USSR   UDC: 620.178.38

STRIZHALO, V. A., ZINCHENKO, A. I., MOROZOV, B. S., IL'IN, A. A., Kiev, Kaliningrad

"Study of Low-Cycle Fatigue of Titanium-Based Alloys at -196° C"

Abstract: The regularities of deformation and rupture of light alloys based on titanium with repeated low-cycle loading are studied under conditions of room temperature (20° C) and low temperatures (-196° C). The change in resistance of the alloys to cyclical loading upon transition to the low temperature is studied in the range of durabilities corresponding to quasi-static and fatigue rupture. The VT1-0, VT5-1 and VT6S alloys were used in the study.

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USSR   UDC· 539.4

STRIZHALO, V. A., IL'IN, A. A., KUZEMA, Yu. A.

"Study of Low-Cycle Fatigue of Light Alloy Welded Joints"

Kiev, Problemy Prochnosti, No 11, Nov 72, pp 31-33.

Abstract: Results are presented from a study of the low-cycle fatigue strength of joints in the aluminum alloys AMg6 and D20-1 and the titanium alloy VT3-1 at room temperature with axial application of a pulsating load. The frequency of application was approximately two cycles per minute, with holding times of approximately ten seconds at the maximum stress. The factors causing a drop in strength and durability of welded joints are analyzed and methods to increase their static and fatigue strength are discussed. These methods include making welded joints for all these alloys symmetrical, as well as mechanical working of seams for those alloys for which the material of the welded joints is as strong as the base metal.

1/1

USSR   UDC 621.397.61

PUSTYNSKIY, I. N., ILIN, A. G.

"Determining the Optimal Frequency Band of a Video Amplifier of Television
Measuring Devices"

Vopr. radioelektroniki. Nauchno-tekhn. sb. Tekhn. televideniya (Problems
of Radioelectronics. Scientific and Technical Collection. Television
Equipment), 1970, vyp. 1, pp 54-63 (from RZh-Radiotekhnika, No 9, Sep 70,
Abstract No 9G154)

Translation: The optimal frequency band of the video amplifier of television
measuring devices is defined by the criterion of minimum dispersion of the
random measurement error in the time position of the video pulse front caused
by video channel noise.

1/1

IL'IN, A. M., Sverdlovsk

"On the Behavior of a Solution of a Boundary Value Problem as $t \to \infty$"

Abstract: The behavior of the solution of the boundary value problem

$$\frac{\partial \Delta u}{\partial t} + \frac{\partial u}{\partial x} = f(x, y), \qquad (1)$$

$$u(x, y, 0) = u_0(x, y), \qquad (2)$$

$$u|_{\Gamma} = 0 \qquad (3)$$

is investigated as time increases without limit. The solution of the problem is considered in the region $Q = D \times (0, \infty)$, where D is the rectangle $0 < x < a$, $0 < y < b$, and Γ is the boundary of this rectangle. Equation (1) describes the propagation of waves in the ocean in the so-called β-plane approximation in which the latitudinal change in the Coriolis parameter is considered constant. Equation (1) belongs to a class of equations of the Sobolev type, and several previous papers have studied the asymptotic behavior of the solutions of boundary
1/2

IL'IN, A. M., Matematicheskiy Sbornik, No. 4, Apr 72, pp 529-553

value problems as $t \to \infty$. In this article another approach is made to the study of the asymptotic behavior of the solution as $t \to \infty$ for equation (1). It is shown that everywhere outside the neighborhoods of the boundaries $y = 0$, $y = b$, and $x = a$ the solution as $t \to \infty$ tends uniformly to

$$-\int_x^a f(\xi, y)d\xi.$$

Boundary layers of width $t^{-1/2}$ and t^{-1} arise close to these boundaries. Explicit formulas are given for the first term of the asymptotic expansion of the solution in each of these layers.

2/2

3

USSR

UDC 621.039.524.034.3:621.039.526

KRASIN, A. K., NESTERENKO, V. B., KOLYKHAN, L. I., BUBNOV, V. P., IL'IN, A. YA.,
SLIZOV, V. P., SHURFROV, YU. V.

"Experimental Power Plant with a Gas Cooled Fast-Neutron Reactor and a Dissociating Heat Transfer Agent (BRG-20)"

Translation: The possibility of creating an experimental industrial atomic
power plant with a gas-cooled fast neutron reactor and a dissociating heat
exchange agent is investigated. The parameters of the device and the required
volume of experimental research are discussed. There are two illustrations and
a four-entry bibliography.

1/1

USSR   UDC 621.311.25:621.039

KREVSUN, E. P. GORODETSKIY, M. YE., IL'IN, A. YA.

"Seals and Bearings of the Rotating Shafts of Dissociating Gas Atomic Electric Power Plant Units"

Dissotsiiruyushch. gazy kak teplonositeli i rab. tela energ. ustanovok -- V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 109-114 (from RZh-Elektrotekhnika i Energetika, No 5, May 1971, Abstract No 5U48)

Translation: A study was made of the problems connected with creating reliable seals and bearings of atomic electric power plant units the working medium of which is nitrogen tetroxide, and means of solving these problems are noted. The basic difficulties are caused by the specific properties of the heat transfer agents (high oxidizing capacity, low boiling point and low viscosity of the liquid phase). This complicates the selection of the materials of the friction couples and has an effect on the operating conditions of the seals and bearings. Work is being done at the Nuclear Power Institute of the Belorussian SSR Academy of Sciences toward the creation of contactless packing units with floating rings and contact end-type packing units and also hydrostatic and hydrodynamic bearings lubricated with nitrogen tetroxide. There are 3 illustrations and a 4-entry bibliography.
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Nuclear Science and Technology

USSR   UDC 621.039.52

KRASIN, A. K., NESTERENKO, V. B., KOLYKHAN, L. I., BUBNOV, V. P., IL'IN, A. YA., SILZOV, V. P., and SHUFROV, YU. V.

"Experimental Powder Installation With Gas-Cooled Fast-Neutron Reactor and Dissociating Heat-Transfer Medium (BRG-20)"

Dissotsiiruyushch. Gazy kak Teplonositeli i Rab. Tela Energ. Ustanovok' (Dissociating Gasses as Heat Transfer Media and Working Fluids of Power Installations — collection of works), Minsk, Nauka i Tekhn. Press, 1970, pp 42-47 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 4, 1971, Abstract No 4.50.134)

Translation: The possibility is studied of creating an experimental pilot scale atomic power plant with a gas-cooled fast-neutron reactor with dissociating coolant. The parameters of the installation and required volume of experimental study are discussed. 2 figures, 4 biblio. refs.

1/1

USSR

IL'IN, B. M., POLYAK, I. I., (Editors) .

"Standard Algorithms for Processing of Meteorological Information"

Standartnye Algoritmy po Obrabotke Meteorologicheskoy Informatsii [English Version Above], Leningrad, Gidrometeoizdat Press, 1971, 68 pages, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V707 K).

NO ABSTRACT.

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5

USSR

GUS'KOVA, V. N., BRAGINA, A. N., ZASEDATELEV, A. A., IL'IN, B. N., KUPRIYANOVA, V. M., MASHNEVA, N. I., RODIONOVA, L. F., SUKAL'SKAYA, S. Ya., and TIKHONOVA, A. I., Leningrad Scientific Research Institute of Radiation Hygiene, Ministry of Health RSFSR

"Effect of a Mixture of Uranium Fission Products on Sanitary Conditions and Hydrobionts in Weakly Mineralized Bodies of Fresh Water"

Abstract: Pollution of water with two mixtures of radionuclides (mixture I, 52% rare earth radioisotopes and 20% alkali earth elements; mixture II, 40% rare earth radioisotopes and approximately 34% zirconium 95 and niobium 95) at concentrations ranging from $2.0 \cdot 10^{-7}$ to $1.0 \cdot 10^{-5}$ curie/liter was studied. The substances did not affect the sanitary conditions or the hydrobionts studied (E. coli, protococcal algae, Infusoria, duckweed). Biochemical oxygen demand and development of saprophytic mycoflora were inhibited only at concentrations above $1.0 \cdot 10^{-3}$ curie/liter. The rate of accumulation decreased from the lowest link (microorganisms) to the highest (fish). Adverse effects of the radioisotopes on developing fish spawn varied with the stage of

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USSR

GUS'KOVA, V. N., et al, Gidrobiologicheskiy Zhurnal, Vol 6, No 4, Jul/Aug 70, pp 5-11

development. Effects were evident in the early stages of embryogenesis at a concentration of $1 \cdot 10^{-5}$ curie/liter and in later stages at $1.0 \cdot 10^{-3}$ curie/liter.

2/2

1/2   021   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--CAPILLARY ARC METAL ION SOURCE -U-

AUTHOR-(02)-ILIN, B.N., KRIVTSOV, A.K.

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, (2), 197-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--LEAD, ION SOURCE, ARC DISCHARGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1455   STEP NO--UR/0120/70/000/002/0197/0198

CIRC ACCESSION NO--AP0135126
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0135126
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CAPILLARY ARC SOURCE WAS USED TO
   OBTAIN IONS OF METALS WITH LOW VOLATILITY. A CURRENT OF 1.5 MA PB IONS
   WAS OBTAINED WITH AN EXTN. VOLTAGE OF 4 KV AND DISCHARGE POWER OF 50 W.
   THE EFFECT OF THE SOURCE GEOMETRY ON THE ION CURRENT WAS INVESTIGATED.

UNCLASSIFIED

USSR

UDC: 621.791.763.029

ORLOV, B. D., MARCHENKO, A. L., ISAKOV, A. F., BILEV, K. K., IL'IN, B. V.

"A Liner for Spot and Roller Welding"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 5, 1970, p 74, patent No 261602, filed 6 Nov 68

Abstract: This Author's Certificate introduces a liner for spot and roller welding of aluminum-magnesium alloys. This liner, in the form of a strip, is introduced into the zone of the welded seam mainly for checking penetration. As a distinguishing feature of the patent, inspection quality is improved and the corrosion strength of the welded joint is increased by making the strip from an alloy of aluminum and manganese taken in the following percent ratio: manganese -- 5-6%, and the remainder aluminum. The thickness of the strip is 7-8% of the thickness of one of the plates being welded.

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Navigation Aids

SOLOMONIK, M. Ye., ROTENBERG, M. I., IL'IN, G. B., RASIN, A. M., SHESTAKOV, A. V., Members of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"A High-Precision Radio Direction Finder With Steerable Antenna"

Abstract: The errors in radio direction finding due to distortions of the phase front of the received signal increase with a reduction in wavelength. One way to reduce these errors is to take a "sample" of the electromagnetic field from as large a region of space as possible. A new way to realize this method on meter wavelengths is considered which combines simplicity of the direction finder circuit with short-base antennas and reduced sensitivity to local distortions of the phase front. The antenna is steerable about the vertical axis. The motion of the antenna results in a change in the errors of the instrument in accordance with a periodic law, with the result that time averaging considerably reduces error. The authors discuss the theory of operation of such a direction finder with an antenna which moves in a closed curve.

1/1

USSR

UDC: 621.372.061

IL'IN, G. I., LOSSOVSKIY, V. A.

"Passage of Signal and Noise Through a Nonlinear Tank Circuit With PN-Junction Capacitance"

Translation: An expression is derived for the probability density function of amplitudes at the output of a tank circuit subjected to a stationary harmonic signal and normal wide-band noise. It is shown that in the case of low noise dispersion, the density function is close to normal. It is noted that circuits of this kind may be used to improve signal-to-noise ratio since resonance phenomena take place on different frequencies when the circuit is subjected to noise or an additive mixture of signal and noise. One illustration, bibliography of seven titles. N. S.

1/1

USSR

IL'IN, G. M., LEYKINA, B. M., NIKITINA, T. N., OTKUPSHCHIKOVA, M. I.,
FITIALOV, S. Ya.

"A Linguistic Approach to the Problem of Constructing an Information System"

V sb. Inform. vopr. semictiki, lingvist. i avtomat. perevoda (Information
Problems of Semiotics, Linguistics and Automatic Translation), vyp. 2,
Moscow, 1971, pp 4-13 (from RZh-Kibernetika, No 4, Apr 72, Abstract No
4V614)

Translation: The paper describes the principles of construction of a
"question-answer" information-logic system. It is assumed that a natural
language can be used as a base for an information language. The actions
of the system are defined by the following relations: 1) text A is an
answer to question Q; 2) an answer to question Q may be extracted from
text A; 3) every answer extracted from text B is extracted from text A
as well; 4) texts A and B give identical answers to any question.

The methods of extracting an answer from the text are not considered
in the paper.

Let $3(T)$ designate the number of questions whose answers can be ex-
tracted from text T according to the rules of the given system. The sense

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USSR

IL'IN, G. M. et al., *Inform. vopr. semiotiki, lingvist. i avtomat. perevoda*, vyp. 2, Moscow, 1971, pp 4-13

of text T_1 relative to text T_2 is determined by the condition $3(T_1) + 3(T_2) < 3(T_1 \cup T_2)$. The amount of information contained in T_1 relative to T_2 can be defined as $3(T_1 \cup T_2) - 3(T_2)$. A. Maslov.

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1/2   018
UNCLASSIFIED
TITLE--ROLE OF ASPARTIC ACID IN BIOSYNTHESIS OF NICOTIN AND ANABASINE -U-
PROCESSING DATE--23OCT70

AUTHOR-(03)-LOVKOVA, M.YA., ILIN, G.S., KLIMENTYEVA, N.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGIYA RASTENIY, 1970, VOL 17, NR 2, PP 409-416

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOSYNTHESIS, PLANT PHYSIOLOGY, ASPARTIC ACID, ALKALOID,
PYRIDINE, PYRROLIDINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1982/1579

STEP NO--UR/0326/70/017/002/0409/0416
CIRC ACCESSION NO--AP0052781
UNCLASSIFIED

CIRC ACCESSION NO--AP0052781

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. FOR INVESTIGATION OF BIOSYNTHESIS
OF NICOTIN AND ANABASINE C PRIME14-N PRIME15 ASPARTIC ACID WAS
INTRODUCTION INTO N. TABACUM SEEDLINGS AND N. GLAUCA SHOOTS AS PRECURSOR
OF ALKALOIDS.   AFTER TERMINATION OF THE EXPERIMENT NICOTIN AND
ANABASINE PREPARATIONS WERE ISOLATED FROM THE PLANT MATERIAL AND THEIR
OXIDATIVE DECOMPOSITION INTO NICOTINIC ACID WAS CARRIED OUT. IT IS
SHOWN THAT ASPARTIC ACID IS A PRECURSOR OF NICOTIN AND ANABASINE BUT ITS
ROLE IN BIOSYNTHESIS OF THESE ALKALOIDS IS NOT THE SAME. THUS, ON
INCORPORATION INTO NICOTIN THE NITROGEN OF ASPARTIC ACID IS MAINLY USED
FOR BIOSYNTHESIS OF THE PYRIDINE RING AND THE CARBON ATOMS PARTICIPATE
IN FORMATION OF BOTH THE PYRIDINE AND PYRROLIDINE RINGS OF THE ALKALOID.
ON THE CONTRARY, IN BIOSYNTHESIS OF ANABASINE, ASPARTIC ACID MAINLY
PARTICIPATES IN FORMATION OF THE PIPERIDINE RING OF THE ALKALOID AND IS
INCORPORATED INTO THE PYRIDINE HETEROCYCLE TO A MUCH SMALLER DEGREE.,
PATHS OF PARTICIPATION OF ASPARTIC ACID IN BIOSYNTHESIS OF NICOTIN AND
ANABASINE ARE DISCUSSED.

1/2   026   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--VIRAL URETHRITIS OF VENEREAL ORIGIN -U-

AUTHOR--ILIN, I.I.

COUNTRY OF INFO--USSR

SOURCE--UROLOGIYA I NEFROLOGIYA, 1970, NR 3, PP 41-44

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--UROLOGY, VENEREAL DISEASE, VIRUS, EYE, SKIN, TETRACYCLINE,
    ALLERGIC DISEASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0163   STEP NO--UR/0606/70/000/003/0041/0044

CIRC ACCESSION NO--AP0120868
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0120868

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMICROBIC URETHRITES WERE RECORDED
   IN 7.1PERCENT OF PATIENTS AMONG A TOTAL OF 2109 ONES SUFFERING FROM
   NONGONOCOCCAL URETHRITES. VIRAL INCLUSIONS TYPICAL OF CHTAMYDOZOON
   OCULOGENITALE WERE FOUND THROUGH VIROSCOPY OF THE MUCOUS SCRAPINGS IN
   THE EPITHELIAL CELLS OF 11 OF 27 PATIENTS WITH FRESH URETHRITES UNDER
   EXAMINATION. SIMILAR INCLUSIONS WERE DISCERNED IN 3 OF 7 PATIENTS WITH
   REUTERS SYNDROME, NOT TREATED PRIOR TO THEIR HOSPITALIZATION. IN VIRAL
   URETHRITIS THE INCUBATION PERIOD AVERAGES 20.5 DAYS, ITS COURSE BEING
   COMMONLY EITHER TORPID OR SYMPTOMLESS. VIRAL URETHRITIS IS OFTEN
   COMPLICATED BY CHRONIC PROSTATITIS, LESS FREQUENTLY, BY EPIDDIDYMITIS
   AND VESICULITIS. TYPICAL ARE EXTRAGENITAL COMPLICATONS SUCH AS: EYE,
   JOINT, SKIN AND MUCOSA LESIONS. REUTER'S SYNDROME, WHICH IS REGARDED BY
   THE AUTHOR AS A TYPICAL COMPLICATION OF VIRAL URETHRITIS, WAS OBSERVED
   IN 35 PATIENTS (ONE OF WHOM DIED AND 8 OTHERS HAD PERSISTENTLY DISTURBED
   ARTICULAR FUNCTIONS). IN THE PATHOGENESIS OF REUTER'S SYNDROME GREAT
   IMPORTANCE IS ATTACHED TO THE ALLERGIC COMPONENT. AGENTS OF THE
   TETRACYCLINE GROUP ARE RECOMMENDED FOR MEDICATION IN UNCOMPLICATED
   CASES.   FACILITY: KLINIKA KOZHNYKH I VENERICHESKIKH BOLEZNEY
   CHELYABINSKOGO MEDITSINSKOGO INST.

UNCLASSIFIED

USSR

UDC 576.858.6.083.35.07

ZHDANOV, V. M., BYKCVSKIY, A. F., AL'TSHTEYN, A. D., LOZINSKIY, T. F., URYVAYEV, L. V., VOLKOVA, M. L., YERSHOV, F. I., IL'IN, K. V., BEKTEIROV, T. A., IRLIN, I. S., MILLER, G. G., ZAKHAROVA, L. G., PEREKREST, V. V., GERASINA, S. F., and SEVAST'YANOVA, M. V., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, and the Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Moscow

"Detection of Oncornaviruses in Continuous Tissue Cultures"

Abstract: Studies were conducted on a number of human and animal continuous tissue cultures maintained in medium 199 containing 10% bovine serum to determine oncornaviruses. Formation of oncornaviruses in the tissue cultures were followed by the appearance of virtal particles in the culture fluid labeled with H^3-uridine, susceptibility of their synthesis to low actino-mycin D concentrations, appearance of these particles following inhibition of nuclear material synthesis by bromodeoxyuridine or mitomycin, presence of reverse transcriptase in these particles, presence of 60-70 S RNA in these particles, and electron microscopy. Of the 26 human lines investigated 14 contained type B oncornavirus, and 4 lines type C virus. Eight of the

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USSR

ZHDANOV, V. M., et al., Voprosy Virusologii, No 4, 1973, pp 411-414

14 animal lines studies also showed the presence of cncornaviruses. The source of these viruses in the human lines remains unclear, but the source may have been bovine serum or porcine trypsin used in the preparation of cell suspension. It is noteworthy that type B viruses were isolated in human cultures of epithelial origin, while type C viruses in human cultures of leukotic or sarcomatous origin.

2/2

1/2   022
UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--A STUDY OF ANTIGENS OF THE SURFACES OF CELLS OF LARYNGEAL PAPILLOMA
-U-

AUTHOR-(03)-ILIN, K.V., SPURE, ZH.ZH., CHIRESHKIN, D.G.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BILOGII I MEDITSINY, 1970, VOL 69, NR
5, PP 85-88
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANTIGEN ANTIBODY REACTION, RESPIRATORY SYSTEM, FLUORESCENT
ANTIBODY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0092   STEP NO--UR/0219/70/069/005/0085/0088

CIRC ACCESSION NO--AP0120792
UNCLASSIFIED

2/2   022
CIRC ACCESSION NO--AP0120792   UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE CELLS OF LARYNGEAL PAPILLOMA
  OF CHILDREN CONTAIN A SPECIFIC SURFACE ANTIGEN (OR ANTIGENS) REVEALED BY
  THE INDIRECT METHOD OF FLUORESCING ANTIBODIES.   HUMORAL ANTIBODIES TO
  THIS ANTIGEN EXERT A CYTOTOXIC EFFECT ON THE CELLS OF PAPILLOMA.
  FACILITY: GAMALEIA INSTITUTE OF PEIDEMIOLOGY AND MICROBIOLOGY OF THE
  ACADEMY OF MEDICAL SCIENCES, OF THE USSR AND NO. 2 CITY PEDIATRIC
  CLINICAL HOSPITAL, MOSCOW.

UNCLASSIFIED

USSR

IL'IN, L. A. and LOBKOVA, N. A., Institute of Mechanics, Academy of Sciences, Ukrainian SSR (Kiev)

"Axisymmetric and Antisymmetric Stresses and Deformations in Shells of Revolution With a Meridional Section"

Abstract: In a problem dealing with the axisymmetric and antisymmetric stressed state of thin orthotropic nonhomogeneous shells of revolution, including laminated ones, with an arbitrary configuration of the meridian during mutual shifts (dislocations) of the edges of the meridional section, it is shown that for its solution an effective method may be used, developed for shells enclosed along a parallel, which is based upon the numerical integration, with discrete orthogonalization and normalization, of a resolving system of differential equations that are obtained from the initial equations of the theory of thin shells without any additional simplifications. 8 references. 4 figures.

1/1

USSR

UDC 612.79.014.482

NORETS, T. A., IL'IN, L. A., and HSAKOV, V. K., Leningrad Scientific Research Institute of Radiation Hygiene, Ministry of Health RSFSR

"Absorbed Doses in the Skin and Changes Therein With Increasing Depth of Contamination by β and $\beta-\gamma$ Emitters With Different Energies"

Abstract: The purpose of the work was to: (a) calculate the absorbed doses at different depths of the skin created by β emitters with maximum energies (E_0) ranging from 0.16 to 3.0 MeV; (b) trace the relationship between the distribution of absorbed doses and E_0; (c) determine the degree of irradiation of various functional and morphological structures of the skin after contamination by β emitters. The levels of absorbed doses in the surface layers of the epidermis and extent of decrease with depth were found to vary with the energy of the β spectrum. The lower the energy, the sharper the decrease in the dose from layer to layer. β emitters with low energy of the β spectrum (i.e., with $E_0 < 0.4$ MeV) affect mainly the layers of epidermis insensitive to radiation. The degree of irradiation of the basal layer varies considerably with the thickness of the epidermis and energy of the spectrum. β emitters

1/2

- 27 -

USSR

NORETS, T. A., et al., Meditsinskaya Radiologiya, No 10, 1971, pp 48-54

with a maximum energy of about 0.5 to 1.5 MeV create high levels of radiation in all layers of the epidermis, the basal layer in particular. They act rather intensively on the functional and morphological structures located in the upper third of the derma, especially the superficial network of blood and lymph capillaries.

2/2

USSR   UDC 577.1:612.12.015

IL'IN, L. A., and MOSKALEV, Yu. I., editors

"Distribution, Kinetics of Metabolism, and Biological Effect of Radio-
active Isotopes of Iodine"

Raspredeleniye, kinetika obmena i biologicheskoye deystviye radioaktivnykh
izotopov yoda (cf. English above), collection of works, Moscow, "Meditsina,"
1970, 240 pp, ill., 2 r. 11 k. (from RZh-Biologicheskaya Khimiya, No 9,
May 71, Abstract No 9 F1408 by V. Sh.)

Translation: The biological effect of iodine, its influence on the cardio-
vascular system, autoimmune reactions of the endocrine glands, formation
of tumors and nontumor disorders developing longer after radioiodine lesions
were studied.

1/1

THE INTERACTION OF Mo99 WITH BIOCOMPONENTS OF THE SKIN

Shvydko, N. S.; Il'in, L. A.; Norets, T. A.; Antonova, V. A.

Summary

The paper presents data characterizing the fixation of Mo^{99} by individual biocomponents of the skin, as well as the epidermis, derma and subcutaneous cellular tissue. The authors demonstrate the quantitative distribution of Mo^{99} between fat-soluble, water-soluble and residual fractions of the skin and its layers. The mechanisms of fixation of Mo^{99} by different structures of the tissue are discussed.

D. A.

REEL/FRAME
19711386

02

TITLE--THE BINDING OF RADIOACTIVE ISOTOPES BY COMPONENTS OF THE SKIN -U--

AUTHOR-(04)-SHVYDKO, N.S., ILIN, L.A., NORETS, T.A., ANTONOVA, V.A.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 6, PP 67-72

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, NUCLEAR SCIENCE AND
    TECHNOLOGY
TOPIC TAGS--RADIOACTIVE ISOTOPE, SKIN PHYSIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1520   STEP NO--UR/0241/70/015/006/0067/0072

CIRC ACCESSION NO--AP0128915
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0128915
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INFORMATION WAS OBTAINED WHICH
  CHARACTERIZED THE QUANTITATIVE DISTRIBUTION OF RADIOISOTOPES OF
  MOLYBDENUM, TELLURIUM, STRONTIUM, BARIUM, YTTRIUM, CERIUM AND
  PRASEODYMIUM WITH NEODYMIUM BETWEEN INDIVIDUAL BIOSTRUCTURES OF THE SKIN
  AND ITS LAYERS. ON THE BASIS OF THE RESULTS DERIVED THE AUTHORS
  CONDUCTED A COMPARATIVE ANALYSIS OF BEHAVIOR OF THESE RADIONUCLIDES IN
  THE SKIN.   FACILITY: LENINGRADSKIY NAUCHNO ISSLED. INSTITUT
  RADIATSIONNOY GIGIYENY MZ RSFSR.

UNCLASSIFIED

USSR   UDC 539.374

PANFEROV, V. M., ISHAGILOV, R. KH., IL'IN, L. M., KOROL', YE. Z., TYURIN, V. F.

"Deformation of a Solid State in the Case of Complex Loading where the Major
Axes of the Stress and Strain Tensors Remain Stationary"

Nauch. tr. In-t mekh. Mosk. un-ta (Scientific Works of the Mechanics Institute
of Moscow University), 1971, No 8, pp 5-21 (from RZh-Mekhanika, No 11, Nov 71,
Abstract No 11V365)

Translation: A version of plasticity theory is proposed which is adapted for
the description of the stressed and strained states of a solid state during
small elastic-plastic flows in the case where the major stress and strain axes
are stationary; the theory is based on the tensor-line relation between the
deviators of the stresses, strains and deformation rates. A description of the
tested device built at the Mechanics Institute of Moscow State University which
permits programmed loading of tubular test pieces under an axial force and
internal pressure is presented. Results are presented from experiments performed
on this device to check the hypotheses assumed in the proposed version of
plasticity theory.

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USSR   UDC 537.311.3:546.26'28

BARINOV, YU.B., BULGAKOV, YU.V., DEM'YANCHIK, D.V., IGLITSYN, M.I., IL'IN,
M.A., KASAGANOVA, M.G., PAVLOV, N.M., SOLOMATIN, V.N.

"Effect Of Irradiation On The Physical Properties Of Hexagonal Silicon Carbide"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic Crystals-
Collection Of Works), Vol. 3, Part 2, Kiev, "Nauk.dumka," 1971, pp 105-110 (from
RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B36)

Translation: The effect was studied of irradiation by α particles and neutrons
on the spectra of electronic paramagnetic resonance and the optical spectra of
n-type α-SiC doped with nitrogen and p-type doped with boron. In the spectra
of the electronic paramagnetic resonance of n-type specimens, the irradiation
caused a decrease of the old and the appearance of a number of new lines.
Irradiation of p-type crystals by α-particles lead to an increase of the optic-
al absorption in the 2--25 micrometer region and irradiation by neutrons caused
an increase of absorption at $\lambda < 0.55$ micrometer and a decrease of absorption
in the $0.55 < \lambda < 6$ micrometer region. 3 ill. I.V.

1/1

I

101498k   Rubber-to-plastic bonding in the vulcanization
process. Glagolev, V. A.; Il'in, N. S.; Kornev, A. E.; Puzrin, B.
S. (Mosk. Int. Tonkoi Khim. Tekhnol. Im. Lomonosova, Moscow,
USSR). Kauch. Rezina 1970, 29(1), 30-2 (Russ). Natural rub-
ber and synthetic rubbers (Nairit, SKN-26, and SKI-3) were
bonded to polyamide, polycarbonate films or glass cloth laminate
surfaces with Leikonat (isocyanate adhesive). The bonding of
these rubbers to polyethylene or polypropylene required the pre-
treatment of their surfaces with aq. KMnO₄ soln. Diagrams
show the changes of adhesion between these rubbers and poly-
mers in the 20-140° range.   CPJR

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USSR

IL'IN, O. P. and PANASYUK, V. I., Belorussian Polytech. Inst.

"Delayed Servo System in Random Actions"

Abstract: The purpose of this article is to investigate theoretically the
possibility of improving the accuracy of automatic control systems for given
random effects of the speed of the system with white noise disturbances in-
put to the system. The authors use the method of statistical optimization
by the criterion of the minimum mean-square error. Only systems tolerating
a "pure" shift in time of the output relative to the input quantities --
systems for which only the shape of the output signal is important -- are
considered. A preliminary choice of system structure is made on the basis
of optimal filtration, with a "pure" delay element applied to the system in-
put. Parallel to this element, the required value of the derivative of the
input signal is applied under the assumption that this significantly reduces
the error in abrupt changes in the speed of the system. An example to de-
monstrate the application of the authors' method is given.

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USSR   UDC: 621.372.54

IL'IN, P. A., SUDAKOVA, V. I., RYABOV, Yu. A.

"An Electromechanical Filter"

Translation: An electromechanical filter is proposed which contains sec-
tions formed by series-connected resonators and restraints which operate
in the torsional vibration mode. To improve the resistance of the filter
to vibration, its sections are arranged in parallel and interconnected by
restraints which operate in the longitudinal vibration mode, and the free
ends of the sections are connected to the base through quarter-wave reso-
nators.

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Veterinary Medicine

USSR

IL'IN, V., Doctor of Biological Sciences Moscow Veterinary Academy

"If Animals are Injured by Radiation"

Moscow, Voyennyye Znaniya, No 7, Jul 70, pp 26-27

Translation: At high radiation levels, especially in an area of dangerous contamination, animals kept in airtight structures or in any other places prepared for winter may be exposed to various doses of gamma-rays without suffering serious internal lesions from the radioactive substances. Some of the animals will receive lethal doses of radiation. Such cattle must be slaughtered for meat as soon as possible, within 3 to 7 days.

It is not difficult to determine the dose if the local radiation level and radiation coefficient are known. If the animals are slaughtered before the external symptoms of radiation sickness appear (elevated body temperature, gastric disturbances), the meat and other products can be used for food.

The meat must be obtained shortly after the animals are slaughtered, because such carcasses spoil more quickly than do those of healthy cattle. Pickling does not help to preserve them. Meat from injured animals must be boiled or canned.

If cattle are irradiated with doses capable of inducing moderately severe radiation sickness, the latent period may be as long as 2 or 3 weeks. Such animals can be slaughtered for meat within the first 14 days of exposure. If the

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USSR

IL'IN, V., Voyennyye Znaniya, No 7, Jul 70, pp 26-27

meat is not needed, the animals can be treated. Prompt and correct treatment can ensure favorable results.

Milk from cows exposed only to external radiation can be freely used since its nutrient qualities remain unimpaired until the symptoms of the disease appear and, of course, after recovery.

The situation is more difficult when cattle and poultry receive internal radiation. Radioactive products of a nuclear blast enter the body chiefly with feed. No more than 2% of the radioactive substances in the feed enter with water. Another example. If the animals are in a pasture, they will receive through the lungs 300 to 500 times less radioactive substances than by eating contaminated grass.

It is reasonable to assume that grass holds from 8 to 25% of the radioactive dust that settles from the air. More tiny particles than large ones adhere to the plants. Therefore, at remote distances from the epicenter of a blast, where the radiation level is low, the grass may still contain a substantial quantity of fine radioactive dust. Swine and poultry are less contaminated by radioactive substances, because a large part of their rations consists of grain forage, which is cleaner than plant leaves. Part of the radioactive isotopes is excreted, part is absorbed into the blood and deposited in organs and tissues, and excreted with

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IL'IN, V., Voyennyye Znaniya, No 7, Jul 70, pp 26-27

milk and eggs. The most dangerous isotopes - radioactive iodine, barium, strontium, cesium - are readily absorbed.

If milch cows are exposed to radioactive products, these isotopes are excreted with milk during the first 2 to 2-1/2 months. If all the radioactivity eliminated with milk is taken as 100%, the iodine isotopes constitute 80%. Milk, therefore, is particularly dangerous for children. Its radioactive iodine is absorbed and concentrated in the thyroid. The gland is very small in an infant (only a few grams), and the accumulation of a large amount of the isotope destroys it. For the same reason, iodine isotopes are also dangerous for adults. Consequently, before milk from injured animals is used, it must be monitored.

Thus, during the first 2 to 2-1/2 months after a nuclear blast, the main danger in milk will be the iodine isotopes ("iodine period"); after the third month and up to a year, the chief danger is strontium 89; after a year, strontium 90 and cesium 137. Iodine isotopes are short-lived (the longest-lived, iodine 131, has a half-life of 8 days.

If radioactivity in milk is above permissible levels, it must not be used for food, nor is it to be destroyed. It must be processed into butter, powdered or evaporated milk, which can be stored a long time. During this time the radioactivity in dairy products drops to permissible levels. This requires a knowledge both of the concentration of the isotope in the product and of the half-life of iodine

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IL'IN, V., Voyennyye Znaniya, No 7, Jul 70, pp 26-27

131.

When milk is processed into butter, 1 to 3% of the iodine 131 in the milk passes into it, only 0.2% into melted butter, about 20% into pot cheese. Consequently, this radioisotope, like cesium 137, remains in nonfood products obtained by processing milk, in whey or buttermilk. If the iodine 131 concentration is not too high, they can be fed to swine.

Beginning with the third month after exposure, milk will contain mostly the radioactive isotopes of strontium, and then those of cesium as long-lived isotopes. Milk must be free of them. In the United States, for example, up to 90% of strontium 90 is removed from milk with special apparatus.

Sometimes the milk can be processed into butter and pot cheese. In doing so only about 1% of strontium 90 and even less cesium (about 0.5%) passes into the butter, and about 60 and 20%, respectively, into the pot cheese.

If the concentration of these isotopes is above permissible levels, the milk cannot be processed, for the butter and pot cheese will not be usable. And it would not make any sense to store them, because the half-life of the isotopes is longer than the period of possible storage of the products.

Some of the radioactive substances are also present in eggs. The concentration of these substances is highest in the shell, and about 100 times less in the yolk and albumen. The short-lived isotopes (iodine, tellurium, etc.) concentrate

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IL'IN, V., Voyennyye Znaniya, No 7, Jul 70, pp 26-27

mostly in the yolk and albumen, while the strontium and barium isotopes concentrate in the shell. Consequently, eggs containing radioactive substances in amounts above permissible levels should be stored until radioactivity decreases to safe levels. When eggs are used after storage, the shells must be carefully removed. An even better procedure is to powder the contaminated eggs, in which form they can be stored longer if properly packaged.

When should food animals be slaughtered? How is the meat to be used? Animals should be slaughtered before pronounced external symptoms of disease appear, or after complete recovery. It is best, however, to wait until the end of the latent period, because in live animals the content of radioactive isotopes in the body and tissues of food value decreases fairly rapidly because of excretion and physical decay.

American investigators (Squire, Carr, Barnes and Others) slaughtered sheep and rabbits at various times after feeding them radioactive products from an aerial blast, and then monitored all the organs and tissues. The blast products were from 8 hours to 4 days "old". If the concentration of blast products in the liver, muscles, bones, and other tissues of animals sacrificed 24 hours after injury is taken as 100%, it decreases by the 5th or 6th days four- to five-fold in the liver and kidneys, four-fold in the muscles, and 1.3-fold in the bones. After 10 days, the radioactivity of all the soft tissues decreased ten-fold or more, but only two-
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IL'IN, V., Voyennyye Znaniya, No 7, Jul 70, pp 26-27

to three-fold in the bones. It decreased thereafter much more slowly.

Organs	Content of radioactive substances in % of activity on the day of slaughter		
	6th day	10th day	20th day
Liver	20.7	7.9	1.1
Kidneys	24.6	10.6	1.9
Bones	78.5	64.0	43.9

One may conclude from this that the most suitable time to slaughter the animals is from 6 to 10 days after internal exposure to radioactive substances. During this time, radioactivity in the tissues of food value decreases five- to ten-fold and the external clinical symptoms of sickness may not yet have appeared.

It is obvious that the duration of this period must be determined by veterinary specialists, taking into account the specific situation, the location of the animals, and the possible amount of radioactive substances that can enter the body with feed, water, and air.

Animals receiving a large dose of whole-body external radiation while ingesting radioactive substances must be slaughtered for meat within 3 or 4 days. The meat and other slaughter products may, of course, be contaminated, but they need

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IL'IN, V., Voyennyye Znaniya, No 7, Jul 70, pp 26-27

less rapidly.

The rapid decrease in radioactivity during the first few months of meat storage is due to decay of the short-lived isotopes (in muscles - iodine, tellurium, molybdenum; in bones - barium 140, strontium 89). When the short-lived isotopes decay, the long-lived ones remain and the radioactivity will decrease slowly at approximately the same rate in muscles and bones.

Short-lived isotopes and those with a medium half-life are deposited in the skin. Skin radioactivity likewise decreases fairly rapidly, more slowly than in the liver, but more quickly than in the muscles and bones.

Both the rate and extent of decrease in radioactivity can be calculated. If the radioactivity in meat does not drop to permissible levels during (a reasonable period of) storage, there is no point in storing it any longer.

Sometimes meat with a concentration of radioactive substances above levels fit for human consumption can be fed to swine and more or less pure lard obtained. It is up to veterinary specialists to determine the possibility, desirability, and duration of storage of the slaughter products obtained from animals exposed to radioactive substances.

Rapid methods are now available for determining radioactivity in environmental objects, including food products. Agricultural specialists must be able to use these methods.

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USSR

GERSHENZON, Ye. M., IL'IN, V. A., KURILENKO, I. N., and LITVAK-
GORSHAYA, L. B.

"Reluctance in n-InSb With a Conductance Impurity"

Abstract: The purpose of this paper is to set up a connection be-
tween the nature of the reluctance, as a function of the magnetic
field and the temperature, and the electrical conductivity mechan-
isms of a semiconductor. The semiconductor used for the experi-
ments described in the paper was n-InSb since all characteristic
dependences of the reluctance can be realized in this material with
comparatively weak magnetic fields. The transverse and longitudi-
nal reluctances were investigated in the temperature range of 1.5-
10° K and at magnetic fields of 0-5000 oersteds. A description of
the preparation of the specimens is given together with a table of
their parameters. Differences in the temperature behavior of the
reluctance of specimens with various types of conductivity as well

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-USSR

GERSHENZON, Ye. M., et al., Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1869-1873

as both positive and negative reluctance in these specimens are discussed. The authors thank V. S. Ivlev for preparing the n-InSb specimens.

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USSR

UDC: 621.315.592

GERSHENZON, Ye. M., IL'IN, V. A., LITVAK-GORSKAYA, L. B.,
RABINOVICH, K. I., and SHAPIRO, Ye. Z.

"Dispersion of Hot Electrons in n-InSb at Low Temperatures"

Abstract: The purpose of this paper is to study the mechanisms of
hot-electron dispersion in n-type InSb in a broad range of elec-
tric fields, and to compare the results of this study with the re-
sults of theoretical research. By so doing, the authors hope to
clear up some of the mystery surrounding the dispersion of energy
and impulse of hot electrons in InSb at temperatures much below
the limiting frequency of the optical phonon. They investigate
the dependence of their specimens' conductivity, Hall constant,
and particle mobility, on the intensity of the electric field at
temperatures of 1.5-4.2° K and at field intensities ranging from
1-400 V/cm. The specimens, whose parameters are given in a table,
were made with markedly different concentrations of impurities and
compensations. Curves are given for the dependence noted above.
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USSR

GERSHENZON, Ye. M., IL'IN, V. A., LITVAK-GORSKAYA, L. B.,
RABINOVICH, R. I., and SHAPIRO, Ye. Z.

UDC: 621.315.592

"Determining Separate Concentrations of Impurities in Type $A^{III}_B{}^V$ Compounds by Electron Heating"

Abstract: A method is developed for determining separate concentrations of impurities in compounds of the $A^{III}_B{}^V$ type from the magnitude of the hot electron mobility and the dependence of the mobility on the electric field intensity. Earlier papers have shown that at low temperatures in such compounds, there is a range of electric field intensities in which this dependence is weak. Two possibilities that may then arise are considered: the carrier concentration is such that the electron-electron interaction may be neglected; the electron concentration is high and the electron-electron interaction must be taken into account. Nomograms for finding the total concentration of impurities from the experimental value of the mobility are given. Also given is the diagram and explanation of a device for verifying this method in the case of some n-InSb and n-GaAs specimens. The authors express their thanks to
1/2

USSR

GERHSENZON, Ye. M., et al, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1906-1910

UDC: 621.315.592

V. S. Ivleva, A. N. Telegin, and L. D. Sobanova for preparing the N-InSb and epitaxial n-GaAs films for the verifying tests.

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- 101 -

"Convergence Conditions of Spectral Expansions Responding to Self-Conjugate Elliptical Operator Expansions"

Abstract: Subtitled "Theorem of the Negative Type for an Arbitrary Expansion of the General, Self-Conjugate, Second-Order Elliptical Operator," the present article is part 4 of the series of articles under the general title given above. In the earlier papers, theorems of the negative type -- i.e., theorems of exact conditions which do not guarantee even the localization of the spectral expansions or their Riesz averages -- were established for the case of the Laplace operator. The present installment proves that these theorems are also valid for the self-conjugate nonnegative expansion of the general, self-conjugate, second-order elliptical operator. It is noted that until the publication of this cycle of papers, theorems of the negative type had not been established even for expansions in the N-multiple Fourier integral or in the N-multiple Fourier trigonometric series. The mathematical methods
1/2

USSR

IL'IN, V. A., _Differentsial'nyye uravneniya_, No 1, 1973, pp 49-73   UDC: 517.946

used in the present paper are very close to those used in the
first two installments of the cycle, both of which were published
in the same journal named above (Il'in, V. A., et al, 7, No 4,
1971; Alimov, Sh. A., et al, 7, No 5, 1971).

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USSR

UDC 623.621.391.825:621.37/39

ATRAZHEV, M. P., Candidate of Technical Sciences, IL'IN, V. A., Candidate of Technical Sciences, and MAR'IN, N. P., Doctor of Technical Sciences

Bor'ba c Radioelektronnymi Sredstvami (Military Electronics Countermeasures), Moscow, "Voyenizdat," 1972, 272 pp

Translation: Annotation: This book, written on the basis of unclassified foreign sources, briefly characterizes the contemporary air defense status of the capitalist countries and examines countermeasure techniques in this defense. The procedures for applying various types of active countermeasures are listed and the gear they utilize is described. The methods of obtaining passive jamming, false targets, and decoys are considered. The basic techniques for surveillance of hostile electronics systems are presented along with procedures for appraising communications countermeasure effectiveness.

The book is intended for the broad circle of readers interested in the fundamentals of electronics countermeasures.

Candidate of Technical Sciences V. A. Il'in wrote chapters 1-3 and section 6 of chapter 4. Doctor of Technical Sciences N. P. Mar'in wrote chapters 4-6, and Candidate of Technical Sciences M. P. Atrazhev wrote chapters 7-9.

USSR

ATRAZHEV, M. P. and IL'IN, V. A., <u>Bor'ba c Radioelektronnymi Sredstvami</u>, 1972,
272 pp

- 64 -

USSR

ATRAZHEV, M. P. and IL'IN, V. A., Bor'ba c Radioelektronnymi Sredstvami, 1972,
272 pp

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USSR

ATRAZHEV, M. P. and IL'IN, V. A., Bor'ba c Radioelektronnymi Sredstvami, 1972,
272 pp

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USSR

ATRAZHEV, M. P. and IL'IN, V. A., Bor'ba c Radioelektronnymi Sredstvami, 1972,
272 pp

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USSR   UDC: 629.78.015.076.8:531.55:523.3

DEMESHKINA, V. V., IL'IN, V. A.

"Investigation of Trajectories of a Space Vehicle Starting from the Surface
of the Moon and Returning to the Earth's Atmosphere"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central
Aerohydrodynamic Institute), 1970, 1, No 3, pp 56-64 (from RZh-Raketostro-
yeniye, No 1, Jan 71, Abstract No 1.41.86)

Translation: The authors investigate the trajectories of a space vehicle
starting from the surface of the moon and returning to the Earth's atmosphere.
The analysis is done by means of an approximate method in which the dimen-
sions of the sphere of action of the moon are disregarded in comparison with
the Earth-moon distance in calculating the geocentric segment, motion along
a circular Keplerian orbit is substituted for the true motion of the moon,
and no account is taken of the change in the vector of orbital velocity of
the moon during selenospheric motion of the vehicle, nor of the extent of
the active segment of the trajectory during the start from the surface of
the moon. The scheme of calculation of the characteristics of the geocentric
and selenocentric motion of the vehicle is briefly discussed. The properties

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USSR

DEMESHKINA, V. V. and IL'IN, V. A., Uch. zap. Tsentr. aero-gidrodinam. in-ta, 1970, 1, No 3, pp 56-64

of invariance of the parameters of the trajectory are established with respect to substitution of an apogeeless geocentric moon-Earth flight by an apogee flight and vice versa, as well as with respect to mapping of the trajectory relative to the plane of the lunar orbit. Data are given from the results of computations of required velocities at the end of the active segment of the trajectory, and the regions on the surface of the moon from which it is possible to reach a given flight trajectory to the Earth. Estimates of geographic latitudes of landing points are given in the case of lift-off from the North Pole for trajectories with single-re-entry. Six illustrations, seven tables. Resumé.

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UDC: 621.373.531(088.8)

USSR

IL'IN, V. A., DIMITRAKI, P. N., All-Union Polytechnical Correspondence Institute

"A Pulse Generator"

USSR Author's Certificate No 270792, filed 3 Dec 68, published 26 Aug 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G213 P)

Translation: This Author's Certificate introduces a pulse generator based on a bridge circuit. The generator contains a time-mark capacitor and switching devices with transistors having complementary symmetry. The unit is designed to produce square and spiked pulses with edges having a slope independent of pulse duration over a wide frequency range with low capacitance of the time-mark condenser. The capacitor is connected between the emitters of transistors of one conductivity type in the two switching devices. The base-emitter junctions of these transistors are the diagonals of two bridge elements whose legs are formed by resistors.

1/1

UDC 621.375.4:621.382.3

USSR

IL'IN, V. A., DIMITRAKI, P. N., ZHURAVLEV, I. G., and NOREKYAN, P. A.

"Experimental Investigation of Semiconductor Diodes Designed for Pulse Bridge Elements"

Moscow, Radiotekhnika, Vol 25, No 1, Jan 70, pp 84-88

Abstract: An experimental investigation of semiconductor diodes intended for pulse bridge elements was carried out, to determine their forward current voltage characteristics and the values of the differential resistance of certain types of diodes. This data is necessary for determining the stability of pulse bridge elements. Two sets (20 each) of diodes of different origin were tested at -60°C, + 25° C, and +75°C for germanium diodes and at -60°C, +25°C, and +120°C for silicon diodes, the technological spread of their parameters was investigated. The results are presented in the form of current voltage and resistance characteristics. The characteristics of the maximum and minimum technological spread and the dependence of the differential resistance of the diode set at each experimental temperature were plotted on the basis of experimental data. An analysis of the results shows that:
1. The silicon junction pulse diodes are the best suited for pulse

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USSR

IL'IN, V. A., et al., Moscow, Radiotekhnika, Vol 25, No 1, Jan 70, pp 84-88

bridge elements; 2. The germanium junction doides can be used successgully in circuits with pulse bridge elements only at average frequencies (1.0-50 KHz), while the use of germanium point-contact diodes is not justified. Original article has ten figures.

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ILIN V. A.

Acc. Nr.: __AP0042551__

Ref. Code: __UR0293__

JPRS 52162

Trajectories for Close Flight About the Moon and Return to Earth

(Abstract: "Study of the Trajectories for a Close Flight Around the Moon
and Return into the Earth's Atmosphere," by V. A. Il'in, V. V. Demeshkina
and N. A. Istomin; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1,
1970. pp 48-58)
        A detailed examination of spatial trajectories for close flight
about the moon with return to the earth's atmosphere is presented; a
large number of requirements are imposed on the analyzed trajectories
(with respect to altitude above the surface, flight time to the moon and
back, velocity at launching from an artificial earth satellite orbit,
initial geocentric distances, inclination of flight planes, etc.). The
study is made by an approximate method with a number of simplifying as-
sumptions: 1) for the geocentric flight segments the radius of the lunar
field of attraction is considered zero; 2) the effect of the lunar gravity
field on the vehicle flying around that body is reduced to an instantaneous
rotation of the entry selenocentric velocity to the vector of exit seleno-
centric velocity; 3) true lunar motion is replaced by motion in a circular
Keplerian orbit; 4) change in the lunar velocity vector during the time of
motion in the lunar sphere of attraction is neglected. On this basis the

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AP0042551

authors formulate the problem of synthesis of trajectories for flight
around the moon and give a model for solving the problem. A classification
of trajectories for flight around the moon is given. The characteristics
of the geocentric segments for earth-moon and moon-earth flights are
analyzed.

19760519

ILIN V. A.

Acc. Nr.: AP0040398

Ref. Code: UR 0103

JPRS 52248

USSR

UDC 621.375.4:621.382.3

IL'IN, V. A., DIMITRAKI, P. N., ZHURAVLEV, I. G., and NOREKYAN, P. A.

"Experimental Investigation of Semiconductor Diodes Designed for Pulse Bridge Elements"

Moscow, Radiotekhnika, Vol 25, No 1, Jan 70, pp 84-88

Abstract: An experimental investigation of semiconductor diodes intended for pulse bridge elements was carried out, to determine their forward current voltage characteristics and the values of the differential resistance of certain types of diodes. This data is necessary for determining the stability of pulse bridge elements. Two sets (20 each) of diodes of different origin were tested at -60°C, + 25° C, and +75°C for germanium diodes and at -60°C, +25°C, and +120°C for silicon diodes, the technological spread of their parameters was investigated. The results are presented in the form of current voltage and resistance characteristics. The characteristics of the maximum and minimum technological spread and the dependence of the differential resistance of

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AP0040398

the diode set at each experimental temperature were plotted on the basis of experimental data. An analysis of the results shows that: 1. The silicon junction pulse diodes are the best suited for pulse bridge elements; 2. The germanium junction doides can be used successgully in circuits with pulse bridge elements only at average frequencies (1.0-50 KHz), while the use of germanium point-contact diodes is not justified. Original article has ten figures.

19741848

TITLE--GEL SORBENTS FOR ENZYME PURIFICATION -U-

AUTHOR-(04)-ILIN, V.A., SHULMAN, M.S., PASHKOV, A.B., SAMBORSKIY, I.V.

COUNTRY OF INFO--USSR

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GELS WERE OBTAINED FOR EXTG.
AMYLASE FROM ORIZIN PC PREPNS. THE CONDENSATION OF DEXTRAN (I) WITH
EPICHLOROHYDRIN OLIGOMER (II) (A. F. CHETVERIKOV, ET AL., 1970), I WITH
II AND POLYETHYLENE POLYAMINE (III), OR I, II, AND III FOLLOWED BY THE
REACTIONS WITH BZCL, DINITROCHLOROBENZENE, OR FURFURAL GAVE GELS WITH
ADSORBENT AND ION EXCHANGE CHARACTERISTICS. THE EFFECTS OF THE GEL
COMPN. ON ITS ION EXCHANGE, ADSORPTION, AND SWELLING PROPERTIES WERE
DETD. THE GELS WITH LOWERED N BASICITY WERE BEST FOR THE EXTN. OF
AMYLASE.   FACILITY: RES. INST. PLAST., MOSCOW, USSR.

UNCLASSIFIED

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AUTHOR-(05)-ILIN, V.A., SAMBURSKIY, I.V., GRACHEV, L.L., PASHKOV, A.B.,
   DOMNINA, L.A.
CCUNTRY OF INFO--USSR

SOURCE--USSR 231,799
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ION EXCHANGE RESIN, CHEMICAL PATENT, TUNGSTATE, MOLYBDATE,
   POLYETHYLENE, POLYAMINE, RESORCINOL, FORMALDEHYDE, ORGANIC SULFUR
   COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1455   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128854
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AA0128354
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   AN ION EXCHANGER WITH IMPROVED
   CAPACITY FOR MOLYBDATE AND TUNGSTATE IONS IS PREPD. BY POLYCONDENSATION
   OF POLYETHYLENE POLYAMINES, RESORCINOL AND HCHO, AND CONTAINS
   TETRAMETHYLTHIURAM DISULFIDE.

UNCLASSIFIED

1/2   023   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--A NEW METHOD OF REPAIRING MANDIBULAR DEFECTS WITH PRESERVED OSSEOUS
   CARTILAGINOUS HETEROTRANSPLANTS (FILINGS) (EXPERIMENTAL RESEARCH) -U-
AUTHOR--ILIN, V.A.

COUNTRY OF INFO--USSR

SOURCE--STOMATOLOGIYA, 1970, VOL 49, NR 2, PP 54-56

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARTILAGE, BONE GRAFT, HETEROTRANSPLANTATION, BONE RESORPTION,
   EXPERIMENTAL SURGERY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1851   STEP NO--UR/0511/70/049/002/0054/0056

CIRC ACCESSION NO--AP0101896
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0101896
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR THE PURPOSE OF STUDYING THE
  REGENERATIVE PLASTIC PROPERTIES OF OSSIOUS CARTILAGINOUS HETEROGRAFTS,
  PLACED FOR 24 HOURS INTO SCHAUFLER KRAUZE SOLUTION AND PRESERVED IN
  80DEGREES ALCOHOL, AND THE REACTION OF THEMANDIBULAR BONE TISSUE TO THE
  TRANSPLANT (FILLINGS) THE AUTHOR CONDUCTED AN EXPERIMENTAL INVESTIGATION
  ON 30 ANIMALS (RABBITS AND DOGS).   THE DURATION OF THE EXPERIMENT WAS
  FROM 7 TO 350 DAYS. ON THE BASIS OF CLINICO ROENTGENOLOGICAL DATE AND
  MORPHOLOGICAL INVESTIGATIONS IT WAS REVEALED THAT THE SOURCE OF
  FORMATION OF NEW BONE IS THE PERISTIUM AND ENDOSTIUM OF THEMANDIBLE,
  ENDOTHELIUM OF BLOOD VESSELS AND YOUNG CONNECTIVE TISSUE CELLS
  DIFFERENTIATED INTO BONE ELEMENTS. IN THE RESORPTION OF CARTILAGINOUS
  AND BONE FILINGS, FILING THE MANDIBULAR DEFECT, PARTICIPATE LOW
  DIFFERENTIATED CELLULAR ELEMENTS AND BLOOD VESSELS OF THE CAPILLARY
  TYPE.

UNCLASSIFIED

1/2   041   UNCLASSIFIED   PROCESSING DATE--04DEC7

TITLE--INVESTIGATION OF TRAJECTORIES OF CLOSE FLIGHTS AROUND THE MOON WITH
  REENTRY INTO THE EARTH'S ATMOSPHERE. II -U-

AUTHOR-(03)-IIIN, V.A., DEMESHKINA, V.V., ISOTOMIN, N.A.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKIE ISSLEDOVANIIA, VOL. 8, MAY-JUNE 1970, P. 365-376

DATE PUBLISHED-------70

SUBJECT AREAS--SPACE TECHNOLOGY

TOPIC TAGS--TRAJECTORY, ATMOSPHERIC REENTRY, APPROXIMATION METHOD, LUNAR
  SATELLITE, ORBIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605013/C08 STEP NO--UR/0293/70/008/000/0365/0376

CIRC ACCESSION NO--AP0140378
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0140378

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT.   ANALYSIS OF THE SELENOCENTRIC
  MOTION OF A SPACE VEHICLE, SHOWING THE INVARIANCE OF THE CHARACTERISTICS
  OF THIS MOTION WITH RESPECT TO A SUBSTITUTEION OF GEOCENTRIC APOGEE
  FLIGHTS FOR NONAPOGEE FLIGHTS AND VICE VERSA.   THE DIFFERENCE BETWEEN
  PURELY NONAPOGEE (OR PURELY APOGEE) GEOCENTRIC FLIGHTS AND 'MIXED'
  (PARTLY APOGEE AND PARTLY NONAPOGEE) GEOCENTRIC FLIGHTS IS OUTLINED.
  ALL POSSIBLE CLASSES OF LUNAR ORBITAL TRAJECTORIES ARE EXAMINED, AND THE
  CLASSES OF TRAJECTORIES OF PRACTICAL INTEREST ARE IDENTIFIED.   IT IS
  FOUND THAT LUNAR ORBITAL TRAJECTORIES COMPUTED BY AN APPROXIMATE METHOD
  CORRELATE WELL WITH COMPUTATIONS BY THE METHOD OF SPHERES OF INFLUENCE.

UNCLASSIFIED

1/2   014   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--AN ION EXCHANGER -U-

AUTHOR-(05)-ILIN, V.A., SAMBORSKIY, I.V., GRACHEV, L.L., PASHKOV, A.B.,
   DOMNINA, L.A.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 231,800
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ION EXCHANGE RESIN, CHEMICAL PATENT, POLYCONDENSATION,
   PLOYETHYLENE, POLYAMINE, RESORCINOL, HEXEMETHYLENETETRAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1442   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128841
                        UNCLASSIFIED

2/2   014   UNCLASSIFIED   PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AA0128841
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ION EXCHANGER WITH GREATER
 CAPACITY FOR MOLYBDATE AND TUNGSTATE IONS IS PREPD. BY POLYCONDENSATION
 OF POLYETHYLENE POLYAMINE, RESORCINOL, AND HEXAMETHYLENETETRAMINE.

UNCLASSIFIED

USSR

UDC 621.398

IL'IN, V. A., Doctor of Technical Sciences

"Automated Information Systems and Their Interconnection With Telemetering Systems"

Moscow, Pribory i Sistemy Upravleniya, No 9, 1972, pp 20-22

Abstract: A discussion is given of automated information systems and the possibilities of their expansion in the Soviet Union. Not only is the strengthening of the automated information system (AIS) going forward in that country, but also it is accompanied by the formation of hierarchic, interconnected complexes of AIS with the automated interchange of information between the ranks of the hierarchy as well as the various types of AIS. A disgram of the AIS classifications and the areas in which each type is used are given. Also presented are the various forms of AIS complexes (information-measurement complexes, automatic control complexes, diagnostic complexes, and the like) and their characteristics. A short sketch of the history of the establishment of telemetering in the Soviet Union as well as abroad is included.

1/1

1/2   014   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--EFFECTIVENESS OF TRACE FERTILIZERS IN WESTERN SIBERIA -U-

AUTHOR--ILIN, V.B.

COUNTRY OF INFO--USSR

SOURCE--AGROKHIMIYA 1970, (1), 144-54

DATE PUBLISHED-------70

SUBJECT AREAS--AGRICULTURE

TOPIC TAGS--MINERAL FERTILIZER, AGRICULTURAL CROP YIELD, COPPER,
    MOLYBDENUM, BORON, MANGANESE COMPOUND, SULFATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/0445   STEP NO--UR/0485/70/000/001/0144/0154

CIRC ACCESSION NO--AP0116111
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0116111
ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. THE EFFECTS OF TRACE ELEMENT
  INTRODUCTION INTO SOIL ON THE YIELD OF CROPS IN WESTERN SIBERIA ARE
  REPORTED. THE POS. EFFECTS OF CU, MO, AND B ADDNS. ON THE YIELD OF CORN
  AND THE POS. EFFECT OF MNSO SUB4 ON THE YIELD OF WHEAT ARE NOTED.

UNCLASSIFIED

USSR

UDC: 51

IL'IN, V. D., KUROV, B. N., SALYGA, V. I.

"Synthesis of Algorithms for Controlling Complex Systems"

Translation: The problem of comparing competing algorithms by means of a standard algorithm is considered. A criterion of relative effectiveness and conditions of comparison are formulated. The question of determining the number of tests when comparing algorithms on a given time interval is considered. The given conditions for comparing solutions can be used in selecting the most effective algorithm for a specific energy system.

1/1

USSR

IL'IN, V. D., KUROV, B. N., Moscow

"Comparison of the Load Distribution Algorithms Considering Variation of the State of the Power System when Finding the Solutions"

Moscow, Elektrichestvo, No 9, 1972, pp 7-10

Abstract: A study was made of the problem of selecting the load distribution algorithm from among those compared which under the conditions of the specific electric power system will insure an optimal value of the efficiency criterion in the given time interval in the future where the total fuel consumption in the power system is considered to be the comparative efficiency criterion. Failure to consider the possible variation of the state of the power system when finding solutions can lead to erroneous conclusions. A comparison circuit is presented in the form of a set of Fortran-4 programs. Analysis of the results obtained on the Sistema 4-70 digital computer (ICL Company) as applied to an actual power system indicates the essential dependence of the results on the initial data used for the comparison and on the possible variation of the state of the target when finding the solutions.
      When developing the software for automated control systems it is necessary to select the algorithms by comparing their efficiency using the initial
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USSR

IL'IN, V. D, Elektrichestvo, No 9, 1972, pp 7-10

data reflecting the conditions of functioning of the algorithms in the specific
power system. Utilization of the algorithm comparison program during the de-
velopmental stage can lead to a significant simplification of the algorithms
without lowering their efficiency. The introduction of the set of programs for
evaluating the comparative efficiency of the algorithms into the software of
automated control systems improves their efficiency since it permits selection
of the algorithms corresponding to the variable conditions of functioning of
the target object.
        The presented mathematical analysis includes formulas for the state-
ment of the problem, comparison of the solutions with and without considera-
tion of the variation of the state of the object, consideration of the random
nature of the system load, consideration of the random variation of the distri-
bution vector and consideration of the indeterminancy of the station character-
istics.
        The general algorithm for estimating the comparative effectiveness of
the solutions is as follows: 1) the characteristics of the relative increments
are calculated by linear and quadratic approximation of the given characteris-
tics; 2) the optimal distribution is carried out with respect to competing
algorithms A_1 and A_2 for a given total system load P_s; 3) the vector components
2/3

USSR

IL'IN, V. D., et al, Elektrichestvo, No 9, 1972, pp 7-10

$\overline{P}(A_1)$ and $\overline{P}(A_2)$ are rounded; 4) the values obtained are reduced in accordance with the condition $\sum\limits_{j=1}^{n} P_j^{(0)} = P_s$ by varying the load of the regulating stations [where $P_j^{(0)}$ is the rounded values of the vector components $\overline{P}(A)_1$ and $\overline{P}(A_2)$]; 5) the inexactness of maintaining the values of $\overline{P}^{(0)}(A_1)$ and $P^{(0)}(A_2)$ at the stations is simulated; 6) the random value of the load P_c' is simulated; 7) the vectors obtained in accordance with item 5 from the condition of equality of the total generation to a value of P_s' are balanced; 8) the characteristics of the relative increments are simulated; 9) the comparative effectiveness is calculated. The Monte Carlo method is used in items 5, 6 and 8 of the algorithm.

3/3

Conferences

USSR   529.781

IL'IN, V.G., SAZHIN, V.V.

"USSR State Time And Frequency Service In 1972"

Izmeritel'naya tekhnika, Moscow, No 1, Jan 1972, p 6

Abstract: The second conference of the Interdepartmental Commission Of The
Unified Time Service was conducted on 24 Dec 1971 at the State Committee Cf
Standards Of The Council Of Ministers, USSR, under the chairmanship of the
Chairman of the State Standards Of The USSR, Doctor Of Technical Sciences
Professor V.V. Boytsov. The Commission, which unites 14 ministries and depart-
ments of the USSR, noted that for the State Time And Frequency Service Of The
USSR, 1972 would be important as a year of transition to a new system of world-
wide coordinated time and as the year of the 25th Anniversary of the creation
of the service in 1947. Past and present activities of the State Time And
Frequency Service are discussed in detail. Received by editors 29 Dec 1971.

1/1

AA0052550⁻   I l' in , Y· G·

243822   EXTRUDER has screw (1) in a sleeve (3)
which can ride along its axis and is
permanently coupled to the melt line (7). The
far end of the line coupled to a fixed disc (9)
which can travel along the disc device and
improve the quality of the product by controlling
the melt pressure. Polymer crush runs along line
(12) in between the rotary disc (13) and fixed
disc (9) and is there melted, fed along the line
(8) to the screw loading zone. This rotates and
forces and portions molten polymer through the
nozzle (6) and flexible line (7) into the mould
lock (not shown). The pressure of the melt tends
to pulsate due to irregularities in feed, load
etc., parameters. When melt pressure rises
between screw (1) and nozzle (6), the sleeve (3)
slides along the screw and posts (4) to the right
thus contracting the spring (5). The fixed disc
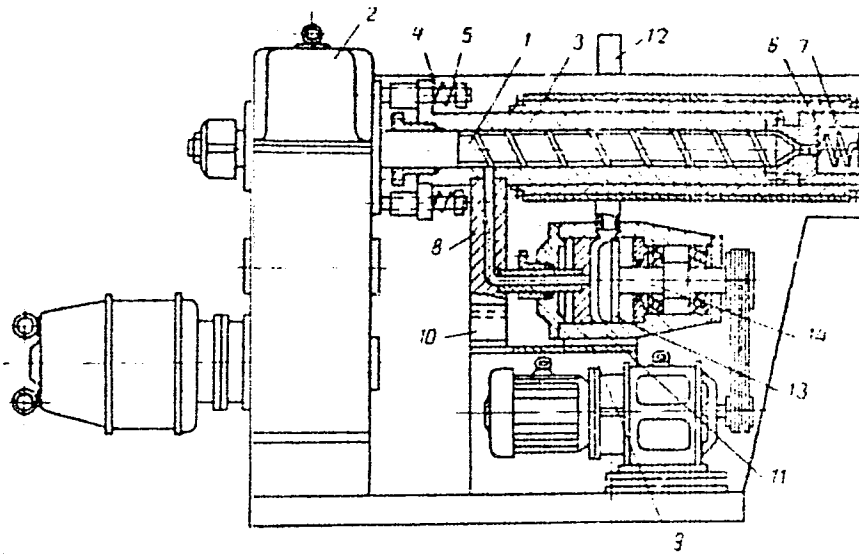
1/3

19821211

AA0052550

travels with the sleeve so as to reduce the clear-
ance between the melting face of the fixed disc (9)
and that of the rotary disc (13), and thus
diminish the portion of crush reaching this gap.
When pressure falls, the reverse occurs. This
extruder is particularly suitable for the prod. of
better quality fibres. 18.3.68. as 1226635/23-5,
VOLKOV, A.A. et al. Synthetic Fibres Res. Inst.
(30.9.69) Bul. 17/14.5.69. Class 39a^4 Int Cl. B 29f

Volkov, A. A.; Belyavskiy, A. I.; Il'in, V. G.
Vsesoyuznyy Nauchno--Issledovatel'skiy Institut Mashin dlya
Proizvodstva Sinteticheskikh Volokon

2/3

19821212

AA0052550

3/3

19821213

USSR   UDC[537.226+537.311.33]:[537+535]

BELOV, A. F., and IL'IN, V. I.

"Investigation of Hall Effect and Electrical Conductivity in Polycrystalline Layers of Lead Sulfide"

Translation: The Hall effect was measured using an apparatus with a variable magnetic field and alternating current. The individual components of this apparatus are briefly described, and the noise of layers on the Hall emf frequency is evaluated; the influence of brightening on electrical conductivity and the Hall constant of photoconductive layers is studied. The results indicate the validity of describing photoconductivity by means of a concentration-type model. Parameters of activated and nonactivated layers are compared. Results are presented from the investigation of the aging of nonactivated layers in air after their removal from the vacuum system.

1/1

1/2   046   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--REVERSIBLE LOW TEMPERATURE DIFFUSION OF OXYGEN IN LEAD SULFIDE
   PHOTOCONDUCTING FILMS -U--
AUTHOR--ILIN, V. I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 229

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--GAS DIFFUSION, LEAD SULFIDE, PHOTOCONDUCTIVITY, DIFFERENTIAL
   EQUATION SOLUTION, GREEN FUNCTION, DIFFUSION COEFFICIENT, LOW
   TEMPERATURE PROPERTY, REVERSIBLE THERMODYNAMIC PROCESS, OXYGEN,
   PHOTOCONDUCTING FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1992   STEP NO--UR/0449/70/004/001/0229/0229

CIRC ACCESSION NO--AP0105066
                         UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105066
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF CHANGES IN THE
ELEC. COND. OF PBS LAYERS UNDER A HIGH PRESSURE OF O AT ROOM TEMP. IS
COMPARED WITH THE THEORETICAL DIFFUSION FORM A CONST. SOURCE ONTO A
PLANE PARALLEL DISK. FORM THE SOLN. OF A DIFFERENTIAL EQUATION USING
GREEN FUNCTIONS, AN ANAL. EXPRESSION IS OBTAINED, WHICH SHOWS THE
DEVIATION FORM "VOL." DIFFUSION. THE DIFFUSION COEFF. AS DETD. FROM
ELEC. COND. WAS OF THE ORDER OF 10 PRIME NEGATIVE12 CM PRIME2-SEC.   THE
LACK OF CORRELATION BETWEEN DIFFUSION COEFFS. FOR O AND THE LAYER
THICKNESS PREVENTS ONE FROM ASSUMING MECHANISMS, THE KINETICS OF WHICH
DEPENDS DIRECTLY ON THE LAYER THICKNESS.   THE QUICK DIFFUSION AT LOW
TEMPS. AND THE REVERSIBILITY OF CHANGES IN THE SAMPLE WOULD SUGGEST THAT
THERE IS DIFFUSION THROUGH INTERCRYST. LAYERS AND A SUBSEQUENT QUICK
CHEMISORPTION ON THE SURFACE OF MICROCRYSTALS.   FACILITY:
LENINGRAD. POLITEKH. INST. IM. KALININA, LENINGRAD. USSR.

UNCLASSIFIED

TITLE--PHOTOELECTRIC ACTIVITY OF OXYGEN IN LEAD SULFIDE FILMS -U-

AUTHOR--ILIN, V.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(3), 631

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--LEAD SULFIDE, OXYGEN, ACTIVATION ENERGY, CRYSTAL LATTICE
   VACANCY, PHOTOELECTRIC EFFECT, REACTION KINETICS, SURFACE FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0570   STEP NO--UR/0449/70/004/003/0631/0631

CIPC ACCESSION NO--AP0105555
                                   UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105555
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE INFLUENCE OF EXCESS O PRESSURE
ON THE PHOTOCOND.(PC) OF PBS FILMS WAS INVESTIGATED. TWO TYPES OF
SAMPLES WERE IDENTIFIED: (1) THOSE WHOSE PC INCREASED UNDER O, AND (2)
THOSE WHOSE PC DECREASED IN O. IN THE TYPE 1 SAMPLES, THE PC KINETICS
UNDER O COINCIDED WITH THE KINETICS OF THE DARK COND.; THE PC IN THE
TYPE 2 SAMPLES CHANGED FASTER THAN THE ELEC. COND. THE RESULTS ARE DUE
TO DIFFERENT DEGREES OF ACTIVATION OF THE FILMS THROUGH THEIR THICKNESS.
THE PHOTOELEC. ACTIVITY OF THE O IS BASED ON A MECHANISM WHICH STARTS
ON THE SURFACE AND IMPROVES THE FILM STRUCTURE BY COMPENSATING DEFECTS,
E.G. S VACANCIES. THE O ITSELF PLAYS NO DIRECT ROLE IN THE PC.

UNCLASSIFIED

USSR   UDC 621.385.64.072.9:621.391.822.3

SOBOLEV, G.L., VOL'FSON, A.O., IL'IN, V.K.

"Fluctuations In Synchronized And Stabilized Voltage-Tuned Magnetrons"

Abstract: Analytical expressions are found for the spectrum of the output os-
cillations of a voltage-tuned magnetron (VTM) which is synchronized by an exter-
ior signal and stabilized by a high-Q resonator. The relationships obtained in
the work make it possible to calculate the spectra of the fluctuations of the
amplitude and phase and the spectrum of the high-frequency oscillation of a VTM
for regimes of synchronization and stabilization with the existence of shot
noise. The spectra of the fluctuations for a stabilized VTM implies the possi-
bility of reducing noise in all regions of the spectrum of the output oscillat-
ions of a VTM. 2 fig. 12 ref. Received by editors, 8 April 1971.

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USSR   UDC 678.029.43

SHISHKIN, V. A., Candidate of Technical Sciences, TROSTYANSKAYA,
YE. B., Doctor of Technical Sciences, GONCHARENKO, V. A., Engi-
neer, Moscow Aviation Technological Institute, BROVAK, G. V.,
Candidate of Technical Sciences, and IL'IN, V. M., Engineer, Cen-
tral Scientific Research Institute of Automobiles and Automobile
Engines

"Chemical Welding of Hardened Plastics for the Mass Production of
Large-Scale Products"

Abstract: The authors describe in this article the results of
research on the chemical welding of hardened polymer materials
such as grades AP-66-151 and AP-65-101 using high-frequency heat-
ing. These materials are used for the manufacture of parts for
automobile bodies and interiors. This high-frequency heating
not only allows intensifying the welding process but also creat-
ing a new one, that is, point welding. A seam produced by such
welding has comparatively higher strength and is distinguished by
good wear resistance in operation. The article contains 2 fig-
ures, 2 tables, and 5 bibliographic references.
1/1

USSR   UDC: 669.15.018.29:539.389.2:536.4

IL'IN, V. P., PADUN, A. N., ANIKAYEV, V. A., URSHANSKIY, A. M., KULALAYEV,
Yu. A., SABKO, V. F.

"Study of Thermal Stability of Certain Wear-Resistant Metals"

Translation: The thermal stability of two groups of wear-resistant steels
was studied. In group I, the C content varied from 0.16 to 0.89%, while the
content of the other elements remained constant as follows (in %): Cr 4.0,
W 1.0, V 1.0, Mo 10.0. In the steels of group II, the content of C varied
from 0.4 to 1.0%, the content of Cr from 5.0 to 10.0%, with the contents of
the other elements (in %): Mn 0.35, Si 0.65, W 10.0, V 0.8, Mo 1.4, Ti 0.5.
A regression equation is produced to estimate the influence of C and Cr con-
tent and tempering temperature on thermal stability of steels of group II.
Analysis of this equation shows that within the limits studied, C significantly

1/2

USSR
Il'in, V. P., Padun, A. N., Anikayev, V. A., Urshanskiy, A. M., Kulalayev,
Yu. A., Sabko, V. F., Progressiv. Sposoby Svarki, Novyye Materialy i Konstruk-
tsii v Svaroch. Proiz-ve, Izhevsk, 1973, pp 54-55.

reduces, Cr increases the resistance to thermal cracking. The combined in-
fluence of C and tempering temperature greatly decreases the thermal stability
of group II steels. For the steels of group I, it was established that
hardness in the state after casting is increased with increasing C content,
while resistance to formation of hot cracks decreases.

2/2

USSR

UDC 624.07:534.1

GUTOVSKIY, E. V., IL'IN, V. P.

"Study of the Deformed State and Rigidity of Bent Curved Tubes of Large Curvature"

Translation: The problem of the bending of a tube of large curvature is solved. The equations of the theory of shells expressed in displacements are solved by the small parameter method using the ratio r/ρ as the small parameter, where r is the radius of the cross section and ρ is the radius of the longitudinal axis of the tube, and the second approximation is considered. Equations of the second approximation are solved keeping nonlinear terms in the right sides determined by quadratures and the products of the functions and their derivatives found in the first approximation, which had not been considered previously. Deformations of the transverse cross section and the coefficient for the lowering of rigidity of tubes of different curvature and reduced length are calculated in the first and second approximations. The limits of application of the approximate theory based on the assumption of a small longitudinal curvature for determining the deformation state and the coefficient for the drop in rigidity of curved tubes are established. V. I. Baulin.
1/1

USSR

BONDARENKO, Yu. V., BUDARNYKH, V. I., IL'IN, V. P., ISKOL'DSKIY,
A. M., NESTERIKHIN, Yu. Ye., POPOVA, G. S., and SHESTAK, A. F.

"Electronic-Optical Converters in Forced Light Load Operation"

Abstract: Forced light load operation is defined as that mode of
operation of the photocathode of an electronic-optical converter
in which a photocurrent of high density is picked up in recording
processes 10^{-9}-10^{-11} s in duration. In this kind of operation the
obtained images are markedly distorted. The function of this
paper is to take a closer look at the basic effects tending to
deteriorate the image quality through experiments, the purpose of
which is to investigate the effect of the electric field near the
photocathode and the space charge in causing this distortion.
A diagram of the experimental equipment is given and the experi-
mental procedure explained. Photographic samples of the image dis-
tortion are shown and the reasons for the defects clarified. The
authors express their gratitude to B. A. Baryshev for his assist-
ance in preparing the equipment, and to L. M. Diamant and I. H.
Zaydel' for their comments.
1/1

USSR   UDC 577.1:615.7/9

VORONIN, A. P., IL'IN, V. P.

"Some Biochemical and Physiological Changes in the Organism of
Workers in the Dye Shop of a Worsted Combine"

Ivanovo, V sb. Materialy I syezda epidemiologov, mikrobiologov,
infektsionistov, gigiyenistov i san. vrachey Ivanov. obl.
(Materials of the First Conference of Epidemiologists, Micro-
biologists, Infectologists, Hygienists and Sanitation Medics
of the Ivanovskaya Oblast--collection of works), 1971, pp 287-
289 (from RZh-Biologicheskaya Khimiya, No 21, Nov 71, Abstract
No 21F2184)

Abstract: It was found that people exposed to occupational con-
tact with azo dyes for 2-6 years show a significant increase in
the content of radical SH-groups and a reduction in the content
of protein SH-groups in blood serum; differences in the content
of overall SH-groups and the activity of aspartate- and alanine-
aminotransferase of the blood serum are insignificant.

1/1

USSR   UDC: 517.514

BESOV, O. V., IL'IN, V. P.

"Natural Expansion of a Class of Areas in Imbedding Theorems"

Teoremy Vlozheniya i Ikh Prilozheniya [Imbedding Theorems and Their
Applications -- Collection of Works], Moscow, Nauka Press, 1970, pp 21-23,
(Translated from Referativnyy Zhurnal Matematika, No. 8, 1970, Abstract
#8B75, by the authors).

Translation: It is shown that it is possible to expand a class of areas for which
the imbedding theorem is formulated as for the entire space.

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