COUNTRY OF INFO--USSR
SOURCE--KHIRURGIYA, 1970, NR 4, PP 121-127
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--GOITER, SURGERY, IODINE, ADRENAL CORTEX, THYROID GLAND,
PEDIATRICS, ANESTHESIA
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1983/1216 STEP NO--UR/0531/70/000/004/0121/0127
CIRC ACCESSION NO--AP0054111
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2/2 028 UNCLASSIFIED PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AP0054111
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER DEPICTS THE RESULTS OF SURGICAL TREATMENT OF 629 PATIENTS WITH DIFFUSE TOXIC GOITER PREDOMINANTLY OF MODERATE AND SEVERE FORM. PREOPERATIVE PREPARATION CONSISTED IN A COMPLEX OF THERAPEUTIC AND TONIC MEASURES. AS ANTITHYROID AGENTS OVER 95 PER CENT OF PATIENTS RECEIVED MICRODOSES OF IODINE, DIIODOTHYROSINE AND PREPARATIONS OF THE ADRENAL CORTEX. THYROSTATIC AGENTS WERE EMPLOYED IN LESS THAN 5 PER CENT OF CASES. SUBTOTAL RESECTION OF THE THYROID GLAND WITHOUT LIGATION OF VESSELS WAS CARRIED OUT UNDER ENDOTRACHEAL ANESTHESIA AFTER A. V. VISHNEVSKY AND IN CHILDREN SOMETIMES UNDER ENDOTRACHEAL ANESTHESIA. RATIONAL PREOPERATIVE PREPARATION OF PATIENTS WITH TOXIC GOITER IS A RELIABLE MEANS OF PROPHYLAXIS OF POSTOPERATIVE COMPLICATIONS, PREVENTS THYROTOXIC CRISES (WITHOUT PREPARATION WITH MERCASOLYL OR ANALOGOUS ANTITHYROID AGENTS WHICH, AS A RULE, DETERIORATE THE CONDITIONS OF OPERATIVE INTERVENTION). A LETHAL OUTCOME AFTER THE OPERATION IN A 6 YEAR OLD GIRL WITH SEVERE THYROTOXICOSIS AND HYPOCORTICISM WAS DUE TO THE LATE EFFECT OF REANIMATION IN AN INCORRECT CHOICE OF THE METHOD OF ANESTHESIA. THIS COMPRISES 0.1 PER CENT TO THE TOTAL NUMBER OF OPERATIONS FOR DIFFUSE TOXIC GOITER (930) PERFORMED DURING 1962 TO 1966.

UNCLASSIFIED

MATHEMATICS

Differential & Integral Equations

USSR

UDC 517.944

NIKOLAYEV, S. I., Main Astronomical Observatory of the Academy of Sciences
Ukrainian SSR

"Properties of Solutions for One System of Linear Differential Equations
With Variable Coefficients"

Kiev, *Dopovidi Akademii Nauk Ukrain's'koi RSR, Seriya A -- Fizyko-
Tekhnichni ta Matematychni Nauky*, No 5, May 72, pp 427-432

Abstract: The article considers the system of three linear homogeneous
differential second-order equations

$$x - 2n^{1/3}y - 3n^2x = \mu A_{11}(t)x + \mu A_{12}(t)y + \mu A_{13}(t)z,$$

$$\ddot{y} + 2n^{5/3}x = \mu n^{4/3}A_{21}(t)x + \mu n^{4/3}A_{22}(t)y + \mu n^{4/3}A_{23}(t)z,$$

$$\ddot{z} + n^2z = \mu A_{31}(t)x + \mu A_{32}(t)y + \mu A_{33}(t)z;$$

USSR

NIKOLAYEV, S. I., Dopovidi Akademii Nauk Ukrain's'koi RSR, Seriya A --
Fizyko-Tekhnichni ta Matematychni Nauky, No 5, May 72, pp 427-432

where n is constant frequency; μ small positive parameter; $A_{11}(t), \dots,$
 $A_{33}(t)$ periodic functions of time t with the period $T = \frac{2\pi}{n - \mu_0}$. $V(\mu, T)$
is the monodromy matrix of system (1), which corresponds to the period T . The
eigenvalues of its characteristic equation

$$\rho^6 + 2B_1(\mu)\rho^5 + 2B_2(\mu)\rho^4 + 2B_3(\mu)\rho^3 + 2B_4(\mu)\rho^2 + 2B_5(\mu)\rho + 1 = 0,$$

given $\mu = 0$, take the form:

$$\begin{aligned} \rho_1(0) &= e^{inT}, & \rho_2(0) &= e^{-inT}, \\ \rho_3(0) &= 1, & \rho_4(0) &= 1, \end{aligned}$$

2/3

- 1 -

USSR

NIKOLAYEV, S. I., Dopovidi Akademii Nauk Ukrain's'koi RSR, Seriya A --
Fizyko-Tekhnichni ta Matematychni Nauky, No 5, May 72; pp 427-432

$$\rho_5(0) = e^{inT}, \quad \rho_6'(0) = e^{-inT}.$$

Because of the multiplicity of the characteristic values (3) of monodromy matrix $V(0, T)$ it is impossible to speak of the stability of solutions for (1) over a whole set of variables, but it is possible to study instability conditions for some of the variables and to trace the character of the instability. An asymptotic solution of system (1) is obtained, the characteristic exponents determined, and the coefficients of the monodromy matrix determined through the characteristic exponents.

3/3

USSR

OBYSOV, A., Doctor of Medical Sciences, and NIKOLAEV, V., Doctor

"The Mechanical Strength of Biological Tissues"

Moscow, Meditsinskaya Gazeta, 26 May 72, p 3

Abstract: In experiments on newly decreased subjects it was found that as ribs develop to twice their original size, their exponent of mechanical strength decreases two-fold. The distensibility of the aorta in middle-aged people was 94-100% and 60-70% among the elderly. Compact parts of hip bones have a pressure limit of 15-30 kg/mm², while cancellous parts have a limit of 0.7-1.5 kg/mm². In humans the coefficient of elasticity in the intervertebral disks increases 4 times in 50 years. Various studies of mechanical strength have been made in relation to: (a) the development of artificial hearts through the determination of the strength of the tendinous threads of heart valves; (b) legal medicine and the determination of the weights which destroy tissues and organs; (c) injury as a result of strain in sports; (d) extreme conditions in space.

1/1

Physiology

USSR

NIKOLAYEV, V., Underwater Experiments Laboratory; PODRAZHANSKIY, A., Research Techniques Laboratory, Oceanological Institute, Academy of Sciences USSR

"'Chernomor-71': An Account of How Soviet Explorers Lived and Worked for 52 Days on the Bed of the Black Sea"

Moscow, Izvestiya, 12 Nov 71, p 4

Translation: The "Kapitan Chumakov" slowly approaches two large roadstead buoys. Here, 15 meters beneath us, lies the "Chernomor-2" underwater laboratory. The boys are ready. Aleksey Nasonov has already set about his duties as the crew's diving specialist and is looking his aquanaut colleagues over from head to toe. Everything is in order. The "Chumakov" has gently touched the mooring buoy, and a ladder is immediately let down over the side.

Igor Sudarkin -- the crew's commander and resident engineer -- descends the ladder followed by Oleg Prokopov (he will perform hydro-optical research on the seabed). Now all three are in the

1/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

water alongside the communications buoy. Igor looks round at the shore, then he raises his head and sees a seagull, it circles over the buoy, which it evidently already considers its "own" property.

"Goodbye! See you in two months! Well, let's go lads," Igor orders. All three wave their hands. "Good luck! Don't get bored! Go out for a stroll more often," people shout to them from the "Chumakov," and they disappear beneath the water.

Three black figures leaving a trail of bubbles behind them descend lower and lower, and the first of the aquanauts -- Igor Sudarkin -- is already disappearing into the diving trunk. A minute later the portholes light up.

"The hatch is open and the crew are in the laboratory," the dynamic loudspeaker of the hydro-acoustic receiver rings out on

2/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

board the "Chumakov." The first entry appears in the "Chernomor's" log and in the log of the shore command point: 1 August 1971, 1930 hrs. Crew occupies underwater laboratory."

...While the crew is settling in at the underwater abode, the authors of these lines make a tour of the "Chernomor's" "personal plot" on the bed of Golubaya Bay. We slowly skirt round the holders for the laboratory's oxygen and nitrogen cylinders and descend lower, to the bed. The semidarkness thickens, but the black snake of the cable coming from the house stands out sharply against the gray, monotonous carpet of the seabed. It leads us along after it, and some thirty meters further we encounter a hydrophysical mast hung with illumination, turbulence, and current sensors. We rise unhurriedly, the bubbles float alongside us while the sensors remain down below, like birds perched in a tree. The sensors transmit all their "sensations," which are transformed into precise electrical signals, to the "Chernomor," where Prokopov will have to record them. His task

3/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

is to obtain data with whose aid it will be possible to find an interconnection between turbulence on the surface and the light conditions in the depths.

The surface is now a few meters above us. The aquanauts will also have to look in here during the experiments, when it is necessary to shift the sensors or clean the optical equipment. They cannot rise any higher, for up higher the bends lie in wait for them. They are no threat to us because we have spent too little time in the water and, casting a final glance at the world of half-tints and silence, we dart toward the surface. The setting sun illuminates the top of the mast which protrudes above the water, the anemometers on it, which are revolving silently, the roadstead buoys, and the "Chumakov." They are already waiting for us. The seagull continues circling over us. We shall go away presently, and it will again perch on "its" buoy. Until morning no one will disturb it. The work has begun...

4/15

- 69 -

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

The impending isolation of the small collective on the bed of Golubaya Bay evoked much reflection among the leaders of the experiment. Everyone knows each other well, and they became accustomed to each other's ways back on shore, but what would happen down there? For it is well known that for people who remain isolated for a long period in a small group a colleague's orderliness sometimes begins to seem like pettifoggery, and conviviality like importunity. A person who by nature is taciturn becomes bound up in himself, or, on the contrary, unnaturally talkative, while an energetic person will become fidgety. And it is difficult here to say whether he had actually become small-minded or whether this only seems to be the case to the person who accuses him of this. Racing ahead, let us say that the experimental staff and, most important, the crew, coped well with the problem of psychological compatibility.

A week after the "Chernomor" was occupied, a fourth member of the crew entered the house, Ruben Kosyan, a geomorphologist. Oleg Prokopov noted this event in the log thus:

5/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

"I consider the selection of the crew to be correct. The methodology for settling in too. Two or three crew members create a stable psychological atmosphere in the underwater laboratory over 5 or 6 days. The subsequent settling in by one person at a time makes the new crew members accept the stable atmosphere that has already taken shape as being natural, and in these cases the psychological acclimatization process passes more rapidly."

It is interesting to follow how Kosyan accustomed himself to the crew. This did not take place immediately. Extract from Kosyan's diary:

"12 August. Sudarkin is a sensible, knowledgeable resident engineer, but I do not consider his appointment as crew commander successful. I should like to see someone else in his place."

"18 August. My assessment of the professional and psychological qualities of the crew members has altered somewhat. I am pleased

6/15

- 70 -

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

to note that in a number of situations Sudarkin has shown himself to be a businesslike, energetic commander. I have long liked him for his purely human qualities."

"28 August. The professional qualities of Nasonov and Sudarkin are quite above criticism, both cope with their duties in such a way that I believe it impossible to fulfill them better. ...I am pleased that I have found myself in the same crew as they."

The others too did not find that Ruben immediately "fitted in." From the outset he adopted an incorrect tone. Extract from Prokopov's diary:

"8 August. My attitude to the crew members is amicable with the exception of Kosyan. Toward him I experience a wariness, his actions and words are not always and in everything to my liking."

7/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

"17 August. After several admonishments, Ruben has greatly altered his conduct for the better."

"22 August. All the aquanauts have been well picked from the viewpoint of their professional qualities and psychological compatability...."

The crew's health is in the hands of the medical welfare group led by V. Grinevich, a physician and specialist in physiology. The aquanauts live in a confined space at a temperature of 27-28 degrees Centigrade and with elevated humidity. All this creates favorable conditions for the development of microflora and microfauna within the "Chernomor." The danger arose that one of the "guests" might bring pathogenic bacteria into the house, and therefore every visitor underwent a preliminary medical examination with obligatory microbiological analyses.

8/15

- 71 -

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

...Evening. The aquanauts are relaxing. They meet the guests affably and help them to take off their aqualungs. In the passageway Sudarkin and Prokopov are sparring together in boxing gloves, not very adroitly, but with enthusiasm, to the accompaniment of music relayed from the command point. One of the visitors cannot contain himself and also puts on boxing gloves. He gave the following comment on the improvised match:

"In my student days I fought with masters of sport, but the three rounds in the 'Chernomor' proved perhaps the most difficult in my life -- there is nothing one can do here without acclimatization."

Sudarkin's father had arrived, and Grinevich allowed Igor to go to the surface for four minutes. And so Igor, accompanied by two maintenance divers, appears in the light of day. Sudarkin Snr is waiting for him on the "Chumakov." Igor climbs onto the deck incessantly repeating: "What tremendous colors, what a scent! No, you cannot imagine how beautiful it is here!!!"

9/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

"Igor, one minute left," one of the entourage reminds him, and then Sudarkin Jnr suddenly recollects something and approaches his father. A minute later Igor is already disappearing under the water without having had time to say what he ought to have said. That day he wrote in his diary: "I miss my wife, daughter, and relatives. The scents and the colors of the dry land. The green grass and the sun. I would like to take a drive through a forest on a motorcycle..."

The second month of the crew's stay under water began. There were only three aquanauts again -- Prokopov had fallen ill and had been evacuated from the "Chernomor." He went through the first "stages" of decompression in the laboratory's transfer airlock and was then taken to the pressure chamber on the shore. But the "Chernomor" with the remaining crew members plunged back to the seabed. Oleg recovered after a few days and continued his work in the support group.

10/15

- 72 -

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

On 3 September Nikolay Denisov was seen into the house. He entered the "Chernomor" to carry out a biological program. The following day Denisov began his collection of specimens and the preparation of experimental areas. As a rule, he and Igor worked as a pair. In the morning after breakfast they swim out to work. Moving along the leading part of a rope, they emerge at rock sectors of the seabed. The areas had been chosen earlier, and runners had been laid to them in advance. Kolya scans the sector and begins taking samples of plant and animal organisms from it.

...Today we make a descent to the seabed with some presents -- in our hands are a bottle of dry wine and some long containers. The "Chernomor's" familiar outlines cannot immediately be made out. First of all the light from the portholes appears, and then the laboratory itself. A large white arrow on its side indicates the diving trunk. One behind the other, we dive down under the house to come up inside it. The gallant males let Svetlana Chaplygin -- a woman biologist from Vladivostock -- go through first.

11/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

We have all been invited to a banquet which will take place at a depth of 15 meters on the occasion of the crew's having spent 1,000 hours in the house.

We are met, our aqualungs are taken off us, and everyone is given a towel. Lenya Bratkov is already bustling about the containers. He opens one of them and takes out steaming skewers of shashlyk. A few minutes ago he himself had taken them from a brazier on the "Chumakov's" deck and wrapped them in greaseproof paper, and now they were steaming down here. The cries of delight from the crew must surely have reached the surface.

We raise our glasses (V. Grinevich recommends dry wine to the aquanauts for enhancing vigor) and drink a first and last toast to everything at once: to underwater research, to the world's "longest" experiment, to those at sea, and, of course, to all those many people who are supporting this experiment on the surface and on the shore.

12/15

- 73 -

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

The time flies by unnoticed until the sound of a buzzer, interrupting the merry-making, summons the duty officer to the desk. Denisov picks up the receiver and announces to those present:

"I'm very sorry, but your time is up and it is time for you to leave!"

On 15 September one of the authors of these lines joined the crew -- he was to complete the program of hydro-optical research begun by O. Prokopov. The crew proposed ending the experiment in about 10 days. However, circumstances considerably altered this plan. Although Ruben Kosyan wanted the fall storms very much (for then he would be able to obtain unique material on the shifting of sediment on the seabed), no one expected the following:

Extract from Denisov's diary:

"20 September. 0300 hrs. I became engrossed in my reading until late. When I had dozed off almost completely, the pitching and
13/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

tossing intensified, and a chemical-absorber cartridge rolled out of its holder. I had to get up and help Ruben to secure it. By morning everyone was engaged in this.

"0700 hrs. My shift at the desk has begun. It soon became difficult to sit in the chair. I had to bind it with rubber ropes, and soon myself too, to the desk.

"1200 hrs. Because of a cable breaking, the supply of electricity from the shore has ceased; the laboratory has switched to the batteries it carries on board."

The storm gathered strength. The communications cable broke. A motorboat, the "Kanon," left the shore -- it was necessary to restore contact through the communications buoy and to bring the crew out from the house. From the shore we saw the "Kanon" now vanish with the mast and then reappear on the crest of a wave. Divers with masks and black suits were standing on the deck, grasping the ropes.

14/15

USSR

NIKOLAYEV, V., Izvestiya, 12 Nov 71, p 4

When the boys left the laboratory, they were quickly seated in the motorboat, and it raced to the pressure chamber building with them. Some 10 minutes after leaving the house, the crew was already at a 30-meter "depth" in the decompression chamber....

And so, the main tasks of the "Chernomor-71" experiment have been successfully fulfilled. The crew lived and worked on the seabed for 52 days -- this is the world's second longest underwater stay. The crew has gathered unique scientific material.

15715

1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--CORRELATION OF THE DIAMETER OF THE TRACK OF A FRAGMENT WITH
SPECIFIC ENERGY LOSSES ON THE SURFACE OF GLASS -U-
AUTHOR--(02)-GROMOV, A.V., NIKOLAYEV, V.A.
COUNTRY OF INFO--USSR
SOURCE--PRIB. TEKH. EKSP. 1970, 1, 245
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PARTICLE TRACK, FISSION PRODUCT, KINETIC ENERGY, DECELERATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1886 STEP NO--UR/0120/70/001/000/0245/0245
CIRC ACCESSION NO--AP0108216
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0108216

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MAGNITUDE OF TRACK DIAM. OF THE FISSION FRAGMENT IS RELATED TO ITS SP. LOSSES DE-DX ON THE GLASS SURFACE. VALUES OF TIMES DE-DX FOR THE LIGHT AND HEAVY GROUPS OF FISSION FRAGMENT ARE ALMOST EQUAL AT THE BEGINNING OF THE PASSAGE AND BECOME INCREASINGLY DIFFERENT WITH PASSAGE THROUGH MATTER. THEREFORE, PRIOR TO REGISTRATION IN THE GLASS THE FISSION FRAGMENTS ARE PASSED THROUGH AN 1.5 MG-CM PRIME2 AL FILTER WHICH DOES NOT ABSORB FRAGMENTS PERPENDICULAR TO IT AND INSURES THAT THE DIFFERENCE IN DE-DX IS MAXIMIZED FOR HEAVY AND LIGHT GROUPS OF FRAGMENTS. THE CORRELATION BETWEEN DE-DX AND THE DIAM. OF THE FISSION FRAGMENT TRACK MAKES IT POSSIBLE TO MEASURE THE MOST PROBABLE VALUE OF THE ENERGY OF FISSION FRAGMENTS WITH AN ACCURACY OF NO LESS THAN 3PERCENT FOR FISSIONING ISOTOPES IN THE AREA FROM TH TO CF.

UNCLASSIFIED

1/2 022
 UNCLASSIFIED
 PROCESSING DATE--16OCT70
 TITLE--SOME EXPERIMENTAL NEUTRON PHYSICAL PARAMETERS OF CO 1 ASSEMBLY -U-
 AUTHOR--(04)-KOSTANTINOV, L.V., NIKOLAYEV, V.A., YEFANOV, A.I., USTINOV,
 A.A.
 COUNTRY OF INFO--USSR
 SOURCE--AT. ENERG. (USSR); 28: 53-5(JAN 1970)
 DATE PUBLISHED-----70
 SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY
 TOPIC TAGS--NEUTRON ACTIVATION ANALYSIS, RADIATION SOURCE, SUBCRITICAL
 REACTOR, URANIUM DIOXIDE, POLYETHYLENE, NEUTRON FLUX, ENRICHED FUEL
 REACTOR
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--1983/1707
 CIRC ACCESSION NO--AP0054549
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2/2 022

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0054549

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION IS GIVEN OF THE NEUTRON SOURCE CO 1 SUBCRITICAL SYSTEM USED FOR ACTIVATION ANALYSES. THE ACTIVATION ZONE OF THE SYSTEM WAS ASSEMBLED WITH URANIUM POLYETHYLENE DISKS. THE ACTIVATION ZONE IS 200 MM IN DIAMETER AND 230 MM HIGH. URANIUM DIOXIDE FUEL, ENRICHED UP TO 36PERCENT WITH PRIME235 U, IS HOMOGENEOUSLY DISPERSED IN THE POLYETHYLENE. TABULATED DATA ARE GIVEN ON MEASURED THERMAL FLUXES OF $10 \text{ PRIME}^7 \text{ NEUTRONS-CM PRIME}^2\text{-SEC}$ IN THE CO 1 INSTALLATION. DATA OBTAINED SUGGESTED THE FOLLOWING PARAMETERS FOR THE INSTALLATION: $0.5 \text{ TIMES } 10 \text{ PRIME} \text{ NEGATIVE}^2$ SUBCRITICALITY; $\text{PRIME}^238 \text{ PU-BE}$ (T SUBONE HALF EQUALS 89.6 YEARS; Q EQUALS $2.3 \text{ TIMES } 10 \text{ PRIME}^8 \text{ NEUTRONS-SEC}$) SOURCE; 0.9 W; AND THE NEUTRON FLUX IN EXPERIMENTAL CHANNELS EQUAL TO $1.3 \text{ TIMES } 10 \text{ PRIME}^7 \text{ NEUTRONS-CM PRIME}^2\text{-SEC}$.

UNCLASSIFIED

1/2 044 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--MECHANICAL PROPERTIES OF KH18N10T STEEL AFTER NEUTRON IRRADIATION,
AND THEIR RECOVERY DURING ANNEALING -U-
AUTHOR--LAPIN, A.N., NIKOLAYEV, V.A., RAZOV, I.A.
COUNTRY OF INFO--USSR
SOURCE--FIZ. KHIM. OBRAB. MATER. 1970, (1) 8-13
DATE PUBLISHED-----70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, MATERIALS, MECH., IND.,
CIVIL AND MARINE ENGR
TOPIC TAGS--MECHANICAL PROPERTY, STAINLESS STEEL, ANNEALING, METAL CREEP,
DEFORMATION RATE, NEUTRON IRRADIATION, ALLOY DESIGNATION/(U)KH18N10T
STAINLESS STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0644

STEP NO--UR/0472/70/000/001/0008/0013

CIRC ACCESSION NO--AP0105623

UNCLASSIFIED

2/2 044

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PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105623

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MICROSPECIMENS (DIAM. 1, LENGTH 5 MM) FROM STEEL KH18N10T (C 0.07, SI 0.52, MN 1.14, CR 18.0, NI 10.8, AND TI 0.53 WT. PERCENT) WERE TESTED FOR TENSILE STRENGTH AT DEFORMATION RATE 0.02-SEC BEFORE AND AFTER IRRADN. IN WORKING CHANNELS OF AN ACTIVE ZONE OF THE REACTOR RFT. THE RATIO OF FAST (IS GREATER THAN OR EQUAL TO 1 MEV) TO THERMAL NEUTRONS WAS 0.71 PLUS OR MINUS 0.12. THE EFFECT OF DOSE WAS DETD. AT 100-300DEGREES, WITHIN THE RANGE 10 PRIME19 TO 10 PRIME21 NEUTRONS-CM PRIME2. HOWEVER, OTHER PROPERTIES CHANGE WITHIN THIS RANGE; E.G. TENSILE STRENGTH DECREASED, WHILE RELATIVE ELONGATION INCREASED. THIS INDICATES THAT DOSES IS GREATER THAN 10 PRIME30 NEUTRONS-CM PRIME2 DID NOT CAUSE A TRUE SATN. STATE. THE EFFECT OF TEMP. WAS STUDIED AT 100-550DEGREES WITH DOSES 4 TIMES 10 PRIME20, 2 TIMES 10 PRIME20, 3.5 TIMES 10 PRIME20, AND 3.5 TIMES 10 PRIME20; EACH DOSE AT FOLLOWING TEMPS. 200-20, 250-300, 350-400, AND 550DEGREES, RESP. STUDIED STEEL REACHED MAX. STRENGTH AFTER IRRADN. AT 200-200DEGREES. THE SOFTENING (WEAKENING) EFFECT OF IRRADN. DECREASED AT TEMPS. IS GREATER THAN 300DEGREES AND AT 500DEGREES THERE WAS PRACTICALLY NO CHANGE IN STRENGTH OF THE STEEL. A PLATFORM OF CREEP WAS FORMED DURING THE INITIAL STAGES OF PLASTIC FLOW AND THIS INDICATES THAT SOME MECHANISM FACILITATING SLIP IS PRESENT DURING THESE STAGES.

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USSR

UDC 621.777.073.001.5

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

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

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

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

1/1

USSR

UDC 621.771.073.001.5

NIKOLAYEV, V. A., ZAUGOL'NIKOV, D. N., and POLUKHIN, V. P.

"Stress Condition in the Contact Zones of Working Rolls in Passing a Weld Joint"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 225-232

Translation: A method is proposed for calculating the optimal shape of a weld joint which compensates for the increased yield point at this place. In order to check the calculations, the polarization-optical method was used. It confirmed the correctness of this technique for determining the optimal shape of the weld. Three figures and one table.

1/1

- 32 -

USSR

UDC 621.771.011

NIKOLAYEV, V. A., and KALASHNIKOV, P. P.

"Investigating the Distribution of Contact Stresses During Rolling Without Widening Using Optical Modelling"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 249-258

Translation: The article shows the similarity in the distribution of specific pressures during rolling with and without widening under the same conditions (where R/H_{ave} : Beta/alpha; l_d/H_{ave} are equal), as well as the predominating influence of unevenness in the distribution of normal pressures in the deformation area on the magnitude of maximum shear stresses in the surface layers of rolls. Seven figures and two tables.

1/1

USSR

UDC 621.771.073.001.5

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

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

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

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

1/1

USSR

UDC 621.771

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

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

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

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

1/1

USSR

UDC 539.3.019.3:669.15--194.55

LAPIN, A. N., ^NNIKOLAYEV, V. A., RAZOV, I. A., Leningrad

"Mechanical Properties of Kh18N10T Steels Following Neutron Irradiation; Their Reduction During Annealing"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan-Feb 70, pp 8-13

Abstract: Radiation damage in metals is known to be directly proportional to the size of the integral dose, and inversely proportional to the irradiation temperature; this can be used as a basis for further study of the mechanisms of radiation damage. The authors studied shifts in the mechanical properties of Kh18N10T steels following an integral neutron dose of $E_n > 1$ Mev (difference in $\sigma_{-0.2}$; form of the tensile diagram, reduced strain hardening with increase in dose). These shifts are explained on the basis of the interaction between moving dislocations and complex radiation defects, and on the basis of differences in concentration and in the spectrum of the complex defects.

1/1

USSR

BARYKIN, N. P., POYUROVSKIY, Yu. V., NIKOLAYEV, V. A., VASHURIN, A. M.,
PLEKHOV, V. A.

"Calculation of Thermoelastic Stresses During Cooling of Stamps at Various Rates"

Tr. Ufim. Aviats. In-t. [Works of Ufim Aviation Institute], 1971, No 25, pp 111-119, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 V43, by N. T. Glazunova).

Translation: This article presents results of theoretical and experimental studies of the stress field in heated, hollow, thickwall, long cylinders cooled in various media. Axisymmetrical distribution of temperature in the cross section is assumed. The temperature field along the cylinder is assumed constant. Under these conditions, the temperature and corresponding stress field in the body in the radial direction are described by certain logarithmic rules. For long bodies of rectangular cross section, the author's recommend that the actual contour be replaced by an equivalent cylinder, with the condition of equality of areas of side surfaces. The results of the study are illustrated by graphs of temperature stresses in cylindrical stamps of type 5KhNV steel, cooled in oil and in air. 8
Biblio. Refs.

1/1

USSR

UDC 669.295:538.221

BELOVA, V. M., NIKOLAYEV, V. I., and STUCHEBNIKOV, V. M., Moscow State University imeni M. V. Lomonosov

"On Superparamagnetism of Highly Coercive Ticonal-Type Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 646-649

Abstract: Results of an experimental investigation of the magnetic properties of Ticonal-type alloys -- YuNDK35T5 (single crystal), YuNDK38T8 and YuNDK35T5 (polycrystal) -- are discussed. The temperature dependence of specific magnetization in different external magnetic fields and the magnitude of superparamagnetic contribution σ_{sp} to the specific magnetization are discussed by reference to diagrams. The usual type of Langevin model qualitatively describes the most characteristic experimental dependences of the magnetic moment, confirming the presence of superparamagnetic properties in dispersion hardening alloys of the Fe-Ni-Co-Al-Ti system. Two figures, one table, two formulas, eight bibliographic references.

1/1

Radar

NIKOLAYEV, V. I.

Doc 021.390.903.3
JPRS: 55322
23 March 1972

ABSTRACT

Работы В. И. Николаева (Psikhologiya V Radiolokatsii (Systems Indicator-Operator) (Engineering Psychology) in Radar (The Indicator-Operator System)), edited by A. I. N. Solov'ev, Moscow, Izd-vo Sovetskoye Radio, 1971. 144 pages, price of 11,000 copies, price 41 kopecks.

In this book, problems of the application of engineering psychology data in the investigation and evaluation of the capabilities of circular-scanning radar sets (RCS) and of devices for representing information are considered.

Special attention is devoted to the statistical analysis of the process of detection of signals by the RCS operator, to a description of methods of calculating the characteristics of the detection of signals, with consideration of the psychophysiological features of the operator, and methods of finding optimum forms of communication in the indicator-operator link.

The book is intended for the general circle of specialists interested in the designing and operation of indicator devices for RCS and devices for representing (displaying) information, as well as graduates and students specializing in the field of radar and automation of control.

56 drawings, 7 tables, bibliography of 58 titles.

Lasers and Masers

UDC 535.89

USSR

N
RUBINOV, A. N. and NIKOLAYEV, V. I., Institute of Physics, Academy of Sciences
Belorussian SSR

"Stabilization and Control of the Single-Pulse Radiation Spectrum of a Ruby Laser"

Minsk, Doklady Akademii Nauk BSSR, Vol. 14, No. 1, 1970, pp 20-24

Abstract: Since the spectrum of a single-pulse ruby laser is generally poorly reproducible from burst to burst, a stabilization method is described which makes it possible to retune the working frequency of the generated radiation in a certain time interval. The results are compared with measurements of the spectrum of single pulses obtained with the same ruby samples for different methods of Q-switching. The measurements were conducted on two different samples: sample no. 1 had a length of 48 mm and a diameter of 8 mm and exhibited good optical homogeneity; sample no. 2 was of poorer quality and was 66 mm long and 6.5 mm in diameter. Q-switching was achieved either with a total internal reflection prism rotating at 30,000 rev/min or with a phototropic shutter, consisting of a KS-19 filter or a solution of gallium chloride phthalocyanin in orthochlorobenzene. The results of interferometer studies to compare the radiation properties of the different versions of the lasers are reported.

1/1

Acc. Nr: **AP0043661**

N

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp 515-521

**THE TEMPERATURE DEPENDENCE OF THE SUBLATTICE
MAGNETIZATION OF LITHIUM FERRITE-CHROMITES**

V. I. Nikolayev, F. I. Popov, V. M. Cherupanov

The Mossbauer effect for Fe^{57} nuclei in the ferrite $Li_{0.5}Fe_{1.1}Cr_{1.4}O_4$ is investigated in the temperature interval between 77 and 500° K. The purpose of the present work was to elucidate the character of the correlation between the temperature dependences of the effective magnetic field acting on the atomic nucleus and of the «own» sublattice magnetization. Within the accuracy of the experiments the effective magnetic fields for both ferrite sublattices were proportional to the sublattice magnetization. For the experiments a ferrite with a compensation point was specially chosen. Magnetizations of the ferrite sublattices are derived from data on measurements of the effective field and magnetization of the sample. It is shown that the temperature dependence of the

1/2

21

REEL/FRAME
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AP0043661

sample magnetization can be described by the Neel model. For both types of sublattices the temperature dependence of the magnetic moment is of the Weiss shape; this indicates strong AB-interaction. Despite the presence of a magnetic compensation point in ferrite, a «weaker» of the two sublattices can be separated only with strong resonances (it turns out to be an octohedral sublattice).

2/2

19770065

DI

Acc. Nr:
AP0045912

Abstracting Service: 5/70
INTERNAT. AEROSPACE ABST:

Ref. Code:
UR 3663

N

A70-22469 # Strength and durability problems involved in the designing and exploitation of limited-production energy engines with a long service time (Zadachi o prochnosti i dolgovechnosti, vznikalushchie pri razrabotke i ekspluatatsii maloseriinykh energomashin bol'shogo resursa). I. D. Dorofoev, I. A. Klimentko, and V. I. Nikolayev. *Problemy Prochnosti*, vol. 2, Jan. 1970, p. 86-90. 6 refs. In Russian.

Analysis of the designing and exploitation processes of a gas turbine blade. Topics discussed include: (1) long-time strength of the E1617 alloy in different media, (2) fatigue strength of the same alloy at 750 C in different media, (3) static durability of the notched and smooth samples at 850 C, and (4) effect of a cyclic loading and heating on the long-time strength at 800 C. Z.W.

V

ACS.

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REEL/FAME
19780957

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Acc. Nr:

AP0043799

10

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 2, pp 747-750

EVEN GALVANOMAGNETIC EFFECT IN ANTIFERROMAGNETIC
MnAu₂ IN THE PARAMAGNETIC TEMPERATURE REGION

V. G. Loginov, V. I. Nikolayev

Results of investigation of the even galvanomagnetic effect in the antiferromagnetic compound MnAu₂ at paramagnetic temperatures are reported. It is shown that for $T > T_N$ the magnetic resistance of MnAu₂ depends on the magnetic moment in the same way as in ferromagnetic substances. The results show that in the paramagnetic temperature region the even galvanomagnetic regularities previously established for ferromagnetic substances are also applicable to antiferromagnetic compounds.

1/1

REEL/FRAME
19770208

2/1 DI

USSR

UDC: 621.375.82

NIKOLAYEV, V. K., KHIMICHEV, Yu. V., VALITOV, R. A., NADEZHKIN, Yu. M.

"A Device for Measuring High Levels of Laser Pulse Emission Energy With Large Beam Diameters"

Radiotekhnika. Resp. mezhved. temat. nauch.-tekhn. sb. (Radio Engineering. Republic Interdepartmental Thematic Scientific and Technical Collection), 1973, vyp. 25, pp 8-14 (from RZh-Fizika, No 8, Aug 73, abstract No 8D1136 by the authors)

Translation: The paper describes the characteristics and design of a pondermotive device for measuring the pulse energy of high-level transmitted emission. Problems of calibrating the meter are considered. Some components of measurement errors are evaluated. Bibliography of 10 titles.

1/1

1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EXPERIMENT ON THE BEAM EXTRACTION BY AN ELECTROSTATIC DEFLECTOR
FROM THE JINR 2 METRE ISOCHRONOUS CYCLOTRON -U-
AUTHOR--(05)--SHELAYEV, I.A., ALFEYEV, V.S., KOZLOV, S.I., NIKOLAYEV, V.M.,
OGANESYAN, R.A.S.
COUNTRY OF INFO--USSR
SOURCE--LAB. OF NUCLEAR REACTIONS). 1970. 12P. DEP. CFSTI
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--IGN BEAM, CYCLOTRON, ELECTROSTATICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3002/0139 STEP NO--UR/0000/10/000/000/0012/0012
CIRC ACCESSION NO--AT0127763
UNCLASSIFIED

N

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0127763

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXTRACTION OF THE ION BEAM FROM THE JINR 2 METER ISOCHRONOUS CYCLOTRON BY A SYSTEM COMBINING AN ELECTROSTATIC DEFLECTOR AND FOCUSING MAGNETIC CHANNEL IS DESCRIBED. FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA USSR.

1/2 015 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--EFFECT OF INTERNAL ALPHA IRRADIATION ON THE CHARACTERISTICS OF THE
ANION EXCHANGER AV,23M -U-
AUTHOR-(05)-NIKOLAYEV, V.M., VYSOKOSTROVSKAYA, N.B., PARAMONOVA, V.I.,
OSIPOV, S.V., FROLOV, V.I. N
COUNTRY OF INFO--USSR
SOURCE--RADIOKHIMIYA 1970, 12(1), 127-32
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--ALPHA RADIATION, ANION EXCHANGE RESIN, PLUTONIUM ISOTOPE,
MECHANICAL STRENGTH, PARTICLE SIZE/AV23M ION EXCHANGE RESIN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1206 STEP NO--UR/0186/70/012/001/0127/0132
CIRC ACCESSION NO--AP0123624
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128624

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AV,23M RESIN WAS SUBJECTED TO ALPHA IRRADN. FROM ABSORBED (FROM NITRATE SOLNS.) PRIME238 PU (FOR DIFFERENT TIMES, SO THAT THE RADIATION DOSE REACHED UP TO 4 TIMES 10 PRIME8 RAD). THE SWELLING OF THE RESIN INCREASED WITH INCREASING DOSE, AND THE RESIN BECAME SOL. IN 7.5 M HNO SUB3; THE SOLY. INCREASED LINEARLY WITH THE DOSE, TO 14PERCENT AFTER IRRADN, WITH A DOSE OF SIMILAR TO 3 TIMES 10 PRIME8 RAD. THE INCREASE IN SWELLING AND SOLY. IS ATTRIBUTED TO THE DESTRUCTION OF CROSSLINKING. THE COLOR OF THE RESIN CHANGED FROM LIGHT YELLOW TO RED, AND THE AV. PARTICLE SIZE INCREASED SOMEWHAT AS A RESULT OF IRRADN. THE SORPTION CAPACITY OF THE RESIN DECREASED BY 10PERCENT ON IRRADN. WITH 2.57 TIMES 10 PRIME8 RAD; THE LOSS OF EXCHANGE GROUPS WAS 1.18 GROUPS-100 EV. ALTHOUGH THE TOTAL AMT. OF PRIME238 PU SORBED ON THE RESIN IN CONTACT WITH SOLN. DECREASED WITH TIME (AS A RESULT OF THE DECREASE IN CAPACITY AND OXIDN. OF THE PU TO THE HEXAVALENT STATE), THE AMT. OF IRREVERSIBLY SORBED PU INCREASED FROM 0 IN THE CASE OF NONIRRADIATED RESIN TO 8 MG-KG IN THE CASE OF RESIN IRRADIATED WITH 2.4 TIMES 10 PRIME8 RAD. THE MECH. STRENGTH OF THE NONIRRADIATED RESIN AND THE RESIN IRRADIATED WITH A DOSE OF 2.57 TIMES 10 PRIME8 RAD WAS 355 AND 85 G-GRAIN, RESP.

UNCLASSIFIED

USSR

UDC 541.15

PARAMONOVA, V. I., VYSOKOOSTROVSKAYA, N. B., NIKOLAYEV, V. M., OSIPOV,
S. V., and PROLOV, V. I.

"Effect of Internal Alpha-Irradiation on Characteristics of Anion Ex-
changer AV-23M"

Leningrad, Radiokhimiya, Vol 12, No 1, 1970, pp 127-132

Abstract: The article describes results of a study of the effect of internal alpha-irradiation dose on the capacity, basicity, swelling capacity, mechanical grain strength and solubility of vinylpyridine anion exchanger AV-23M, as well as the distribution of some fission products of Zr-95 + Nb-95, Ce-144 + Pr-141, Ru-106 + Rh-106. The isotope Pu-238 was used for irradiation. The principal result of the action of alpha radiation was found to be the breakdown of resin cross-linkage. This is manifested in increased swelling capacity and decreased grain strength. Internal alpha-irradiation of the resin results in its dissolution, with complete dissolution, according to estimates, setting in at a dose of about $(2.5 - 3.8) \cdot 10^4$ g·hr Pu-238/kg

1/3

USSR

PARAMONOVA, V. I., et al., Radiokhimiya, Vol 12, No 1, 1970, pp 127-132

absolutely dry resin.

At a maximum dose equal to $2.57 \cdot 10^8$ rad there is a mere 10 percent decrease in capacity and practically no change in basicity. According to resultant data the capacity loss rate constant was estimated to be $K = (0.27 \pm 0.1) \cdot 10^{-9}$ rad⁻¹ and the radiation-chemical reaction yield $G_0 = 1.18 \pm 0.45$ exchange groups/100 ev.

Dissolution of the resin and the decrease in its capacity result in the appearance of plutonium-238 in solution. Not less than 70 percent of the plutonium found in solution is oxidized to the hexavalent state.

Alpha-irradiation results in changed resin sorption characteristics. The amount of irreversibly sorbed plutonium increases with

2/3

USSR

PARAMONOVA, V. I., et al., Radiokhimiya, Vol 12, No 1, 1970, pp 127-132

irradiation dose, but even at the maximum dose it is an insignificant quantity (hundredths of a percent of the initially sorbed quantity of plutonium).

3/3

USSR

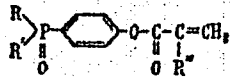
UDC 678.744.3-13

NIKOLAYEV, V. N., KOSTOCHKO, A. V., LAZAREV, R. A., Chuvash State University
Imeni I. N. Ul'yanov

"A Method of Making Polymers Containing Phosphorus and Nitrogen"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrastysy, Tovarnyye Znaki,
No 17, 1971, Author's Certificate No 304260, Division C, filed 20 Jan 1970,
published 25 May 1971, pp 86-87

Translation: This Author's Certificate introduces a method of making
polymers containing phosphorus and nitrogen. As a distinguishing feature
of the patent, the variety of the resultant polymers is increased by co-
polymerizing alkyl esters of the general formula

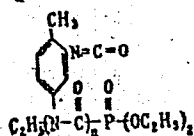


where R and R' are alkyl, and R'' is H₂CH₃, with an isocyanate selected from
the group consisting of 2,4-toluylene diisocyanate and phosphorus-containing
polyisocyanates of the general formula

1/2

USSR

NIKOLAYEV, V. N., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1971, Author's Certificate No 304260, Division C



where n=7-8. The copolymerization is done in the presence of 2,4-diazo-bicyclo-2,2,2-octane as a catalyst.

2/2

- 35 -

USSR

UDC 539.374

GREKHOV, V. A., MANZHELEY, V. I., MITROFANOV, V. V., NIKOLAYEV, V. P.,
TITOVA, N. S., SHOYKHET, G. Ya.

"Experimental Study of the Strength of Thin-Walled Rectangular Tube Under
Cyclic Axial Loading in the Elastic-Plastic Region"

V sb. Dinamika splosh. sredy. Vyp. 8 (Dynamics of a Continuous Medium.
No. 8 -- Collection of Works), Novosibirsk, 1971, pp 144-151 (from RZh-
Mekhanika, No 8, Aug 72, Abstract No 8V361)

Translation: The strength of a tube with a transverse cross section in the
form of a rectangular trapezoid welded at the ends to fixed rigid parts
under a cyclic temperature effect was studied. Experiments were made on
the object itself and on models, reduced tubes of rectangular cross section.
The tube was subjected to a variable load and cooling up to given tempera-
tures. The models were deformed without changing the temperature, com-
pression was achieved up to a given deformation, and stretching was achieved
up to a given value of the axial force. The material for the tube and the
models was Kh18N10T steel. Test results based on 100 cycles are discussed.
Stability losses in the walls and limited growth of deformation under the
first cycles are noted. The test ended with the formation of cracks in some
cases. D. A. Gokhfel'd.

1/1

NIKOLAYEV, V.S.

RND / R-960 / S-N-11-113
Dec '73 34

Kryukova, S. G., and V. S. Nikolayev.
Experimental investigation of optimally
balanced profiles in viscous supersonic
flow. IN: Uchenyye zapiski Tsentral'nogo
aero-gidrodinamicheskogo instituta, v. 2, no.
5, 1971, 94-98. (RZHMekh, 5/72, no. 5B377)

The optimal shapes of three classes of profiles with a given location of the balancing center of pressure were investigated in viscous hypersonic flow stream ($M_\infty = 5.2$, $R = 150$). The upper boundary of the quality factor as a function of the location of the center of pressure is found for the profiles under consideration. The experimental results are compared with theoretical data calculated by one of the authors (Nikolayev, Uchenyye zapiski Tsentral'nogo aero-gidrodinamicheskogo instituta, v. 1, no. 6, 1970, 67-74, RZHMekh, 1971, no. 10B229).

Rakhmatulin, Kh. A., and S. I. Meriyzadev.
Supersonic flow around a slender body in a two-
phase mixture. IN: Voprosy vychislitel'nogo
i prikladnoy matematiki, Tashkent, no. 9,
1971, 166-175. (RZHMekh, 5/72, no. 5B1204)

The problem of supersonic flow around a slender profile or body of revolution by a two-phase mixture is considered in an approximation of linear theory. A model of the interpenetrating motion of two or three interacting continuous media (components) is used. Instead of an equation of energy of the gas or mixture, an assumption of barotropy is used; i.e., the pressure perturbation p is considered to be a known function

1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--CALCULATION OF EFFECTIVE CROSS SECTIONS OF K ELECTRON LOSS BY FAST
HYDROGEN LIKE IONS DURING A COLLISION WITH NITROGEN ATOMS -U-
AUTHOR-(04)-SENASHENKO, V.S., NIKOLAYEV, V.S., SHAFER, V.YU., DMITRIYEV,
I.S.
COUNTRY OF INFO--USSR
SOURCE--VESTN. MOSK. UNIV., FIZ., ASTRON. 1970, 11(2), 136-45
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--NUCLEAR CROSS SECTION, HYDROGEN, NITROGEN, NUCLEAR COLLISION,
ELECTRON LOSS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3009/0093 STEP NO--UR/0188/70/011/002/0136/0145
CIRC ACCESSION NO--AP0138958

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138958

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY USING A NONRELATIVISTIC BORN APPROXN., THE CROSS SECTIONS ARE CALCD. OF K-E LOSS BY FAST H LIKE IONS OF ARBITRARY ELEMENTS DURING COLLISION WITH N ATOMS. SIMPLE APPROX. FORMULAS ARE FOUND FOR THE EFFECTIVE CROSS SECTIONS IN LIMITING CASES. THE THEORETICAL RESULTS ARE COMPARED WITH EXPTL. ONES.

UNCLASSIFIED

USSR

UDC 539.67

NIKOLAYEV, V. V., ORLOV, A. N., and TALUTS, G. G.

"Contribution of Plane Dislocation Pileups to an Amplitude-Independent Internal Friction"

Sb. "Vnutrenneye treniye v metallicheskih materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 113-119

Abstract: A calculation of the amplitude-independent internal friction is presented. It is shown that dislocation pileup distribution along the lengths can substantially alter the internal friction frequency dependence.
5 references.

1/1

USSR

UDC 621.317.741(088.8)

N
NIKOLAYEV, V. V., KOLYVANOVA, S. F.

"Small Waveguide Reflectometer"

USSR Author's Certificate No 252422, Filed 29 Mar 68, Published 6 Feb 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9A158P)

Translation: A small waveguide reflectometer consisting of a segment of a rectangular waveguide and four rotating detector heads in round out-of-bounds waveguides the axes of which are perpendicular to the wide walls of the waveguide segment is proposed. The reflectometer is distinguished by the fact that its detector heads are arranged symmetrically in one cross section of the rectangular waveguide, and they are connected with the rectangular waveguide by cross-shaped slots partially covered by dielectric inserts which rotate simultaneously toward different sides. This offers the possibility of measuring the amplitude and phase of the rotation factor simultaneously and increasing the operating frequency range.

1/1

USSR

UDC 681.2-52:681.3.06

NIKOLAYEV, V. YE.

"On the Design of Digital Instruments With Algorithmic Adaptation"

Nauch. tr. Mosk. lesotekhn. in-t (Scientific Proceedings of the Moscow Institute of Wood Technology), No 48, 1973, pp 95 - 97 (from RZh Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 73, abstract No 11 A346)

Translation: The necessity of developing methods and instruments of digital measurement technology is noted, a number of advantages of the use of digital technology over analog are described, and the reasons limiting the further development of the metrological characteristics of digital measuring instruments (TsIP) are examined. The most significant is considered to be instrumental inaccuracy of the TsIP, its effect being most strongly felt in measuring non-electrical quantities. Its reduction by developing precision elements is associated with significant technical difficulties and increasing instrument costs.

In recent times a number of instruments have been developed to combine the various methods of analog-digital conversion, making possible a significant reduction in measurement inaccuracy, but these instruments are intended for use under laboratory conditions. A method is suggested for improving the measurement accuracy of slowly varying, non-electrical quantities by parametric sensors,

1/2

USSR

NIKOLAYEV. V. YE., Nauch. tr. Mosk, lesotekhn. in-t, No 48, 1973, pp 95 - 97

Involving the design of a rational algorithm of TsIP operation which will ensure the total consideration of destabilizing factors through the resulting measurement.

As an example of the possibility of developing an adaptation algorithm, the principle of digital measurement of non-electrical quantities by inductive sensors is considered. Four bibliographic citations.

Abstract by O. M.

2/2

- 14 -

USSR

UDC: 681.325.65:621.382

NIKOLAYEV, Ye. I., GVOZDEV, S. A., TURCHENKO, L. S.

"A Pulse-Potential Diode-Transformer Rectifier"

USSR Author's Certificate No 253439, filed 7 May 65, published 25 Feb 70
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11,
Nov 70, Abstract No 11A57 P)

Translation: This Author's Certificate introduces a pulse-potential diode-transformer rectifier with an amplifier and a resistance-capacitance circuit for delaying the potential by the time of pulse operation. To reduce interference with simultaneous arrival of the input pulse and the leading edge of the enabling potential, as well as to increase speed and improve resistance to interference in the supply circuit, additional semiconductor diodes are connected in parallel with the resistor in the potential delay circuit and between the pulse and potential inputs. The capacitor in the potential delay circuit is connected to the output of the collector supply source. One illustration. V. M.

1/1

Acc. Nr: **AP0051911**

Ref. Code: **UR 0219**

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol **69**, Nr **2**, pp **26-28**

ON THE INFLUENCE OF OVARECTOMY, ADMINISTRATION OF OESTROGENS AND FEEDING WITH CHOLESTEROL ON THE FUNCTION OF THE THYROID AND ECG IN RABBITS

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The authors studied the influence of cholesterol and oestradiol propionate on the content of cholesterol in the blood serum, function of the thyroid gland and ECG in 63 normal and ovariectomized female rabbits taken into experiment at the age of one month. Duration of experiments 6 months. Despite high content of cholesterol in the blood serum of ovariectomized rabbits which received cholesterol animals were resistant to development of aortic atherosclerosis. Significant decrease of absorption of I^{131} by the thyroid gland took place only after 2 to 6 months after ovariectomy. Great ECG changes were seen in female rabbits fed on cholesterol.

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TITLE--STABILITY OF THE BRUTE FORCE METHOD IN THE REALIZATION OF
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AUTHOR--NIKOLAYEV, YE.S. N
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ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. ANALYSIS OF WEIGHTED SCHEMES APPROXIMATING THE FIRST BOUNDARY VALUE PROBLEM FOR THE ONE DIMENSIONAL HEAT CONDUCTIVITY EQUATION AND THE OSCILLATION EQUATION. IT IS SHOWN THAT IF THESE SCHEMES ARE STABLE WITH RESPECT TO THE INITIAL DATA, THEN THE BRUTE FORCE METHOD USED FOR OBTAINING A SOLUTION AT THE UPPER LAYER IS ALSO STABLE.

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UDC 518:517.944/.947

NIKOLAYEV, Ye. S. and SAMARSKIY, A. A.

"Computational Stability of Two-Level and Three-Level Iteration Systems"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No 12,
Vol 5, 1972, pp 1197-1207

Abstract: One of the problems in the theory of iterational processes is to obtain the quantitative characteristics which will permit comparing methods differing in structure. This article considers these characteristics for simple double-level iteration and triple-level Chebyshev and stationary iteration processes, with special attention to the characteristic of computational stability. It is assumed that the introduction of the rounding-off error is equivalent to a perturbation of the input data of the iterational system, an approach which permits reduction of the problem of computation accuracy of a method to the study of a problem in input data perturbation. In their analysis, the authors consider an operational equation of the first kind, $Au = f$, in real Hilbert space, where A is a linear, self-conjugate operator, while u and f are the sought-for and given elements of that space. The computational stability of these iterational systems is proved, and it is shown that the coefficients in the evaluations for that

1/2

USSR

NIKOLAYEV, Ye. S. and SAMARSKIY, A. A., Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No 12, Vol 5, 1972, pp 1197-1207

proof depend only on the dimensionless parameter $\xi = \alpha_1/\alpha_2$, where α_1 and α_2 are limits of the spectrum of operator A or equivalence constants of A and a second operator B of the iterational system.

2/2

- 25 -

USSR

UDC 517.949.21

NIKOLAYEV, Ye. S. and SAMARSKIY, A. A., Corresponding Member of the USSR Academy of Sciences, M. V. Lomonosov Moscow State University

"Methods of Numerically Solving the Dirichlet Problem of the Poisson Equation in Any Number of Dimensions"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 4, 1972, pp 815-818

Abstract: A new difference system is proposed for raising the order of accuracy for the Poisson equation in a p-dimensional parallelepiped with the characteristic of strong ellipticity for any $p \geq 2$. For the solution, iteration methods of the variable directions and alternately triangular with Chebyshev and cyclical sets of parameters are used. Comparison of this method with those of earlier papers (e.g., A. A. Samarskiy, et al., Zhurn. vychislit. matem. i matem. fiz., 4, No 6, 1964) shows that the methods considered in this paper can be carried out with fewer iterations to achieve the same degree of accuracy. The order of accuracy of this new method is $O(|h|^4)$. It is noted that the difference system can be generalized for the case of the third boundary value problem in the p-dimensional parallelepiped.

1/1