

PETROV, Vyacheslav Aleksandrovich, kand. tekhn. nauk; GOL'D, B.V., doktor tekhn. nauk, retsenzent; IVANOV, Yu.B., kand. tekhn. nauk, red.; NAKHIMSON, V.A., red. izd-va; TIKHANOV, A.Ya., tekhn. red.

[Automatic motor-vehicle clutches] Avtomaticheskie stseplenia avtomobilei. Moskva, Mashgiz, 1961. 277 p. (MIRA 15:10)  
(Motor vehicles--Transmission devices, Automatic)

BOGOLYUBOV, Sergey Konstantinovich; VOINOV, Aleksandr Vasil'yevich;  
CSADCHEKO, V.A., inzh., retsenzenter; IVANOV, Yu.B., kand. tekhn.  
nauk, red.; BYSTRITSKAYA, V.V., red. izd-va; UVAROVA, A.P.,  
tekhn. red.

[Course in technical drawing] Kurs tekhnicheskogo chercheniya.  
Moskva, Mashgiz, 1962. 358 p. (MIRA 15:6)  
(Mechanical drawing)

IVANOV, Yu.B.; RUKHANTZ, A.A.

High-frequency conductivity of a magnetohydrodynamic plasma. Izv. vys. ucheb. zav. radiofiz. 7 no.2:252-254 '64 (MIRA 18:1)

1. Fizicheskiy institut imeni V.M. Lebedeva AN SSSR.

9.2580

S/194/62/000/002/083/096  
D271/D301

AUTHOR: Kozlovskiy, K. N. and Ivanov, Yu. D.

TITLE: Oscillator with delay and inertial self-bias

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika,  
no. 2, 1962, abstract 2-7-159p (Tr. Mosk. energ. in-ta,  
1961, no. 34, 120-137)

TEXT: Stability of harmonic oscillations is studied in an oscillator with delayed feedback and inertial self-bias. Conditions are derived in which the self-bias can be regarded as having practically no inertia. The possibility is analytically proved and experimentally confirmed of emergence of asynchronous bi-harmonic oscillations in an oscillator with delay and inertial self-bias. Pulse operation of such oscillator is considered; in pulse operation, the oscillator generates short radio pulses with a repetition period very close to the delay time of the feedback loop. 5 references.  
/Abstracter's note: Complete translation. 7

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24, 2200 (1147, 1158, 1164)

33126  
S/105/62/000/002/002/002  
E032/E514

AUTHORS: Shishkov, A.G., Candidate of Physico-mathematical Sciences; Ivanov, Yu.D., Engineer and Gladkov, V.M., Engineer (Moscow)

TITLE: An instrument for the oscillographic measurement of the dynamic magnetization curve of ferromagnetics

PERIODICAL: Elektrичество, no. 2, 1962, 68-71

TEXT: The importance of the dynamic magnetization curve in studies of the properties of ferromagnetics is pointed out. This curve is defined as the geometrical locus of the end points of the hysteresis loops obtained with a monotonically increasing amplitude of a symmetrical alternating magnetic field. Existing methods for studying magnetization curves of ferromagnetics are said to consume a great deal of time. Oscillographic methods on the other hand are more convenient. In the present paper the authors describe an apparatus which can record oscillographically a family of symmetric hysteresis loops which are obtained with an amplitude modulated sinusoidal magnetizing current. A block diagram of the device is shown in Fig. 1. The master oscillator is

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produces a sinusoidal voltage at 500 cps. This voltage is fed into the modulator 4 which also receives a 25 cps voltage signal from the oscillator 2. In the modulating stage the 500 cps signal is amplitude modulated and the modulation coefficient may be varied from 0 to 100%. The load of the modulating stage is a transformer whose primary is connected in parallel with a capacitance. This circuit is tuned to 500 cps. The magnetizing current is regulated by voltage changes across a load resistance placed across the secondary of the transformer. This voltage is fed into a current amplifier which is tuned to 500 cps. The magnetizing current is measured by an ammeter in the magnetizing circuit. The magnetizing circuit also includes a resistor R which provides the horizontal sweep for the oscillograph. A double-beam oscillograph is used to produce simultaneously two images on the screen so that the characteristics of two specimens can be compared. The voltage across the secondary wound on the specimens is fed through an integrator into an amplifier and then into the vertical plates of the oscillograph. As a result a family of symmetric hysteresis loops appears on the screen.

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In order to produce the dynamic magnetization curve, the apparatus includes a pulse-shaping circuit which controls the brightness of the CRO beam. These pulses are produced from the 500 cps signal and are fed into a phase reversing stage which is used to shift the pulses by up to 180° relative to the extremal point on the magnetization current curve. From the phase shifter the signal is fed into a circuit which produces sharp pulses at twice the frequency. These pulses pass through a limiter and amplifier and are applied to the modulating electrode of the CRO tube, thereby producing brightness modulation. The errors of measurements along the vertical and horizontal channels are of the order of 5%. G. S. Veksler is mentioned for his contributions in this field (Elektrichestvo, 1962, No.10). There are 5 figures.

SUBMITTED: September 10, 1961

X

Card 3/4

RABINOVICH, A.R.; IVANOV, Yu.D.

Semiautomatic machine for making investment patterns for precision casting. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.1 tekhn.inform. no.3:20-22 '62. (MIRA 15:5)  
(Precision casting—Equipment and supplies)

RABINOVICH, A.R.; IVANOV, Yu.D.

Equipment for the continuous preparation of a paste-like pattern  
material. Lit.proizv. no.4:8-9 Ap '63. (MIRA 16:4)  
(Patternmaking)

IVANOV, Yu.D.; TRUSOVA, V.A.

New TK-2 double-twisting machine. Tekst. prom. 18 no. B:39-40 Ag '58.  
(MIRA 11:10)

(Spinning machinery)

SIKOV, N.S.; IVANOV, Yu.D.

The PMShB-2 rewinding machine. Biul. tekhn.-ekon. inform.  
no. B:50-52 '58. (MIRA 11:10)  
(Reels (Textile machinery))

IVANOV, Yu.D., inzh.; TSEYTLIN, S.L.

Mechanization of labor-consuming production processes at the  
"Kresnaia Krutil'shchitsa" Silk Factory. Mekh. i avtom. proizv.  
15 no. 5:23-25 My '61. (MIRA 14:5)  
(Silk manufacture--Technological innovations)

ACC NR: AR6015995

SOURCE CODE: UR/0271/65/000/012/A023/A023

AUTHOR: Yagodkin, I. A.; Ivanov, Yu. D.

TITLE: Functional devices using pneumatic elements

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika, Abs. 12A163

REF SOURCE: Sb. tr. Leningr. mekhan. in-ta, no. 41, 1964, 65-68

TOPIC TAGS: pneumatic control, logic element

ABSTRACT: The following principles of constructing functional systems on the basis of pneumatic elements are stressed: 1) the principle of force compensation, 2) the use of low-pressure regions, and 3) the application of wire and spherical elements. A circuit of the resolving angle is presented in which a diaphragm element is used. One of the practical applications of this circuit is the comparison of two quantities, e.g., a force, either given or varied according to a program, which acts on the diaphragm, and a pressure which must be in an evacuated reservoir. The circuit operates both on the principle of pressure comparison and vacuum comparison. The operation of a comparison element is described which can be used in excess pressure and vacuum control. [Translation of abstract] 4 illustrations. V. L.

SUB CODE: 13

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UDC: 62-525:681.142.67

L 34477-66 EWT(m) JXT(CZ)  
ACC NR: AP0014700

SOURCE CODE: UR/0367/65/002/006/0971/0977  
*SI*  
*R*

AUTHOR: Ivanov, Yu. F.; Rumer, I. A.

ORG: Institute of Biophysics, Ministry of Hygiene, SSSR (Institut biofiziki minis-  
terstva zdravookhraneniya SSSR)

TITLE: Coefficients of internal conversion of certain nuclear transitions in  $Xe^{132}$  79

SOURCE: Yadernaya fizika, v. 2, no. 6, 1965, 974-977  
*ISOTOPE, SPECTROMETER,*  
TOPIC TAGS: Xenon, conversion electron spectrum, photoelectron, Beta spectroscopy,  
electron transition, molecular interaction, Gamma transition/ BPP-3 ~~magnetic~~ spectro-  
meter

ABSTRACT: The authors have determined the coefficients of internal conversion for  
certain transitions in  $Xe^{132}$  with the aid of a procedure that yields directly the  
absolute value of the coefficient, by measuring with a magnetic spectrometer the  
number of conversion electrons and the number of photoelectrons knocked out from a  
calibrated target, using the same radioactive source for both. The spectra of the  
conversion electrons and photoelectrons were investigated with the aid of a double-  
focusing  $\beta$  spectrometer described by the authors earlier (Magnetic spectrometer BPP-3),  
in: Tekhnika izmerenii radioaktivnykh preparatov [Techniques of measurement of radio-  
active compounds], Gosatomizdat, 1962). The nuclear transitions investigated had  
energies 523, 630, 667.8, 772.9, and 954.5 kev. The photoelectron spectrum was in-  
vestigated by using a platinum target of thickness 6 and 11  $mg/cm^2$ , calibrated against

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•ACC NR: AF6014700

$\gamma$  rays from Au<sup>198</sup> and Cs<sup>137</sup>. The relative intensities of these  $\gamma$  transitions in Xe<sup>136</sup> were determined. The multipolarities of the 523, 630, 667.8, and 772.9 kev are identified as E2 and that of the 154.5 transitions is identified as E1. This agrees with the level scheme proposed by Hamilton and Boyd (Bull. Amer. Phys. Soc. v. 9, 405, 1964). The levels corresponding to the different transitions are identified. The parities of the levels 1963.7 and 2070.9 are found to be positive and that of the 2395.2 level negative. Orig. art. has: 3 figures and 3 tables.

SUB CODE: 20/ SUBM DATE: 30Mar65/ ORIG REF: 003/ OTH REF: 007

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"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619210012-9

IVANOV, Yu.F.; RUMER, I.A.; BUKACH, A.Ya.

Internal conversion electrons in Te<sup>132</sup>. Izv. Akad. SSSR Ser. fiz. 29  
no.1:157-158 Ja '65. (MIRA 18:2)

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619210012-9"

33616

S/025/62/000/002/001/002  
D299/D304

6,3000

AUTHORS: Sokolov, V. A. and Ivanov, Yu. F., Scientific Associates, Academy of Sciences, USSR

TITLE: Starship calling Earth. Super-long distance communication with a spaceship

PERIODICAL: Nauka i zhizn', no. 2, 1962, 13-19

TEXT: The authors discuss the difficulties of long-distance communications in space, dictated by the immense distances involved and the background of radio-frequency emission from the stars. Space is least filled with radio waves with a length measured in tens of centimeters. Radio communication should, therefore, be based on this wavelength. Directional antennas of the parabolic reflector type should be used. An antenna of this type was installed on the automatic interplanetary station launched in the direction of Venus. For radio communication between Venus/Mars and Earth the radio waves must be concentrated into the tightest possible beam. The greater the relation of the antenna's mirror area to the wave-

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Starship calling Earth. ...

length used, the tighter will be the beam. It would, therefore, be advisable to work on wavelengths in the millimeter band. A further possibility is optical transmission of information. Solar radiation could be collected by a mirror on the spacecraft and used to semaphore messages back to Earth. Communications systems of this type capable of transmitting information over 15,000,000 km have been built and tested. Instead of natural sunlight, plasma can also be used as a light source. Here most of the usable energy is in the ultra-violet band and since the Earth's atmosphere absorbs much of the ultra-violet light, the receiving station would have to be outside this atmosphere. With this system, communication is possible over a distance equal to several diameters of the solar system. In cloudless weather communication with Mars would be possible directly from the Earth's surface. The authors then describe the theory underlying light generators, a promising means of space communication. Theoretical work on light generators has been carried out by N. G. Basov and A. M. Prokhorov. A description of the first light generator, the "laser" (light amplification by stimulated emission of radiation"), which underwent successful tests in America

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in late 1960, is given. This particular laser used ruby with an admixture of chrome as a light generator and amplifier. Lasers have also been built of calcium fluoride with an admixture of uranium or samarium. With a laser using potassium vapors at low pressure it is intended to create a light beam with a width of some ten-thousandths of a degree. In the near future it is intended to create a beam with a width of only a few hundred-thousandths of a degree. Due to the absence of moisture and dust particles in space - factors which scatter light - lasers would not have to be particularly powerful. For flights to Mars and Venus the whole space communications apparatus would be of pocket size and could be powered from the sun by a collector system. A beam of red light from a ruby laser could be trained on an artificial satellite and the considerable light pressure from this beam used to correct its orbit. Ruby lasers can also be used as light amplifiers. When illuminated with green light from a special lamp the chrome ions will eventually assume a stable medium energy level. Subsequent illumination with weak red light will cause an instantaneous red flash of greatly enhanced brilliance. Astronomers could use this for stu-

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Starship calling Earth. . .

dying virtually dark stars and distant galaxies. Lasers can be used as light locators of immense revolving power. At distances of 3,000 km they can discriminate between objects only 30 meters apart. At a range of 160,000 km the distance to a spaceship 6 meters in diameter can be measured with an accuracy of up to 1.6 km. The problem of imposing an information signal on the radiation of a laser has not yet been solved. Nor can scientists as yet control the laser's radiation frequency, although in 1961 a system of temperature control was tried out. It was found that increasing the temperature of the laser from -180° to + 210°C changed the wavelength from

6,934 to 6,953 Å. A study is being made of the prospects for using various solid and gaseous materials as lasers. The use of X-rays and gamma-rays for space communication is also being studied. With communication of this sort ordinary ionization chambers or radiation counters could be used as receivers. Optical space communication would require special relay stations on the moon or on artificial Earth satellites. These relay stations could maintain continuous communication with the spacecraft by lasers and with the Earth on normal radio wavelengths. There are 8 figures.

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IVANOV, Yu. F.

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PHASE I BOOK EXPLOITATION

SOV/6333

Bochkarev, V. V., ed.

Tekhnika izmereniye radioaktivnykh preparatov; sbornik statey (Techniques for the Measurement of Radioactive Preparations; Collection of Articles) Moscow, Gosatomizdat, 1962. 4600 copies printed.

Eds.: A. M. Smirnova and M. A. Smirnov; Tech. Ed.: S. M. Popova.

PURPOSE: This book is intended for specialists in nuclear instrumentation.

COVERAGE: The book is a collection of articles on recent developments in 1) measurement of the activity and 2) analysis of the composition of emissions of radioactive preparations. The methodology and apparatus used in these studies are described in detail. References are given at the end of each article.

TABLE OF CONTENTS:

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Techniques for the Measurement (Cont.)

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- Turkin, A. D. Measurement of the Concentration of  $\beta$ -Emitting Gases and the Determination of Their Isotopic Composition by Means of Spherical Ionization Chambers 134
- Lavrenchik, V. N. Measurement of the  $\gamma$ - and  $\beta$ -Activity of Aerosols 139
- Ivanov, Yu. F., K. N. Shlyagin, and P. N. Feoktistov. Magnetic  $\beta$ - and  $\gamma$ -Spectrometer 156
- Ivanov, Yu. F., I. A. Rumer, and K. N. Shlyagin. Magnetic Spectrometer BPP-3 168
- Bazhenov, B. A., Yu. M. Golubev, K. N. Shlyagin, P. N. Feoktistov, and G. V. Yakovlev. Scintillation  $\gamma$ -Spectrometer With a Multichannel Analyzer and a Unit for the Automatic Plotting of Spectra 182
- Bazhenov, V. A., Yu. M. Golubev, and K. N. Shlyagin. Scintillation Spectrometer Counter With Allowance for Dead-Time Effect 202

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QOMISK AM FSSR Izvestiya Svera fizicheskogo. v.29. no.1. 1965. 187-188

TOPIC TAGS: internal conversion, beta-irradiation, iodine, beta decay

measured over a time scale of 2 x 10<sup>-5</sup> cm<sup>2</sup> sec<sup>-1</sup> thermal neutron flux. The radioactive

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CIA-RDP86-00513R000619210012-9"

PRIKHOD'KO, I.F.; FEDIN, V.P.; IVANOV, Yu.G.

Wear-resistant materials for the manufacture of roller bearings  
for the equipment of rolling mill fittings. Metallurg 5  
no.8:27-31 Ag '60. (MIRA 13:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metalloobrabotki  
i mashinostroyeniya.  
(Rolling mills) (Roller bearings)

FEDIN, V.P.; IVANOV, Yu.G.

Guide unit on continuous billet mills. Metallurg 8 no. 5:23-27  
My '63.

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektno-konstruk-  
torskiy institut metallurgicheskogo mashinostroyeniya.  
(Rolling mills---Equipment and supplies)

IVANOV, Yu.G.

Principal features of metallogeny in the Khanka ore district. Soob.  
DVFAN SSSR no.10:51-62 '59. (MIRA 13:11)

1. Primorskoye geologicheskoye upravleniye.  
(Maritime Territory--Ore deposits)

IVANOV, Yu. G. (reader) and TOMASHUNAS, Z. B.

"The Khankay<sup>skiy</sup> Ore Region in Southern Primor'ye"

report presented at the First All-Union Conference on the Geology and Metallurgy  
of the Pacific Ocean Ore Belt, Vladivostok, 2 October 1960

So: Geologiya Rudnykh Mestorozhdeniy, No. 1, 1961, pages 119-127

S/169/63/000/002/067/127  
D263/D307

AUTHOR: Ivanov, Yu. G.

TITLE: On the application of spectrophotometric surveying methods in prospecting for fluorite deposits

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1963, 9, abstract 2D56 (Inform. sb. Primorsk. geol. upr. Gl. upr. geol. i okhrany nedr pri Sov. Min. RSFSR, 1961, no. 2, 87-88)

TEXT: Experimental spectrophotometric studies were carried out in the western regions of Primorskiy territory, on an already explored fluorite deposit. Samples were taken at 20 m intervals, from a depth of 0.5 m, along 2 profiles extending transversely across the length of an orebody. The results obtained show that even in the presence of clayey deluvial layers up to 5 m thick, the underlying orebody defines a very clear spectrophotometric anomaly, the overall nature of which is independent of the depth from which the samples are collected. This confirms the possibility of using or-

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On the application of ...

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D263/D307

dinary metallometric surveying methods, with corresponding suitable methods of ashing the samples, in the prospecting for fluorite deposits. / Abstracter's note: Complete translation.

Card 2/2

POLLER, V.P., inzh.; IVANOV, Yu.G., inzh.

Engineering geophysics in investigations. Transp. stroi. 12  
no.8:32-34 Ag '62. (MIRA 15:9)  
(Prospecting--Geophysical methods) (Railroad engineering)

IVANOV, Yu.G.; LEVASHEV, G.B.

Ancient gold-bearing conglomerates in the Maritime Territory.  
Sov. geol. 6 no.11:139-140 N '63. (MIRA 17:1)

1. Primorskoye geologicheskoye upravleniye.

BORDE, A.I.; IVANOV, Yu.G.

Relationship of the fault tectonics of various structural stages  
of the Maritime Territory. Sov. geol. 7 no.5:125-130 My '62  
(MGA 18:2)

1. Primorskoye geologicheskoye upravleniye.

IVANOV, Yu.G., inzh.; LOZOVSKIY, L.A., inzh.

Investigation of bogs by the radio compounding and direction  
finding method. Transp. stroi. 15 no.11:38-39 N '65.  
(MIRA 18:11)

IVANOV, Yu.I.

Improve the organization of lashing and towing rafts. Rech.transp.  
18 no.6:15-17 Je '59. (MIRA 12:9)

1. Inzhener Kamskogo parokhodstva.  
(Lumber--Transportation)

IVANOV, Yu.I. (Leningrad)

Combined action of antibiotics of the tetracycline series and of  
staphylophage on the resistance of staphylococcus to antibiotics.

Kaz. med. zhur. no. 2:113 Mr-Ap '61. (MIRA 14:4)

(ANTIBIOTICS) (BACTERIOPHAGE) (BACTERIA, EFFECT OF DRUGS ON)  
(STAPHYLOCOCCUS)

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619210012-9

IVANOV, YU. I.

36119 Sushka gidrotorfa v Kosykh reshetkakh. Torf. prom-st', 1949, No. 11, S. 14-15.

SO: Letopis' Zhrunal' mykh Statey, No. 49, 1949

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619210012-9"

IVANOV, Yu. I.

IVANOV, Yu. I. -- "Mining Peat in Upland Deposits Subject to Landslides."  
Min Higher Education USSR. Moscow Peat Inst. Moscow, 1955. (Dissertation for the Degree of Candidate of Technical Sciences.)

SO: Knizhnaya letopis', No. 4, Moscow, 1956

IVANOV, Yu.I.

The TPSH-1 peat screw grader. Biul.tekh.-ekon.inform. no.8:  
12-14 '59. (MIRA 13:1)  
(Peat machinery)

IVANOV, Yu.I., kand.tekhn.nauk

TPSh-1 machine for the profiling of milled peat bogs. Torf.prom.  
36 no.3:9-12 '59. (MIRA 12:7)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo instituta  
torfyanoy promyshlennosti.  
(Peat machinery)

IVANOV, Yu.I.

The DMK-1 interchangeable equipment for the TB-2M excavator.  
Biul.tekh.-ekon.inform. no.2:42-44 '60. (MIRA 13:6)  
(Excavating machinery)

IVANOV, Yu.I., kand. tekhn. nauk; KOLOTUSHKIN, V.I., red.; BORUNOV,  
N.I., tekhn. red.

[Temporary instructions for the operation of the KPSh-2 machine  
for cleaning peat block drainage ditches] Vremennaya instruk-  
tsiya po ekspluatatsii mashiny KPSh-2 po prochistke kartovykh  
kanav. Moskva, Gos.energ.izd-vo, 1959. 29 p. (MIRA 15:1)

1. Leningrad. Vsesoyuznyy nauchno-issledovatel'skiy institut  
torfyanoy promyshlennosti.  
(Peat machinery)

PANKRATOV, N.S., kand. tekhn. nauk; POKAMESTOV, V.V.; LUK'YANOV, A.D.; GAVRILOV, Yu.M.; IVANOV, Yu.I.; KONDRASHOV, A.S.; MATEVSKAYA, K.T.; MALKOV, L.M.; FOMIN, V.K.; KOLOTUSHKIN, V.I., red.; LARIONOV, G.Ye., tekhn. red.

[New equipment and technology of peat-bog preparation and the winning of granulated peat] Novaia tekhnika i tekhnologiya bolotno-podgotovitel'nykh rabot i dobychi granulirovannogo torfa. Moskva, Gos. energ. izd-vo, 1961. 86 p. (MIRA 15:2)

1. Leningrad. Vsesoyuznyy nauchno-issledovatel'skiy institut torfyanoy promyshlennosti. Direktor filiala Vsesoyuznogo nauchno-issledovatel'skogo instituta torfyanoy promyshlennosti (for Pankratov).

(Peat bogs) (Peat machinery)

IVANOV, Yu.I.; PAKHMURNYY, B.A.

Effect of cortisone and prednizone on water distribution in  
the body. Probl. endok. i gorm. 11 no.5:71-74 S-0 '65.  
(MIRA 19:1)  
1. Kafedra farmakologii (zav. - prof. Ye.B. Barkhin) Altayskogo  
meditsinskogo instituta, Barnaul. Submitted December 20, 1964.

ACC NR: AP7005058

SOURCE CODE: UR/0031/66/000/010/0053/0061

AUTHOR: Omarov, T. B.; Ivanov, Yu. I.

ORG: None

TITLE: On intermediate motion in celestial mechanics of bodies of variable mass

SOURCE: AN KasSSR. Vestnik, no. 10, 1966, 53-61

TOPIC TAGS: celestial mechanics, variable mass system, motion equation, orbit calculation

ABSTRACT: Aperiodic motion of two bodies is considered where mass is a function of time. A system of equations is given for rates of change in the elements of an osculating orbit and it is shown that the transformed values of these osculating elements may be interpreted as disturbed Kepler elements of the representative motion

$$\frac{d^2\vec{r}}{dt^2} = -GM_0 \frac{\vec{r}}{r^3} + \frac{M_0}{M} \vec{F},$$

where

$$\vec{F} = \vec{f} - \frac{1}{2M} \frac{dM}{dt} \frac{d\vec{r}}{dt}$$

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Particular attention is given to intermediate motion described by the equation

$$\frac{d^2 \vec{r}}{dt^2} = -GM(t) \frac{\vec{r}}{r^3} - \alpha(t) \frac{d\vec{r}}{dt}$$

for which the actual motion may be interpreted either as aperiodic motion along a conic section about a center with mass  $M(t)$  disturbed by the tangential force

$$\vec{F}_1 = -\left[ \frac{1}{2M} \frac{dM}{dt} + \alpha(t) \right] \frac{d\vec{r}}{dt}$$

or as aperiodic motion along a conic section about a center with mass  $\mu(t)$  with perturbation by the central force

$$\vec{F}_2 = G [\mu(t) - M(t)] \frac{\vec{r}}{r^3}$$

where

$$\mu(t) = M(t_0) \exp \left\{ -2 \int_{t_0}^t \alpha(t) dt \right\}$$

giving two different systems of osculating elements. Various methods are described for representing the solution of the initial equation of intermediate motion for dynamic problems in the form of osculating aperiodic motions along a conic section. The

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ACC NR: AP7005058

results are applied to equations of planetary motion and a system of differential equations is given defining the osculating elements of planetary orbits with regard to the effect of continuous loss of solar mass. Orig. art. has: 84 formulas.

SUB CODE: 03/ SUBM DATE: None/ ORIG REF: 08/ OTH REF: 01

Card 3/3

"APPROVED FOR RELEASE: 08/10/2001 CIA-RDP86-00513R000619210012-9

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APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619210012-9"

Ivanov, Yu. I.

AID P-1297

Subject : USSR/Electricity  
Card 1/1 Pub. 27 - 21/30  
Author : Ivanov, Yu. I., Eng.  
Title : N. N. Krachkovskiy's article: "Interconnection diagrams  
of hydroelectric power stations" (Elektrichestvo, #11,  
1953) (Discussion)  
Periodical : Elektrichestvo, 1, 76-78, Ja 1955  
Abstract : The author discusses at length the above article and  
criticizes some of the diagrams. He presents his own  
solutions. Four diagrams.  
Institution : Ukrainian Branch of GIDROENERGOPROYEKT  
Submitted : No date

IVANOV, YU. I.

AID P - 1518

Subject : USSR/Electricity

Card 1/1 Pub. 26 - 14/36

Author : Shestopalov, V. I., Eng.

Title : Discussion of the article "Electrical connection diagrams for hydroelectric power stations" by D. A. Bashlay and Yu. I. Ivanov (Elek. sta., 1954, No.2)

Periodical : Elek. sta., 3, 42-43, Mr 1955

Abstract : The author is of the opinion that the diagram for the supply of the station's own power needs as presented by the authors of the article discussed are very seldom used at the present time. It requires large costs for the equipment of the step-down 220  $\div$  110/6 kv transformer and is costly in operation. The author proposes different solutions of the problem. Three connection diagrams

Institution: Ministry of Construction of Electric Power Stations

Submitted : No date

IVANOV, Yu.I.

Generalized problem of two immovable centers. Vest. Mosk. un.  
Ser. 3: Fiz., astron. 20 no.1:26-33 Ja-F '65. (MIRA 18;3)

1. Kafedra nebesnoy mekhaniki i gravimetrii Moskovskogo universiteta.

IVANOV, Yu.I.

Effect of cortisone and prednisone on water-salt metabolism and  
the renal function in dogs. Probl. endok. i gorm. 11 no.1:92-96  
(MIRA 18:5)  
Ja-F '65.

1. Kafedra farmakologii (zav. - prof. Yu.B. Berklin) Altayskogo  
meditsinskogo instituta, Barnaul.

IVANOV, Yu.I.; PAKHMURNYY, B.A.

Methodology for simultaneous determining of the volume of extra - and intracellular fluid in the body of rats. Biul. eksp. biol. i med. 59 no.4:123-125 Ap '65.

(MIRA 18:5)

1. Kafedra farmakologii (zav. - prof. Ye.B. Berkhin) Altayskogo meditsinskogo instituta, Barnaul.

RUS'KO, Yu.A. [Rus'ko, IU.O.]; IVANOV, Yu.K.

Using methyl methacrylate for preparations of microscopic  
analysis. Geol. zhur. 20 no. 5:97-98 '60. (MIRA 14:1)  
(Methacrylic acid) (Microscopy)

ABELEV, Yu.M.; DONDYSH, A.M.; IVANOV, Yu.K.; KRUTOV, V.I.; LISOVSKIY, V.P.;  
PANKIN, G.N.

Experience in correcting the tilt of a large-panel 1-480-P  
series apartment house after the sagging of the foundation.  
Osn., fund. i mekh. grun. 7 no.3:23-25 '65. (MIRA 18:6)

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619210012-9

UFENOV, D.A. (Liesnici, D.I.); IVANOV, Yu.K.

Study of uranium minerals in solid bitumens using electron microscopy. Geol. zhur. 25 no. 3:110-114 '65. (MIRA 18.11)

1. Institut geologicheskikh nauk AN UkrSSR.

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619210012-9"

L 42790-66 ENT(m)/ENT(v)/T/ENT(t)/ENT(r) 14167 36/3  
ACC NR: AP6029037

SOURCE CODE: UR/0413/66/050/014/0053/0054

INVENTOR: Ivanov, Yu. K.; Ryazanov, Ye. M.

36  
B

ORG: none

TITLE: Method of preventing an erratic arc. Class, 21, No. 183854

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 53-54

TOPIC TAGS: arc welding, metal welding, inert gas welding

ABSTRACT: This Author Certificate introduces a method of preventing an erratic arc in welding of thin articles, where the distance between clamps is equal to the width of the weld. To improve the quality of welds, the clamps, which are made out of material with a resistivity lower than that of the welded material, are covered with a 40—120- $\mu$  coat of material with a resistivity several times higher than that of the welded material. In a modification of the above method, the clamps are made entirely of a material with a resistivity several times higher than that of the [TD] material welded.

SUB CODE: 11, 13/ SUBM DATE: 27Jan64/ ATD PRESS: 5066

Card 1/1 LC

UDC: 621.791.856

57-28-4-14/39

AUTHORS: Ivanov, Yu. L., Ryvkin, S. M.

TITLE: The Formation of Current Oscillations in Germanium Samples  
in an Electric and Longitudinal Magnetic Field (Vozniknoveniye  
kolebaniy toka v obraztsakh germaniya, pomeshchennykh v  
elektricheskoye i prodol'noye magnitnoye pole)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 4, pp.774-775  
(USSR)

ABSTRACT: The authors determined current fluctuations in some germanium-samples through which a direct current passed and which were placed in a constant magnetic longitudinal field (magnetic field parallel to the current). Under certain conditions the forming fluctuations had a shape near to the sinusoidal line with a frequency of 10 .. 15 kilocycles per second. The fluctuation character depends on quite a number of circumstances. Thus fluctuations only formed at a current through the sample different from zero and increased according to amplitude and frequency with an increase in current. Analogous dependences were also observed on the magnitude of the

Card 1/3

57-28-4-14/39

The Formation of Current Oscillations in Germanium Samples in an Electric  
and Longitudinal Magnetic Field

magnetic field. In spite of zinc-contacts the voltampere characteristics in the investigated samples differed from a linear one. The fluctuations formed in one as well as the other current direction were more marked when the direction of current correspond to the lower resistance of the sample. Fluctuations only occurred in the case of an exact agreement of the direction of the magnetic field with the axis of the sample. An intensive illumination of the samples led to an interruption of the fluctuations. A certain drop in temperature in the samples, however, led to an increase of their amplitude and frequency. An etching of the samples in hydrogen peroxide promoted the formation and the stability of the fluctuations. An increase or decrease of the amplitude of fluctuation connected with any change of the experimental conditions in all cases led to the corresponding increase or decrease respectively of the frequency of fluctuations. There are 3 figures and 1 reference, 1 of which is Soviet.

Card 2/3

57-28-4-14/39

The Formation of Current Oscillations in Germanium Samples in an Electric  
and Longitudinal Magnetic Field

ASSOCIATION: Leningradskiy fiziko-tehnicheskiy institut AN SSSR  
(Leningrad Physical-Technical Institute, AS USSR)

SUBMITTED: December 14, 1957

Card 3/3

24.7700  
24(3), 24(6)

AUTHORS:

Ryvkin, S. M., Ivanov, Yu. L., Grinberg, A. A., Novikov, S. R.,  
Potekhina, N. D.

67390

SOV/181-1-9-8/31

TITLE:

A New Longitudinal Magnetostriction Effect and Its Application to the Determination of the Ratio Between the Concentrations of Heavy and Light Holes

PERIODICAL:

Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1372 - 1375 (USSR)

ABSTRACT:

When investigating the diffusion of the nonequilibrium carrier in the magnetic field, the appearance of electrical fields is usually studied (e.g. the photomagnetic Kikoin-Noskov effect). The present paper offers the results obtained from an investigation of the concentration distribution of the minority carrier in the magnetic field, and in particular, the results of an investigation of the longitudinal magnetostriction effect in the longitudinal magnetic field. A plane-parallel semiconductor plate was arranged perpendicularly to a homogenous magnetic field. On the plate, a point light probe exactly faced a point collector. The injected nonequilibrium carriers diffused through the plate and the collector determined the concentration of the minority carrier. The concentration

Card 1/3

67390

A New Longitudinal Magnetostriction Effect and Its Application to the Determination of the Ratio Between the Concentrations of Heavy and Light Holes SOV/181-1-9-8/31

recorded thereby increased with H. Figure 1 shows a schematic representation of the measuring arrangement, a description of which is given. Theoretically, one obtains for the concentration of the injected carrier on the z-axis

$$(\vec{H} \parallel z): \Delta n_H = \frac{i_0 \beta e}{2\pi D_n z I(\gamma_v)} \cdot -z/l_D$$

where  $i_0 \beta$  is the electron-hole pair production rate,  $l_D$  the diffusion length,  $D_n$  the electron diffusion coefficient. Figure 2 shows the result obtained by an attempt of experimentally verifying this formula for electron injection into hole-type germanium. The best agreement is obtained with a microscopic drift mobility of the electrons,  $\mu_n^0 = 3650 \text{ cm}^2/\text{v.sec}$ . When investigating the hole diffusion in n-type germanium, a considerable divergence between theory and experiment is observed, which, however, can be explained when taking into account the existence of

Card 2/3

67390

A New Longitudinal Magnetostriiction Effect and Its SOV/181-1-9-8/31  
Application to the Determination of the Ratio Between the Concentrations  
of Heavy and Light Holes

heavy and light holes. The theoretical curve drawn for this case nicely describes the experimental results. The concentration ratio between heavy and light holes is deduced from measuring results as being 57; this value approaches the result (50.0) obtained by an other way (Ref 1). There are 2 figures and 2 references.

SUBMITTED: March 7, 1959

4

Card 3/3

*Ivanov, Yu. L.*81947  
S/181/60/B02/04/05/034  
B002/B063

24.7700

## AUTHORS:

Ryvkin, S. M., Grinberg, A. A., Ivanov, Yu. L.  
Novikov, S. R., Potekhina, N. D.

## TITLE:

Investigation of the Diffusion of Minority Carriers in a  
Magnetic Field

## PERIODICAL:

Fizika tverdogo tela, 1960, Vol. 2, No. 4, pp. 575-590

TEXT: The distribution of the concentration of minority carriers introduced into a magnetic field by "point" injection was theoretically and experimentally studied. A light spot was focused onto a germanium sheet cut out of a single crystal. The occurring emf was measured by means of an JB-9 (LV-9) tube voltmeter. The setup is schematically represented in Fig. 1. Thus, the longitudinal magnetostriction effect (Fig. 5) was measured on p-type and n-type germanium. Such measurements may be used to determine such semiconductor parameters as the microscopic drift mobility of carriers and the concentration ratio between carriers of equal sign but different effective mass. The concentration ratio between light and heavy holes in germanium was about 2 per cent. Mention is made of

X

Card 1/2

Investigation of the Diffusion of Minority  
Carriers in a Magnetic Field

81947  
S/181/60/002/04/05/034  
B002/B063

I. K. Kikoin, Noskov, and Pikus. There are 7 figures and 18 references:  
7 Soviet, 1 American, 9 British, and 1 French.

ASSOCIATION: Leningradskiy fiziko-tekhnikheskiy institut AN SSSR  
(Leningrad Physicotechnical Institute of the AS USSR)

SUBMITTED: July 24, 1959

Card 2/2

38909  
S/181/62/004/006/015/051  
B125/B104

24.7700  
24.2600

AUTHORS: Ivanov, Yu. L., and Ryvkin, S. M.

TITLE: Optical charge exchange of impurity centers and kinetics  
of impurity photoconduction

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1482-1491

TEXT: The kinetics of photoconduction in direct and reverse charge exchange through the C-zone has been investigated experimentally, and results have been interpreted qualitatively. The examined five groups of n-type germanium specimens with copper introduced by diffusion comprised almost all possible stages of compensation. The illumination of group I specimens (all Cu centers having a triple negative charge) and of group V gives rise to electron exchange between a single level (level III for group I, and level II for group V) and the corresponding zone. The relaxation curves then contain only one "fast" component. If specimens of groups II and III (containing triply and doubly charged centers) are irradiated with  $0.43 \text{ ev} > h\nu > 0.26 \text{ ev}$ , both slow and fast relaxation appears. Under irradiation with  $0.49 \text{ ev} > h\nu > 0.43 \text{ ev}$ , the

Card 1/3

S/181/62/004/006/015/051

B125/B104

Optical charge exchange of impurity ...

relaxation curve slopes down gently owing to charge exchange of the Cu centers. The irradiation of III (all centers having double negative charge) with  $0.49 \text{ ev} > h\nu > 0.43 \text{ ev}$  causes reverse charge exchange which may change the rate of generation and, to a lesser degree, also the lifetime. In the irradiation of group IV specimens (containing singly and doubly charged centers) with  $0.43 \text{ ev} > h\nu > 0.32 \text{ ev}$  as well as in the short-wave range, there appears a "fast" component. Theoretically possible slow processes are not observed. After illumination of a group III specimen with  $0.49 \text{ ev} > h\nu > 0.45 \text{ ev}$ , electrons from levels II and III are transferred to the C-zone. The intensity of this reverse process ("flashing") increases with progressing filling of level III with electrons. A steady state sets in after a certain time. Hence, the amplitude of this "reverse flashing" (characterizing the concentration of triply charged non-equilibrium centers) tends toward a limiting value if preliminary illumination has been protracted for a sufficiently long time. The more intense the illumination, the more quickly this limiting value is attained. There are 6 figures. The most important English-language reference is: J. Lambe, C. C. Klick. Phys. Rev., 98, 909, 1955.

Card 2/3

S/181/62/004/006/015/051  
B125/B104

Optical charge exchange of impurity ...

ASSOCIATION: Fiziko-tehnicheskiy institut im. A. F. Ioffe AN SSSR,  
Leningrad (Physicotechnical Institute imeni A. F. Ioffe  
AS USSR, Leningrad)

SUBMITTED: January 22, 1962

f

Card 3/3

39987  
S/181/62/004/006/036/041  
B108/B102

94.7700

AUTHOR: Ivanov, Yu. L.

TITLE: The capture cross sections for photons and electrons on the third copper level in germanium

PERIODICAL: Fizika tverdogo tela, v. 4, no. 8, 1962, 2274 - 2276

TEXT: Copper impurities in germanium have three acceptor levels in the forbidden band. The photon and electron capture cross sections of the third of these levels which is 0.26 ev below the bottom of the conduction band were determined from impurity photoconductivity measurements in the range 77 - 150°K:  $\frac{dn}{dt}|_0 = qm_0 I$ , where n is the electron concentration in the conduction band,  $m_0$  is the electron concentration on the levels in the dark, q is the photon capture cross section, and I is the number of light quanta per second falling upon 1 cm<sup>2</sup>. The electron lifetime decreases exponentially as temperature increases which is related to an increase in

Card 1/2

The capture cross sections ...

S/101/62/004/008/036/041  
B108/B102

capture cross section, which at 77°K is about  $0.8 \cdot 10^{-20} \text{ cm}^2$ . This low value is attributed to the repulsive Coulomb field of the doubly charged copper centers. There are 2 figures and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR Leningrad)

SUBMITTED: April 26, 1962

Card 2/2

S/181/63/003/004/043/047  
B102/B106

AUTHOR: Ivanov, Yu. I.

TITLE: Temperature dependence of the activation energy of the second and third levels of copper and germanium

PERIODICAL: Fizika tverdogo tela, v. 5, no. 4, 1963, 1217 - 1218

TEXT: The temperature dependence of the position of the third and second levels in the forbidden band was determined by two methods: (1) The level position at 0°K was determined by measuring the Hall effect. In this case the electron concentration in the conduction band was determined from the relation  $n = A \exp(-\alpha/\beta k) \exp(-\Delta E_c/\beta kT)$  when the temperature dependence of the forbidden band width is given by  $\Delta E = \Delta E_0 + \alpha T$ ,  $E_0$  being the gap width at 0°K and  $\alpha$  the temperature coefficient of the level shift. (2) The long-wave edge of photoconductivity due to optical excitation of carriers from the level investigated into the band was determined. Two groups of samples were investigated: Those of the first group had at 0°K their lower level ( $\epsilon_v + 0.04$  ev) completely filled with electrons and the other partially.

Card 1/2

S/181/63/005/004/043/047

Temperature dependence of the activation... 3102/3106

Those of the other group had two lower levels completely filled and another partially. For the  $\epsilon_c + 0.32$  ev the temperature shift determined from the photoconductivity red edge shift was obtained as  $-5.3 \cdot 10^{-4}$  ev/deg, from the Hall effect  $-6.9 \cdot 10^4$  ev/deg was obtained. For the  $\epsilon_c - 0.26$  ev level this value was determined from the Hall effect and was  $-5.3 \cdot 10^{-4}$  ev/deg. The activation energies for the two copper levels in Ge were:

T, °K	$\Delta E_I$	$\Delta E_{II}$
0	0.320	0.260
4.2	0.318	0.258
77	0.280	0.220
300	0.260	0.100

There are 2 figures and 1 table.

ASSOCIATION: Fiziko-tehnicheskiy institut im. A. F. Ioffe RAN SSSR, Leningrad (Physicotechnical Institute imeni A. F. Ioffe RAS USSR, Leningrad)

SUBMITTED: December 7, 1962

Card 2/2

IVANOV, Yu.L.; RYVKIN, S.M.

Photoelectret effect in silicon. Fiz. tver. tela 5 no.12:3541-3544 D  
'63. (MIRA 17:2)

1. Fiziko-tehnicheskiy institut imeni A.F.Ioffe AN SSSR, Leningrad.

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APPROVED FOR RELEASE: 08/10/2001 CIA-RDP86-00513R000619210012-9"

IVANOV, Yu.I.

Radiative recombination on linear dislocations in germanium. Fiz.  
tver. tela 7 no.3:788-792 Mr '65. (MIRA 18:4)

1. Fiziko-tehnicheskiy institut imeni Ioffe AN SSSR. Leningrad.

IVANOV, Yu.L.; YUKHNEVICH, A.V.

Radiative recombinations in Si and Ge related to radiation  
defects. Fiz. tvar. tela 6 no.12:3703-3704 D '64  
(MIRA 18:2)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR, Leningrad.

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presence of two groups of dislocations where characteristic of the radiation becomes saturated.

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CIA-RDP86-00513R000619210012-9"

SALISHCHEV, K.A.; GEDYMIN, A.V.; IVANOV, Yu.M., redaktor

[Cartography. Supplements: cartographic projections and maps]  
Kartografiia. Prilozhenia: Kartograficheskie proektai i karty.  
Moskva, Gos. izd-vo geogr. lit-ry, 1955. 100 p. (MLRA 9:7)  
(Cartography) [Microfilm]

CHIZHENKO, I.M.; NEMIROVSKIY, A.Sh.; GLUKHOV, D.Ya.; IVANOV, Yu.M.

The first compensated mercury rectifying converter of the aluminum plant and results of its testing. Izv. KPI 26:139-169 '57.  
(MIRA 11:6)

1.Kafedra teoreticheskikh osnov elektrotekhniki. Kiyevskogo politekhnicheskogo instituta.  
(Mercury-arc rectifiers--Testing)

PAGE 1 BOOK EXTRAPOLATION 807/507

**Book 1.** The book contains drawings of propulsive liquid, V. P. Dostizhushko  
Production Equipment) Moscow, Russia, 1960. 176 p.  
8,000 copies printed.

**Document 1.** Description of Propulsive-polymeristic production I  
Polymerized density 1.02.

**Book 2.** (1. T. Kudravtsev [Editor], G. L. Martens,  
S. N. Slobodkin, V. P. Gubarev [Editor], V. V. Rubanovskiy,  
Bogolyubov, and Polytechnic) Moscow, Russia, 1960. 176 p.

**Book 3.** Collection of articles is intended for technical personnel,  
engaged in the construction of heavy equipment for metal processing.  
Collection contains articles dealing with modern problems.  
Construction. This collection contains articles dealing with modern problems, and data on the in-  
dustrial equipment, methods of manufacture, and data on the in-  
dustrial equipment, methods of manufacture, and data on the in-  
dustrial equipment, methods of manufacture, and data on the in-  
dustrial equipment, methods of manufacture, and data on the in-  
dustrial equipment, methods of manufacture, and data on the in-

and article.

**Document 4.** Standard-Unit Machine-Tool Pictures for lot Production  
The book contains the drawings of group assembly of parts  
explosive clamps assembled from standard parts and subassemblies.

**Document 5.** V. A. and V. A. Prokof'ev. Experience Gained in the Use of  
Standard-Unit Pictures in Experimental and lot Production  
The book gives experience of standardization of the methods for the assembly  
of standard-unit fixtures. Mounting methods are also  
described.

**Document 6.** Standard Clamping Devices for Universal Standard-Unit  
Machine-Tool Development and Application of Adjustable Machine-Tool  
Fixtures

The book contains fixtures which can be easily adapted for use on  
standard units by small modifications of certain elements of the fixtures.

**Document 7.** V. A. and V. A. Prokof'ev. Standardization of Auxiliary-Mechanical  
Fixtures  
The book describes the theory of standardization process in the  
planning, designing, and manufacturing of parts and auxiliary  
fixtures. The book gives the description of standardizing processes of individual  
elements.

**Document 8.** V. A. Description of Proprietary Fixtures into Experimental  
The author describes a method of cutting by stamping with partially  
machined dies of his own design. By means of combination a set  
of 8 to 12 dies can produce a large variety of parts.

**Document 9.** V. A. [Designer]. Universal Auxiliary Processing Equipment  
The author describes the use of such materials as cement, plasticine,  
aluminum compounds, and rubber in the manufacture of standard-  
unit equipment.

**Document 10.** Standardization of Fixtures for Welding and Assembly  
In this article constructional principles of fixtures for electrical machines  
and the manufacture of parts from plastics are described.

**Document 11.** V. A. [Designer] and V. M. Tsvetkov [Designer]. Use of En-  
gineering Materials for Auxiliary Processing Equipment  
The author describes the use of such materials as cement, plasticine,  
aluminum compounds, and rubber in the manufacture of standard-  
unit equipment.

**Document 12.** Use of Reinforced Concrete for Making Scalefolds for  
Reinforcement Work  
The article deals with classification of standard-unit fixtures for  
blocks for controlling in concrete work. The use of such blocks  
makes it possible to reduce labor costs, originally used for  
making concrete structures.

**Document 13.** Standardization of Welding and Auxiliary Tools  
The article deals with the standardization of carbide-tipped and  
copper carbide tools for welding bars and welding rods. The standardization  
of other types of tipped cutting tools is also discussed.

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S/124/61/000/008/042/042  
A001/A101

AUTHOR: Ivanov, Yu. M.

TITLE: Estimate of polymer material strength as a function of load duration  
and temperature

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 8, 1961, 66-67, abstract 8V569  
(V sb. "Vopr. primeneniya dereva i plast. mass v str-ve". Moscow,  
Gosstroyizdat, 1960, 5-18 )

TEXT: The author analyzes experimental data of S. N. Zhurkov on determining  
temperature-time relations of strength in plastics (see, e.g. Zhurkov, S. N.,  
Vestn. AN SSSR, 1957, no. 11, 78-82; RZhMekh, 1958, no. 11, 13126). He notes,  
in particular, that temporary dependences of strength in semi-logarithmical  
coordinates,  $\sigma$  - lgt, represent straight lines crossing at one point with coordi-  
nates  $\sigma_0$  - a. The slope angle of these lines to the abscissa axis  $\alpha$  depends on  
temperature. It is shown that in coordinates  $\sigma$  - tg  $\alpha$  (a + lgt), experimental  
points obtained at different temperatures lie in a single straight line which is  
named by the author the summary straight line of strength. The concept of  
Holloman, J. H., and Jaffe, L. D. ( Trans. Amer. Inst. Mining and Metallurg.  
✓

Card 1/2

Card 2/2

15.8500 2409.1407, 1155

21157

3/03/67/01/027/034/016/028  
B103/E201

AUTHOR: Ivanov, Yu. M.

TITLE: Methods of interpreting results of long life strength tests on polymeric substances

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 4, 1961, 455-458

TEXT: The author has shown by the example of polystyrene that the parametric relation  $T(C + \log t) = K = \text{const}$  (2) is little suited for the extrapolation of the long life strength of polymers in a wide range of temperatures and durations of the action of forces. He also found that V. I. Nikitin's method discussed below (for heatproof steels) (Ref. 7) is not applicable to polymers exhibiting a nonlinear dependence of  $\tan \alpha$  on  $T$  in a wide temperature range. The author suggests a method of "total" straight lines, which is based upon the collection of the straight lines of a bundle to a single line. S. N. Zhurkov (Ref. 6) has been concerned with a better definition of the applicability of formula (2), and has used it for interpreting published experimental data concerning the long life strength of polystyrene. It may be seen from S. N. Zhurkov's

Card 1/8

21157 X

S/032/61/027/004/016/028  
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Methods of interpreting results ...

diagram (Fig. 1) that the points for the temperature -194°C are shifted far to the left. Since these points are not on the possible continuation of the parameter curve that would pass through the points of higher temperatures, the author concludes that relation (2) is not applicable to this case. He further stresses the fact that the points in the diagram of Fig. 1, which correspond to a constant temperature, lie on a straight line. Therefore, no curve appears in the coordinates  $\sigma$ ; K ( $\sigma$  being the stress), but a curved strip made of sections of a straight line for  $T_i = \text{const}$ . For this and other reasons, the applicability of formula (2) is greatly limited. The author, therefore, bases on the formula by S. N. Zhurkov (Ref. 1) to write:  $t = t_0 \exp(U_0 - \gamma\sigma/kT)$  (1), where  $t$  is the timespan until breakdown,  $T$  is the absolute temperature,  $U_0$  is the energetic constant of the breaking process,  $k$  is the Boltzmann constant,  $t_0$  and  $\gamma$  are constants. Fig. 3 b shows a diagram for aluminum in coordinates  $T \log t$ ;  $T$  (method by V. I. Nikitin, Ref. 7). This diagram consists of parallel straight lines for  $\sigma_i$  [Westraeter's

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note:  $T_i$  and  $\sigma_i$  are not explained in the text], which are inclined toward the axis T under an angle, whose tangent = C. In the diagram for polystyrene (Fig. 3 a) these straight lines converge instead of being parallel. Furthermore, the author has based on work by S. N. Zhurkov and co-workers (Refs. 1, 6, and 8) constructed the diagram  $\tan \alpha = f(T)$  (Fig. 4) for polystyrene (1), celluloid (2), organic glass (3), alloy of aluminum + 4.6% tin (4), platinum (5), and aluminum (6). This diagram shows the nonlinearity of the dependence of  $\tan \alpha$  on T for polystyrene. The author bases on all these data to state that V. I. Nikitin's method is not applicable to the abovementioned polymers. He suggests an interpretation method based on data by S. N Zhurkov: the experimental points in the coordinates  $\sigma$ ;  $\log t$  are arranged onto straight lines for  $T_i = \text{const}$ , which constitute a bundle converging to one pole. The equation for this bundle reads, according to Fig. 2:  $\sigma - \sigma_0 = -\tan \alpha(a + \log t)$  (3), where  $\sigma_0$  and  $a = \log t_0$  are the pole coordinates. After equating the right-hand part of equation (3) with  $\vartheta$ , the straight lines of the bundle are collected to one line, which the author calls "total" straight

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line, and which corresponds to equation  $\sigma_0 - \sigma = \dot{\gamma}^n$  (4). Fig. 5 presents such a straight line for polystyrene. The author has submitted a report on the method of constructing these straight lines to the All-Union meeting on theoretical and applied mechanics (section for rheology) on January 27 - February 3, 1960 in Moscow. There are 5 figures and 9 references: 7 Soviet-bloc and 2 non-Soviet-bloc. References: S. N. Zhurkov (Ref. 1: Vestnik AN SSSR, 11, 78, 1957); S. N. Zhurkov, B. N. Narzulleyev (Ref. 6: Zhurnal tekhnicheskoy fiziki, XXIII, no. 10, 1955); V. I. Nikitin (Ref. 7: Zavodskaya laboratoriya, XXV, 12, 1959); S. N. Zhurkov, T. P. Sanfirova (Ref. 8: Zhurnal tekhnicheskoy fiziki, XXVIII, no. 8, 1958). The 2 references to English-language publications read as follows: F. R. Larson, J. Miller, Trans. ASME, 74, no. 5 (1952); S. Goldfein, Proc. ASTM, 54, 1344 (1954).

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