"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

LOTKOVA, E.N.; VAVILOV, V.S.; SOBOLEV, N.N.

Infrared absorption spectrum of silicon irradiated by fast neutrons.
Opt.i spektr. 13 no.2:216-221 Ag '62. (MIRA 15:11)
(Silicon--Spectra) (Neutrons)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

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KUDRYAVTSEV, Ye. M.; SOBOLEV, N.N.; TUNITSKIY, L.N.; FAYZULLOV, F.S.

Pyrometric study of the state of a gas behind a reflected shock wave. Trudy Fiz.inst. 18:159-200 '62. (MIRA 15:12)
(Pyrometry) (Shock waves) (Gas dynamics)

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SOBOLEV, N. N.

95

S/089/62/013/006/019/027
B102/B186

AUTHORS: G. T. and M. R.

TITLE: Nauchnaya konferentsiya Moskovskogo inzhenerno-fizicheskogo instituta (Scientific Conference of the Moscow Engineering Physics Institute) 1962

PERIODICAL: Atomnaya energiya, v. 13, no. 6, 1962, 603 - 606

TEXT: The annual conference took place in May 1962 with more than 400 delegates participating. A review is given of these lectures that are assumed to be of interest for the readers of Atomnaya energiya. They are following: A. I. Leypunskiy, future of fast reactors; A. A. Vasil'yev, design of accelerators for superhigh energies; I. Ya. Pomeranchuk, analyticity, unitarity, and asymptotic behavior of strong interactions at high energies; A. B. Migdal, phenomenological theory for the many-body problem; Yu. D. Fiveyskiy, deceleration of medium-energy antiprotons in matter; Yu. M. Kogan, Ya. A. Iosilevskiy, theory of the Mössbauer effect; M. I. Ryazanov, theory of ionisation losses in nonhomogeneous medium; Yu. B. Ivanov, A. A. Rukhadze, h-f conductivity of subcritical plasma;

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Nauchnaya konferentsiya...

Ye. Ye. Lovetskiy, A. A. Rukhadze, electromagnetic waves in nonhomogeneous plasma; Yu. D. Kotov, I. L. Rozental', the origin of fast cosmic muons; Yu. M. Ivanov, muon depolarization in solids; V. G. Varlamov, Yu. M. Grashin, B. A. Dolgoshein, V. G. Kirillov-Ugryumov, V. S. Roganov, A. V. Samoylov, μ^- capture by various nuclei; V. S. Demidov, V. G. Kirillov-Ugryumov, A. K. Ponosov, V. P. Protasov, F. M. Sergeyev, scattering of π^- mesons at 5 - 15 Mev in a propane bubble chamber; S. Ya. Nikitin, M. S. Aynutdinov, Ya. M. Selektor, S. M. Zombkovskiy, A. F. Grashin, muon production in π^-p interactions; B. A. Dolgoshein, spark chambers; N. G. Volkov, V. K. Lyapidevskiy, I. M. Obodovskiy, study of operation of a convection chamber; K. G. Finogenov, production of square voltage pulses of high amplitudes; G. N. Alekseakov, problems of color vision; V. K. Lyapidevskiy, relation between number of receivers and number of independent colors; Ye. M. Kudryavtsev, N. N. Sobolev, N. I. Tizengauzen, L. N. Tunitskiy, F. S. Fayzulov, determination of the moment of electron transition of oscillator forces and the widths of the Schuhman-Runge bands of molecular oxygen; B. Ye. Gavrilov, A. V. Zharikov, V. I. Rayko, decomposition of the volume charge of intense ion beams; Ye. A. Kramer-Ageyev, V. S. Troshin, measurement of neutron spectra; G. G. Doroshenko, new methods of fast-neutron recording; V. I. Ivanov, dosimetry terminology; R. M. Voronkov,

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

41325

S/057/62/032/009/008/014
B125/B186

AUTHORS: Kitayeva, V. F., Kolesnikov, V. N., Obukhov-Denison, V. V., and Sobolev, N. N.

TITLE: Structure of the positive column of an arc discharge in argon. I. The local electrical characteristics of the column

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1084 - 1089

TEXT: The field strength and the radial distribution of the concentration of charged particles are determined from the contour of the hydrogen line H_β, and the radial distribution of temperature is measured for a non-equilibrium plasma (i = 4a) and for an equilibrium plasma (i = 10 - 200a) in an arc discharge in a hydrogen-argon mixture (Ar $\gtrsim$94.0%, $H_2 \sim$5%, N, O and C impurities). The volt-ampere characteristics (Fig. 2) are shifted if there is a change in the diameter and material of the cathode, the hydrogen concentration, or the velocity of the gas flow. The general shape of the characteristics is practically independent of these quantities.

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The dashed line shows the extrapolated sum of anode and cathode drops. The descending branch is due to the change in amperage of the column, and the ascending one to the increase of anode and cathode voltage drops. The field strength is practically constant at $i \gtrsim 50a$. The radial distributions of the concentration N_e of charged particles (Fig. 3) and of the current density $j(r) = \sigma(r)E$ (Fig. 4) in the column are calculated from the exact formulas of the kinetic theory for the plasma conductivity σ. The concentration of charged particles and the column radius increase with increasing amperage. There is no indication of a pinch effect in air at these amperages. The amperages calculated from $j(r)$ in a partially ionized equilibrium plasma agree well with the amperages measured. The formulas here given for σ in plasma hold as long as the Boltzmann equation is applicable to the plasma. The applicability of these formulas for concentrations of $N_{ion} \lesssim 10^{15}$ cm^{-3} cannot be established yet, from lack of experimental data. There are 4 figures and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva, Moskva (Physics Institute imeni P. N. Lebedev, Moscow)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SUBMITTED: July 27, 1961 (initially)
January 29, 1962 (after revision)

Fig. 2. Volt-ampere characteristics. (1) Diameter of the cathode 2 mm, of the anode 6 mm; (2) diameter of the cathode 6 mm, of the anode 12 mm.

Fig. 3. Radial distributions of the concentration of charged particles in the column of the arc. (1) 200a; (2) 40a; (3) 10a; (4) 4a.

Fig. 4. Radial distributions of the current density in the column of the arc. Designations as in Fig. 3.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

41326

S/057/62/032/009/009/014
B125/B186

AUTHORS: Kolesnikov, V. N., and Sobolev, N. N.

TITLE: Structure of the positive column of an arc discharge in argon. II. The radius of the positive column and the form of radial distributions

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1090 - 1094

TEXT: The present paper is a continuation of that by V. F. Kitayeva et al. (ZhTF, v. 32, no. 9, 1962, 1084 - 1089). The electrical conductivity has its maximum (σ_{max}) in the center of the positive column, and decreases by 50% at $r = r_{0.5}$; $\sigma(r_{0.5}) = 0.5 \cdot \sigma_{max}$. The radial distribution $\sigma(r)$ in the positive column of an arc discharge in an argon-hydrogen mixture is well approximated by $\sigma(r) = \exp\left[-(r/r_{0.5})^{e} \ln 2\right]$. It is independent of the amperage and of the hydrogen concentration. This approximate function does not make it more difficult to solve the heat conduction equation $(1/r)(d/dr)\left[\varkappa(r) r dT/dr\right] = -q(r)$, which is valid if all energy losses are due to thermal conductivity. $\varkappa(r)$ is the thermal conductivity and

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$q(r) = 0.24\sigma(r)E^2$ is the density of heat sources. Under these conditions, the amperage is calculated from formula

$$i = 2\pi r_{0.5}^2 \cdot \sigma_{max} E \cdot \int_0^{R_0} \sigma_{отн.}(R)\, R dR = 2\pi r_{0.5}^2 \sigma_{max} E \cdot I, \quad (3)$$

with the constant integral

$$I = \int_0^{R_0} \exp(-R^e \ln 2)\, R dR = \frac{1}{e(\ln 2)^{\frac{2}{e}}} \gamma\left(R_0, \frac{2}{e}\right) \quad (4),$$

and the radial distribution $\varkappa(R)$ of the thermal conductivity and $T(R)$ of the temperature from

$$\varkappa(R) = -\frac{iE}{10} \cdot \frac{\gamma\left(R, \frac{2}{e}\right)}{R\frac{dT}{dR}} \quad (7) \text{ and } \quad T(R) = T_{max} - \frac{iE}{10} \cdot \int_0^R \frac{\gamma\left(\rho, \frac{2}{e}\right)}{\rho\varkappa(\rho)} d\rho. \quad (8).$$

Maximum current density occurs in a homogeneous conductor of the radius $1.1 \cdot r_{0.5}$. The standard distribution $\sigma_{rel}(R) = \sigma(r)/\sigma_{max}$ does not contain any uncertain parameters. It would be very desirable to check the validity of the present formulas for arc discharges in air and other molecular gases with

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high dissociation energy, for arcs within channels, and for other arcs with difficult burning conditions. Measurements in currentless plasma jets and in plasmotrons would also conduce to better understanding of several laws governing the flow of currents through gases. There are 3 figures.

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SUBMITTED: July 27, 1961 (initially)
January 29, 1962 (after revision)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

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Structure of the positive...

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B125/B186

Fig. 2

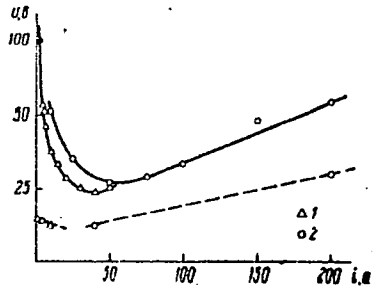


Fig. 3

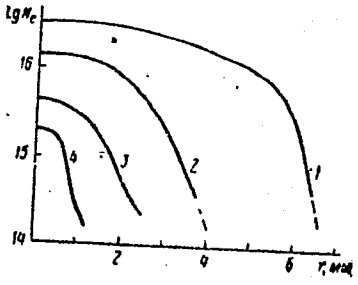
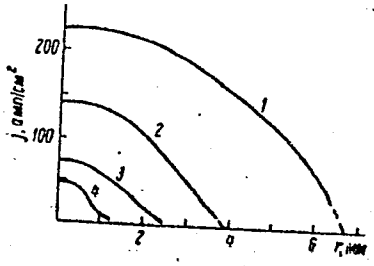


Fig. 4



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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, N.N.

Spectroscopic study of gases in shock tubes in the U.S. Usp.fiz. nauk 77 no.3:559-560 Jl '62. (MIRA 15:7)
(United States--Plasma (Ionized gases)--Spectra)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

[illegible], V. N.; SOBOLEV, N. N.

"The Establishment of the Thermal Equilibrium for D.C. Arc Plasma in Inert Gases."

report submitted to 11th Intl Spectroscopy Colloq, Belgrade, 30 Sep-4 Oct 63.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACCESSION NR: AP4000402 S/0294/63/001/001/0073/0084

AUTHORS: Kudryavtsev, Ye. M.; Ginnius, Ye. F.; Pechenov, A. N.; Sobolev, N. N.

TITLE: Determination of the matrix element in the dipole moment of electron transfers in the cyanogen violet spectrum. Part 1

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 1, 1963, 73-84

TOPIC TAGS: cyanogen, carbon monoxide, nitrogen, shock wave, high temperature, radiative heat transfer, cyanogen spectrum, spectral line reversal, spectroscopy, supersonic aerodynamics, violet band, electron transfer, dipole moment, matrix element, absorption spectrum, radiative heat exchange, heat exchange, heat transfer, shock wave heating, shock tube, violet band system, reflected shock wave

ABSTRACT: In view of the uncertainty in the value of $|R_e|^2$ (the square of the electron transition dipole moment matrix element) for

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ACCESSION NR: AP4000402

the violet cyanogen spectrum, and in view of a recent development of a new method for determining this quantity in the Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR) by measuring the absorption of light in gas behind a reflected shock wave, new measurements of $|R_e|^2$ have been set up by this method, with the CN radicals obtained by heating a mixture of CO and N_2 by a reflected shock wave. It was established that by transmitting pulsed light through a mixture of CO and N_2 heated to 5,000--7,000°K by the reflected shock wave, it is possible to register the absorption spectrum of the violet CN band system, and determine the value of $|R_e|^2$ of this system. To choose the optimal experimental condition and to obtain the data necessary for the data reduction, the states of the CO and N_2 mixture behind the reflected shock wave were calculated over a wide range of initial pressures (10--200 mm Hg) and of shock-wave velocities (2.0--5.6 km/sec). The temperature of the mixture

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ACCESSION NR: AP4000402

was measured by a generalized method of inversion relative to the CN bands, which was also used to monitor the fact that the CN concentration is in equilibrium. The shock tube employed was described by the authors previously (Optika i spektroskopiya, v. 8, 585, 761, 1960). It is concluded that the most suitable conditions for the described experiment are those with $T_5 \geq 4800°K$ (i.e., p_1 = 100, 50, 25 mm Hg). The final results of the experiments will be reported in future articles. "In conclusion the authors are grateful to A. T. Matachun and L. L. Sabsovich for programming and solving the problem with the electronic computer, to A. A. Sapronov for developing the electronic apparatus, and to G. I. Dronova and I. M. Kholinov for help with the work." Orig. art. has: 9 figures, 2 formulas, and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute AN SSSR)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACCESSION NR: AR4040823 S/0058/64/000/005/D026/D026

SOURCE: Ref. zh. Fizika, Abs. 5D191

AUTHOR: Kudryavtsev, Ye. M.; Gippius, Ye. F.; Pechenov, A. N.; Sobolev, N. N.

TITLE: Definition of matrix element of dipole moment of electron transition of violet system of bands of cyanogen. II.

CITED SOURCE: Teplofiz. vy*sokikh temperatur, v. 1, no. 2, 1963, 218-227

TOPIC TAGS: matrix element, dipole moment, electron transition, cyanogen, cyanogen band, radioscopy

TRANSLATION: There is described the installation used for obtaining absorption spectrum of violet system of CN bands during radioscopy with a pulse source of a mixture of gases CO and N_2, heated by a reflected shock wave to a temperature of 4000 - 6000° K. This spectrum is used for measurement of rotary

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACCESSION NR: AP4017717 S/0294/63/001/003/0376/0385

AUTHORS: Kudryavtsev, Ye. M.; Gippius, Ye. F.; Derbeneva, S. S.; Pechenov, A. N.; Sobolev, N. N.

TITLE: Determination of the matrix element of the dipole moment of the electronic transition of the cyan violet band system. III

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 3, 1963, 376-385

TOPIC TAGS: cyan, cyan band system, cyan violet band system, dipole moment, matrix element, integral absorption exponent, internuclear distance, dissociation energy, electronic transition

ABSTRACT: This is a continuation of previously reported research (Teplofizika vy*sokikh temperatur v. 1, 73 and 218, 1963) and is devoted to the actual determination of the square of the matrix element of the dipole moment of the electronic transition $|R_e|^2$ from the measured integral absorption exponents of the rotational line of

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ACCESSION NR: AP4017717

the sequences $\Delta v = 0$ and $\Delta v = -1$ of the violet system of CN bands. The value obtained for the $|R_e|^2$ was found to be 0.38 atomic units and to be independent of the internuclear distance of the transitions. The over-all error in the measurements due to imperfections in the spectral instrument and failure to take complete account of the skirts of the lines is less than 10%, since the half-width of the rotational line exceeds or is equal to the half-width of the apparatus function under the experimental conditions. The value obtained for $|R_e|^2$ is in satisfactory agreement with the values obtained earlier by other methods. A value of 7.6 eV is obtained for the dissociation energy of CN from the present results and those by others. Orig. art. has: 6 figures, 7 formulas, and 3 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

S/051/63/014/003/005/019
E039/E120

AUTHORS: Krindach, N.I., Kudryavtsev, Ye.M., Sobolev, N.N., Tunitskiy, L.N., and Fayzullov, F.S.

TITLE: Determination of the electronic transition moments of the Schumann-Runge band system in oxygen. I.

PERIODICAL: Optika i spektroskopiya, v.14, no.3, 1963, 351-361

TEXT: A method is developed for determining the square of matrix elements for electron transitions of molecules based on a measurement of the absorption in gases behind shock waves. The Schumann-Runge absorption bands for oxygen are obtained on a shock tube using helium as a working gas and equipped with apparatus for measuring temperature by the usual method of rotation of spectral lines; in this case by observing the resonance line of Ba II (λ = 4554 Å). An ionization probe is used for measuring the velocity of the front of the incident shock waves. The pulsed light source and the synchronizing circuit are described in detail. Spectra are recorded on ДФС-13 (DFS-13) and КС-55 (KS-55) spectrographs with glass and with quartz optics. By plotting the absorption index against wave number ν for the

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groups R(K)P(K - 4) and measuring the area under the curve, a value for the integral of the absorption index is obtained for lines of R and P form, from which is calculated the square of the moment for electronic transitions $|R_e^{n\,m}|^2$. The value of this integral obtained graphically agrees with the calculated value. These results and the analysis of possible errors will be examined in a later paper.
There are 10 figures.

SUBMITTED: May 18, 1962

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

KRINDACH, N.I.; SOBOLEV, N.N.; TUNITSKIY, L.N.

Determining the electron transition moments of the Schumann-Runge bands for the oxygen molecule. Part. 2. Opt. i spektr. 15 no.3:298-305 S '63. (MIRA 16:10)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

KRINDACH, N.I.; SOBOLEV, N.N.; TUNITSKIY, L.N.

Determination of the electron transition moments of the Schumann-Runge bands of the oxygen molecule. Part 3. Opt. i spektr. 15 no.5:601-608 N '63. (MIRA 16:12)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ANTROPOV, Ye.T.; DRONOV, A.P.; SOBOLEV, N.N.; CHEREMISINOV, V.P.[deceased]

Experimental determination of the matrix element of the electron transition in gamma and beta systems of the NO molecule. Dokl. AN SSSR 153 no.1:67-69 N '63. (MIRA 17:1)

1. Predstavleno akademikom I.V. Obreimovym.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

VIKTOROV, Yuriy Vsevolodovich; GDALIN, Aleksandr Davidovich; LEBEDEV, Ivan Yevstifeyevich; SOBOLEV, N.N., red.

[Introduction of progressive practices and highly efficient equipment at the "Rovnoe" granite quarry] Vnedrenie progressivnoi tekhnologii i vysokoproizvoditel'nogo oborudovaniia na granitnom kar'ere "Rovnoe." Leningrad, 1964. 13 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Stroitel'noe proizvodstvo, no.2) (MIRA 17:7)

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ACCESSION NR: AR5012225 UR/0058/65/000/003/D013/D013

37
B

SOURCE: Ref. zh. Fizika, Abs. 3D81

AUTHOR: Sobolev, N.N.; Antropov, Ye.T.; Gippius, Ye.F.; Dronov, A. P.; Krindach, N.I.; Kudryavtsev, Ye.M.; Pechenov, A.N.; Sviridov, A.G.; Tunitskiy, L.N.; Fayzullov, F.S.; Cheremisinov, V. P.

TITLE: Experimental determination of electronic oscillator strengths of diatomic molecules 21

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 64-81

TOPIC TAGS: oscillator strength, electron oscillator, diatomic molecule, shock wave, oxygen, nitric oxide, cyan, electronic spectrum

TRANSLATION: To determine the oscillator strengths of electronic transitions of diatomic molecules, an experimental method was developed, based on the measurement of the absorption of gas behind a shock wave reflected from the end of a shock tube. By varying the velocity of the incident shock wave and by calculating the state of the gas behind the shock wave, it is possible to determine the temperature and the concentration that the molecules behind the reflected

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ACCESSION NR: AR5012225

shock wave must have to permit determination of the oscillator strengths from the measured absorption. The theoretically obtained temperature was monitored by two experimental methods. A method was also developed for determining the oscillator strengths from the study of the gas behind the shock wave; these strengths were determined for the Schumann-Runge bands of oxygen, the beta and gamma systems of nitric oxide, the violet band system of CN, and the C_2 Swan bands.

SUB CODE: NP, ME ENCL: 00

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

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ACCESSION NR: AR5012274 UR/0058/65/000/003/D046/D046

36

B

SOURCE: Ref. zh. Fizika, Abs. 3D348

AUTHOR: Krindach, N. I.; Sobolev, N. N.; Tunitskiy, L. N.

TITLE: A method for determining the width of rotational lines and integral indices of absorption from a molecular absorption spectrum

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 704-712

TOPIC TAGS: line spectrum, absorption spectrum, molecular spectrum, spectrographic analysis, absorption coefficient

TRANSLATION: A method is developed for determining the true values of the half-width of a rotational line and the integral indices of absorption from their observed values, which differ from the true values due to the finite resolution of the spectral instrument. The method may be used for studying absorption spectra where there is incomplete resolution of the rotational structure. This method may also be used to estimate the error in the integral absorption index which is caused by substituting a contour with "detached" limbs for the "complete" line group contour which is defined in an infinite interval.

SUB CODE: OP ENCL: 00

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L 9202-66 EWT(1)/ETC/EPF(n)-2/EWG(m) IJP(c) AT

ACC NR: AR6000107 SOURCE CODE: UR/0058/65/000/008/G013/G013

SOURCE: Ref. zh. Fizika, Abs. 8G102

80
B

AUTHORS: Kolesnikov, V. N.; Sobolev, N. N.
44,55 44,55

ORG: none

TITLE: Reasons for deviations from thermal equilibrium in an arc-discharge plasma in an inert gas

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 2, vyp. 1, 1964, 376-381

TOPIC TAGS: plasma arc, arc discharge, thermal effect, plasma diffusion, thermal excitation, electron collision, particle collision

TRANSLATION: The difference between the electron and the gas temperature in the column of an arc discharge at low current values can be due to an inhomogeneity of the column, which leads to energy diffusion of the electrons out of the column. Comparison of the average time of stay of the electrons in the column and the temperature relaxation time for different discharge-combustion modes gives results which agree with experiment. The observed singularities in the excitation of the atoms cannot be explained within the framework of the usual assumption that the inelastic collisions between atoms have low efficiency compared with atom-electron collisions.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Added c/up
wrd: Plasma Temperature
21,44,55

Card 1/1 rds

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACCESSION NR: AP4038432 S/0294/64/002/002/0181/0187

AUTHORS: Gippius, Ye. F.; Kudryavtsev, Ye. M.; Pechenov, A. N.; Sobolev, N. N.; Fokeyev, V. P.

TITLE: Determination of the red cyan-band system electronic transition dipole moment matrix element

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 2, 1964, 181-187

TOPIC TAGS: absorption spectrum, shock wave, dipole moment, absorption band, matrix element, carbon dioxide, nitrogen

ABSTRACT: The investigation is a continuation of research on the determination of the matrix element of the dipole moment of the electronic transition of the violet system of the CN bands (Teplofizika vy*sokikh temperatur v. 1, no. 1, 73, 1963; no. 2, 1963; no. 3, 1963). The absorption spectrum of the red system of the cyan band is obtained behind the front of the reflected shock wave in a mix-

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ACCESSION NR: AP4038432

ture of CO and N_2. The square of the matrix element of the dipole moment of the electronic transition is determined from the measured integral absorption coefficients in the wavelength region 6,330--6,550 Å and is found to be 0.19 ± 0.09 atomic units. The ratio of the squares of the matrix elements for the violet and for the red bands is obtained from the integral intensities of the bands (1,0) of the red system and (0, 1) of the violet system of cyan, in the spectrum of an arc with carbon electrodes burning in air. Its value is found to be 1.9 ± 0.6. The value obtained for the square of the matrix element of the red dipole moment calculated from this ratio, and from the value obtained for the violet band earlier, agrees with the value obtained in the present work by measurements with the aid of a shock tube. The ratio does not agree with calculations by King and Swings (Astrophys. J. v. 101, 6, 1945) if allowance is made of the Franck-Condon factors. The reason for the discrepancy are discussed. "In conclusion the author is thankful to V. N. Kolesnikov for useful advice, A. T. Matachun and L. L. Sabsovich for solving the

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ACCESSION NR: AP4038432

gas dynamic problem on the M-20 computer, and G. I. Dronova for help in the reduction of the experimental data. Orig. art. has: 4 formulas, 2 tables, and 1 figure.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 29Dec63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: OP, ME NR REF SOV: 005 OTHER: 011

Card 3/3

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

S/0051/64/016/002/0208/0215

ACCESSION NR: AP4020923

AUTHOR: Antronov, Ye.T.; Sobolev, N.N.; Cheremisinov, V.P. (Deceased)

TITLE: Experimental determination of the matrix element of the dipole moment of electron transitions associated with the Beta and Gamma bands of nitric oxide. Part I.

SOURCE: Optika i spektroskopiya, v.16, no.2, 1964, 208-215

TOPIC TAGS: dipole moment matrix element, transition intensity, oscillator strength, nitric oxide, nitric oxide absorption, nitric oxide gamma band, molecular absorption spectrum

ABSTRACT: The intensity of emission and absorption lines is determined by the probability for the corresponding transition which, in principle, depends on the Einstein coefficients. However, in many cases, instead of the Einstein coefficients, it is more convenient to use some other parameter: the oscillator strength, lifetime of the upper state or the square of the matrix element of the dipole moment of the transition. Accordingly, in the present work, for the purpose of determining the values of the square of the matrix element, R_e^2, of the dipole moment of the corresponding transitions, there were measured the integral absorption coefficients

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACCESSION NR: AP4020923

(α) of the γ bands of nitric oxide in the 2300 to 2600 Å region by means of quartz prism KS-55 spectrograph with a dispersion of 2-2.5 Å/mm in the indicated region. The nitric oxide NO was heated in an electric furnace to temperatures from 350 to 900°C. To minimize apparatus errors in determining α the NO lines were broadened by introduction of argon at 13 to 20 atm into the sealed tubes containing the NO. The results of processing the spectra, i.e., the values of α, R_e^2, and f_e for the γ(0,0), γ(0,1) and γ(0,2) absorption bands of NO are tabulated. The values of the square of the matrix element for the transitions corresponding to the above bands are 0.018, 0.026 and 0.036 atomic units, respectively. The results for the bands of the β system and for higher order γ bands, obtained by a somewhat different procedure, will be described in the next paper. "The authors are grateful to S.A.Losev for aid in procuring the nitric oxide and for valuable consultations." Orig.art.has: 5 formulas, 6 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 11Jun63 DATE ACQ: 02Apr64 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 013

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ANTROPOV, Ye.T.; DRONOV, A.P.; SOBOLEV, N.N.

Experimental determination of the matrix element of the dipole moment of an electron transition in the β- and γ-band systems of nitrogen oxide. Part 2. Opt. i spektr. 17 no.5:654-661 N '64. (MIRA 17:12)

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L 2091-66 EWA(k)/FBD/EWT(1)/EEC(k)-2/ETC/EPF(n)-2/EWG(m)/EPA(w)-2/T/EWP(k)/EWA(h)/EWA(m)-2 SCTB/IJP(c) WG/AT

ACCESSION NR: AP5024901 UR/0382/65/000/003/0054/0056
533.9.01:621.378.1

AUTHOR: Gudzenko, L. I.[44,55]; Kolesnikov, V. N.[44,55]; Sobolev, N. N.[44,55]; Shelepin, L. A.[44,55]

TITLE: Use of highly ionized plasma[21,44,55] for fabrication of a laser[25,44,55]

101
B

SOURCE: Magnitnaya gidrodinamika, no. 3, 1965, 54-56

TOPIC TAGS: plasma, laser, plasma laser, magnetohydrodynamics, energy conversion

ABSTRACT: The sudden cooling of the free electrons of a highly ionized low-temperature plasma (a condition necessary for the attainment of laser action in such a medium) is discussed. Two methods are proposed: cooling the walls of the container, and the use of heavy particles (ions and neutral atoms of the plasma) to cool the free electrons. The second method is discussed in detail. In utilizing heavy particles for cooling, two conditions must be satisfied: 1) The electronic temperature must be significantly greater than the temperature of the heavy particles ($T_e \gg T$). The temperature T_e must be close to the temperature of the almost totally singly ionized gas, and the temperatures T, to the final cooling temperature of free electrons; and 2) the specific heat of the electrons must be significantly smaller than that of the heavy particles ($C_e \ll C$). The first condition can be realized by heating

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ACCESSION NR: AP5024901

the gas by means of an electric field. The second condition can be fulfilled only when the electronic density is small in comparison with the total density of the gas. This occurs at a practically total ionization of an easy-to-ionize compound of plasma which forms only a small percentage of the total density of a mixture of gases, or, in the case of gas consisting of one component, when the plasma is not ionized completely. In a plasma consisting of a mixture of gases, the hard-to-ionize components form the cooling system, the specific heat of which is high. In addition, the total density cannot be too high lest nonradiative transitions control the population of the discrete lower levels. It is shown that the various cooling methods used in magnetohydrodynamics could probably be used in developing a low-temperature highly ionized plasma laser. [CS]

ASSOCIATION: none

SUBMITTED: 10Aug64 ENCL: 00 SUB CODE: ME, EC

NO REF SOV: 001 OTHER: 000 ATD PRESS: 4117

Card 2/2

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

L 15769-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACC NR: AP5027678 SOURCE CODE: UR/0051/65/019/005/0819/0821

AUTHOR: Brusyanova, Ye. B.; Kolesnikov, V. N.; Sobolev, N. N.

ORG: none

TITLE: Thermal excitation of the molecular nitrogen spectrum

SOURCE: Optika i spektroskopiya, v. 19, no. 5, 1965, 819-821

TOPIC TAGS: spectroscopy, arc discharge, nitrogen, optic spectrum, shock tube, discharge tube, gas discharge counter, thermal excitation

ABSTRACT: The spectrum of molecular nitrogen has usually been studied in low-pressure gas-discharge tubes, i.e., under nonequilibrium conditions without thermal excitation. When shock tubes are used, the gas, treated by a shock wave, contains admixtures, the spectrums of which are superposed on the nitrogen spectrum. A light source was therefore developed that produced thermally excited spectrums of molecular nitrogen, free of interfering admixtures, and which could be used for photographic recording. A d-c arc discharge, burning in high-purity nitrogen ($< 0.005\%$ O) between two tungsten electrodes cooled intensely by water was used. The nitrogen spectrum, studied in the range of 2300-10,000 A by using a DFS-8

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L 15769-66
ACC NR: AP5027678

spectrograph, consisted only of the bands of N_2 and N_2^+, having a well-developed structure and a small number of lines of atomic N. Neither traces of CN nor NO bands, nor the lines of tungsten were present in the spectrum. The oscillator strength f_e and the transition strength $S_e^{n'n''}$ for the first and the second positive nitrogen systems were determined by using this light source and the method of absolute intensities. The electron-vibration bands of the first positive system N_2 in the region of 0.5-1.8 m were inapplicable to direct treatment because of a strong overlapping of bands caused by the high temperature in the discharge (7000-8000 K). Measurements were thus made of parts of the bands (0, 0) and (1, 0). The values of $S_e^{n'n''}$ and f_e obtained for bands (0, 0) and (1, 0) were 1.095 and 0.068, and 0.0028 and 0.0020 atomic units, respectively. The bands of the second positive system were in the region of 0.25-0.5 m, were suitable for measuring, and were free of overlapping. The values of $S_e^{n'n''}$ and f_e were determined from several rotating lines [$R_1(25)$, $R_2(24)$, $R_2(37)$] for band (0. 0) to be 0.75 and 0.06 atomic units, respectively. Both results agreed well with the literature (W. H. Wurster, J. Chem. Phys., 36, 2111, 1962, and M. Jeunchomme, A.B.F. Dunkan. J. Chem. Phys., 41, 1692, 1964). Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 10Apr65/ NR REF SOV: 000/ OTHER: 008

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACC NR: AP6031993 SOURCE CODE: UR/0051/66/021/003/0267/0274

AUTHOR: Dronov, A. P.; Fayzullov, F. S.; Sobolev, N. N.

ORG: none

TITLE: Determination of the electron transfer energy of the first positive band system of nitrogen. I.

SOURCE: Optika i spektroskopiya, v. 21, no. 3, 1966, 267-274

TOPIC TAGS: molecule energy level, nitrogen energy level, molecule band, nitrogen band, electron transfer energy, molecule energy transfer, EXCITED ELECTRON STATE, SHOCK WAVE, BAND SPECTRUM, ELECTRON ENERGY

ABSTRACT: The electron transfer from the first positive band system of the nitrogen molecule, which occurs between the second $B^3\Pi_g$ and first $A^3\Sigma^+_u$ excited electron states, was experimentally investigated on an installation based on the measurement of the intensity of radiative emission behind a shock wave. The installation consisted of a specially adapted shock tube, an ISP-51 spectrograph, a three-stage electron-optical converter for photographically recording the spectrum, and a 4-channel DFS-33 diffraction spectrometer for recording the spectrum intensity. The (1, 0) band (λ = 8912.3 Å) of the positive system of N_2 was photographically recorded and the absolute intensity of the rotation lines belonging to this band was measured by the installation. The article, which is the first part of a larger work, discusses at length the measuring installation, describing its components and characteristics. The

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ACC NR: AP6031953

measurement results are presented in a photograph taken from the screen of the electron-optical converter showing two spectra—one of a neon lamp with two close, well resolved lines of 8654 and 8634 Å and the other of nitrogen heated by the shock wave to about 8000K. The photograph shows the rotational structure of the band tail of the CN red system. Orig. art. has: 5 figures and 1 formula. [FP]

SUB CODE: 07 / SUBM DATE: 29Mar65/ ORIG REF: 013/ OTH REF: 006/ ATD PRESS: 5090

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

L 44813-66 EWT(1) IJP(c) AT

ACC NR: AP6032020 SOURCE CODE: UR/0386/66/004/006/0213/0216

AUTHOR: Kitayeva, V. F.; Osipov, Yu. I.; Sobolev, N. N.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Electron temperature in the electric discharge used for the argon ion laser

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 6, 1966, 213-216

TOPIC TAGS: gas laser, argon, electron temperature, electron density, electric discharge

ABSTRACT: This is a continuation of an earlier investigation (Dokl. AN SSSR, in press) of the charged-particle concentration and the gas temperature in argon under conditions typical of the operation of a continuously operating ionic argon laser. The results indicated that the decisive influence on the ion motion in the discharge column is exerted by the drift of the ions to the wall and their recombination. The present investigation was devoted to a determination of the electron temperature in a discharge of this type. Measurements were made of the half-width of the Ar II lines radiated transverse to the discharge in a tube of 2.8 mm diameter and ~40 cm length, with a bypass channel. The gas pressure ranged from 0.21 to 0.62 Torr and the current density from 150 to 350 a/cm^2. The results show that the width of the Ar II line increases with increasing current density. The width $\delta\lambda_{il}$ of the line

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ACC NR: AP6032020

radiated transverse to the channel exceeds the width $\delta\lambda_{i\parallel}$ of the line radiated along the discharge by a factor ~1.5- 2. From the values of $\delta\lambda_{i\perp}$ the authors determined the "effective temperature" of the ions transverse to the discharge and the electron temperature T_e. T_e increases from 5×10^4 to 9×10^4 (for $p_{Ar} = 0.37$ Torr) when the current density rises from 150 to 350 a/cm^2, and is expected to reach 13×10^4K at $j = 550$ a/cm^2. It follows from the results that the increase of the intensity of the spontaneous radiation of the Ar II lines and the increase of the power of the coherent radiation of the laser with increasing current density in the capillary are due primarily to the increase in the electron temperature. The electric-conductivity cross sections $\langle Q_a \rangle$ calculated from the electron temperature are equal to 8×10^{-16} cm^2 at 5×10^4K and 6×10^{-16} cm^2 at 9×10^4K. The electron density N_e is also calculated from the temperature and agrees with the values experimentally determined from the half-width of the hydrogen line H_β. It is concluded that the investigations have yielded the basic characteristics of the discharge used for the argon ionic laser, which are of undisputed interest for the explanation of the mechanism that ensures population inversion. Although the increase of T_e with current density is not subject to doubt, the absolute values of the temperature must be verified by other independent methods. The authors thank A. A. Rukhadze for valuable discussions and advice. Orig. art. has: 1 figure, 2 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 17Jun66/ ORIG REF: 004

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

L 04626-67 EWT(1)/EWG(k)-2/T/EWP(k) IJP(c)

ACC NR: AP6034423 SOURCE CODE: UR/0386/66/004/008/0303/0307

61
B

AUTHOR: Sobolev, N. N.; Sokovikov, V. V.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: A mechanism ensuring level population inversion in CO_2 lasers 15

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 8, 1966, 303-307

TOPIC TAGS: gas laser, laser theory, neon, carbon dioxide, electron interaction

ABSTRACT: Population inversion of the CO_2 molecules in a CO_2-N_2 laser by resonant energy transfer from the N_2 molecules in the first vibrational level, and the cause of the large population of the first vibrational level of N_2, are explained by the authors in a natural fashion by using the results of G. J. Schulz (Phys. Rev. v. 135, A988, 1964 and earlier) and I. D. Swift (Brit. J. Appl. Phys. v. 16, 837, 1965). The explanation is based on the hypothesis that the vibrational levels are excited by electron interaction, since their results demonstrate that the average electron energy in the discharge, under conditions close to those prevailing in a CO_2-N_2 laser, will not exceed 1.5 - 2 ev. This denotes, when account is taken of the large (e, N_2) collision cross section, that the main cause of the appreciable concentrations of N_2 in the excited vibrational states is direct electron excitation. Furthermore, any vibrational quantum of N_2, not only the first, can go over to the CO_2 molecule, leading in

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACC NR: AP7000024 SOURCE CODE: UR/0051/66/021/005/0538/0545

AUTHOR: Dronov, A. P.; Sobolev, N. N.; Fayzullov, F. S.

ORG: none

TITLE: Determination of the strength of the electron transition of the first positive system of nitrogen bands. II

SOURCE: Optika i spektroskopiya, v. 21, no. 5, 1966, 538-545

TOPIC TAGS: nitrogen, band spectrum, electron transition, shock wave reflection, radiation intensity, oscillator strength

ABSTRACT: The apparatus described in the first part of the paper (Opt. i spektr. v. 21, 267, 1966) is used to measure the absolute intensity of the group of rotational lines at λ 8819.4 Å of the (1, 0) band of the first positive system of nitrogen heated by a reflected shock wave. The test procedure is described in detail. The primary data obtained in each experiment for the initial nitrogen pressure (10 mm Hg), the velocity of the incident shock wave, oscillograms of the radiation intensity, and oscillograms of the radiation intensity of the standard lamp used for calibration, are given. The procedure for determining the strength of the electronic transition and the oscillator strength from the integral radiation intensity is described, and the measured absolute intensities are used to obtain numerical values for the electron transition strength (0.089 ± 0.026 atomic units) and the oscillator strength (0.0028 ± 0.00098). The registered spectra show convincingly that the second com-

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACC NR: AP7002419 SOURCE CODE: UR/0051/66/021/006/0727/0734

AUTHOR: Dronov, A. P.; Sobolev, N. N.; Fayzullov, F. S.; Boyko, V. A.

ORG: none

TITLE: Determination of the intensity of electron transition in the red cyanogen band system

SOURCE: Optika i spektroskopiya, v. 21, no. 6, 1966, 727-734

TOPIC TAGS: electron transition, cyanogen, electron transition intensity, cyanogen red band, cyanogen spectrum

ABSTRACT: The CN spectrum beyond the front of a reflected shock wave in 50% Co + 50% N_2 was photographed in the near-infrared region of the spectrum using an electron optical converter with an oxygen-cesium cathode. The absolute intensity of emission of the (1, 0) CN band was measured using a DFS-33 spectrometer with an oxygen-cesium photomultiplier. The intensity of electron transition S_e^{nm} = 0.11 at. units of the red CN (cyanogen) band system was determined from measurements of absolute intensity. Orig. art. has: 7 figures and 2 tables. [Translation of authors' abstract] [SP]

SUB CODE: 20/SUBM DATE: 23Apr65/ORIG REF: 007/OTH REF: 011/

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

ACC NR: AP7005582

atom temperatures. For tubes of the second type, an He-Ar (10:1) mixture was used. Current was applied in 4-μsec, 6—10-kv pulses, yielding a density of approximately 500 amp·cm^{-2}. The atom temperatures and ion concentrations were obtained by comparing the widths of the H_α and H_β lines and by using an assumed ratio for the contribution of the Stark and Doppler effects. Temperatures from 2000 to 6000°K and concentrations from 0.8 to 20 (10^{13}) cm^{-3} were obtained. Electron temperatures, which are required for population inversion, were extremely difficult to determine in the investigated case. Orig. art. has: 1 figure and 2 tables. [JM]

SUB CODE: 20/ SUBM DATE: 22Mar66/ ORIG REF: 001/ OTH REF: 001/
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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

[illegible]

[illegible] kolkhoze (five-year plan for the collective farm) [illegible],
[illegible], 1953.
[illegible] p. illus., [illegible], [illegible], tables.
[illegible]

[illegible]/5
[illegible]
.36

SOBOLEV, N.P.

USSR/[illegible] Cultivation, Melioration, Erosion. J-5

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

Abs Jour: Ref Zhur-Biologiya, No 1, 1958, 1293.

Author : Sobolev, N.P.
Inst :
Title : T.S. Mal'tsev's Method of Tilling the Soil, as Applied in the Altay Sovkhozes.

Orig Pub: Sovkhoznoye proizvodstvo, 1956, No 11, 51-53.

Abstract: Production tests of T.S. Mal'tsev's tilling method on grain sowings show an increase in yield of from five to seven centners per hectare.

Card : 1/1

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

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ACC NR: AP6012944

A pipe layer and a tractor with a wooden bumper were used to roll the tank halves to the conductor. The pipe layer was used to hold one end of a tank half on the conductor and the tractor held the other end. After both halves are positioned one half is pushed toward the other until they mate, whereupon they are aligned and welded.

Two gangs of 18-men each did the work. Ellipticity and mismatch were corrected by metal wedges inserted from inside and out, and final alignment was accomplished by hydraulic jacks.

The final welds, consisting of three seams each, took from 125 to 132.5 man hours; about 1/2 the allowed time. The tanks were lifted and placed into prepared cradles. Orig. art. has: 3 figures. [JPRS]

SUB CODE: 13 / SUBM DATE: none

Card 2/2 BK

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

1964

SOBOLEV, N. P.

DECLASSIFIED

MACHINE TOOLS

c/1963

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, N.P.

Installation of horizontal tanks for liquefied gas. Stroi. truboprov. 10 no.1:27-28 Ja '65. (MIRA 18:4)

1. SU-1 tresta Nefteprovodmontazh, Kazan'.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, N. S. (Major, Vet. Corps)

"Vaporization for Surgical Diseases of Horses"

"Bolezni Loshadey (Equine Diseases)", Collection of Works, Ogiz-Sel'khozgiz, 1947
Chapter IV - Surgical Diseases, p 100 TAB CON
Compiled by A. Yu. Branzburg and A. Ya. Shapiro, under Editorship of A. M. Laktionova, State Press for Agric. Literature

In the majority of cases the articles previously had been published in the journal Veterinariya or in one of the manuals issued by the Vet. Admin. of the Armed Forces USSR

-W-9922, 1 May 1950, p 2

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SKUL'SKIY, Yu.V.; MAKAROV, M.D.; POPOV, A.N.; KHOKHLOV, P.L.; SOBOLEV, N.T.

Cast and welded flanged cast-iron pipe. Avtom.svar. 18 no.11:57-59 N '65. (MIRA 18:12)

1. Institut elektrosvarki im. Ye.O.Patona AN UkrSSR (for Skul'skiy, Makarov, Popov). 2. Makeyevskiy truboliteynyy zavod im. Kuybysheva (for Khokhlov, Sobolev). Submitted March 24, 1965.

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SOBOLEV, N. V.

"Investigation of the Operation of a Sweeping Machine With Pneumatic Dust Removal." Cand Tech Sci, Acad of Communal Economy imeni K. D. Famfilov, Moscow, 1954. (KL, No 1, Jan 55)

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SO: Sum. No. 556, 24 Jun 55

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PETROV, I.S.; SOBOLEV, N.V.; TSIMMEL'ZON, M.R.; PAVLOVA, V.A.

Boiling staple fabrics with peroxide in IvNITI kiers. Tekst. prom. 17 no.3:40-41 Mr '57. (MLRA 10:4)
(Cotton finishing) (Bleaching) (Hydrogen peroxide)

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GUSEV, L.M.; KLEMENT'YEV, V.G., inzh., retsenzent; SOBOLEV, N.V., kand. tekhn. nauk, red.; BOCHAROVA, Ye.G., red. izd-va; PETERSON, M.M., tekhn. red.; BARDINA, A.A., tekhn.red.

[Design of street-cleaning motortrucks] Raschet i konstruktsii podmetal'no-uborochnykh mashin. Moskva, Mashgiz, 1963. 203 p. (MIRA 16:10)
(Street cleaning--Equipment and supplies)

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SUDAREV, M.D.; KOMNATNYY, N.A.; BERDENNIKOV, Ye.V.; SOBOLEV, N.V.

Putting into operation a 32000 kva charge-resistance furnace.
TSvet. met. 34 no.3:23-31 Mr '61. (MIRA 14:3)
(Electric furnaces)

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VAKHRUSHEV, V.A.; SOBOLEV, N.V.

Genetic connections between iron mineralization and intrusives in the Inskoye deposit of the Gornyy Altai. Geol. i geofiz. no.11: 86-98 '61. (MIRA 15:2)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.
(Altai Mountains--Rocks, Igneous) (Altai Mountains--Iron ores)

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SOBOLEV, N.V.; LODOCHNIKOVA, N.V.

Mineralogy of garnet peridotites. Geol. i geofiz. no.6:52-59 '62. (MIRA 15:7)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR Novosibirsk, i Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy institut.
(Czechoslovakia--Peridotite) (Yakutia--Peridotite)

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SOBOLEV, N.V.

Paragenetic types of garnets from ultrabasic rocks and eclogites. Dokl. AN SSSR 143 no.5:1190-1193 Ap '62. (MIRA 15:4)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom D.S.Korzhinskim.
(Garnets)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, N.V.

Rhombic pyroxenes from granite-peridotites and eclogites.
Dokl. AN SSSR 154 no.5:1096-1098 F'64. (MIRA 17:2)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR.
Predstavleno akademikom D.S. Korzhinskim.

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SOKOLEV, N.V.

Paragenetic types of garnets. Trudy inst.geol.i geofiz.Sib otd.AN SSSR no.15:42-73 '63. (MIRA 17:4)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

VAKHRUSHEV, V.A.; SOBOLEV, N.V.

Garnets of the Irbinskaya group of iron ore deposits. Trudy Inst. geol i geofiz.Sib.otd.AN SSSR no.15:74-79 '63. (MIRA 17:4)

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SOBOLEV, N.V.

Classification of rock-forming garnets. Dokl. AN SSSR 157 no. 2:353-356 Jl '64. (MIRA 17:7)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom D.S.Korzhinskim.

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FIRSOV, L.V.; SOBOLEV, N.V.

Absolute age of the xenolite of eclogite from the kimberlite pipe "Obnazhonnaya" Yakutia. Geol. i geofiz. no.10:74-77 '64. (MIRA 18:4)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

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SOBOLEV, N.V.

Eclogite xenolith with ruby. Dokl. AN SSSR 157 no.6:1382-1384 Ag '64. (MIRA 17:9)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom D.S. Korzhinskim.

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DOBRETSOV, N.L.; REVERDATTO, V.V.; SOBOLEV, V.S.; SOBOLEV, N.V.; USHAKOVA, Ye.N.; KHLESTOV, V.V.

Basic characteristics of the distribution of the facies of regional metamorphism in the U.S.S.R. Geol. i geofiz. no.4: 3-18 '65. (MIRA 18:8)

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DOBRETSOV, N.L.; SOBOLEV, N.V.

Some problems of petrology at the 22nd session of the International Geological Congress. Geol. i geofiz. no.8: 151-154 '65. (MIRA 18:9)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, N.V.; KUZNETSOVA, I.K.

New data on the mineralogy of eclogite from the kimberlite pipes of Yakutia. Dokl. AN SSSR 163 no.2:471-474 Jl '65. (MIRA 18:7)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR. Submitted February 10, 1965.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

Sobolev O.A.

PHASE I BOOK EXPLOITATION

Leningradskiy elektrotekhnicheskiy institut svyazi im. M. A. Bonch-Bruyevicha.

Trudy LEIS, vyp. 3(36) (Transactions of the [illegible] Institute im. M. A. Bonch-Bruyevicha, [illegible]) 400 copies printed.

Editorial Board: A. F. [illegible], [illegible] K. P. [illegible], [illegible] K. V. [illegible], [illegible] Dozent (Resp. Ed.), [illegible] V. B. [illegible], [illegible] Dozent, and P. T. [illegible], [illegible]

PURPOSE: This collection of articles is [illegible] specialists in various fields of [illegible]

COVERAGE: The articles cover the [illegible] coaxial antennas [illegible] tic-phase method of [illegible] Larionov circuits, $\sum_{n=1}^{\infty} e^{-rn^2} \cos \ldots \sin \ldots$ spiral beam antennas. No personalities are mentioned. None of the articles are accompanied by references.

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The method is examined in relation to telephone systems.

Yevstignayev, Yo. I. Use of Reduced Voltage in Grets and Larionov Circuits 79
The article discusses basic properties of and methods of calculating Grets and Larionov circuits for simultaneous use of both full and reduced voltages.

Levenzhyy, A. M. Representation of Series $\sum_{n=1}^{\infty} e^{-rn^2} \frac{\cos}{\sin} nx$ in Closed Form 105
A number of approximate formulas are derived.

Timirev, N. P. Parameters and Characteristics of a Conical Spiral Beam Antenna Having a Constant Lead Angle 111
Selection of adequate parameters is recommended, thus making it possible to establish methods for calculating conical spiral antennas.

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SOBOLEV, O. A.

O. A. Sobolev, V. A. Godlevskiy, S. A. Vasil'yev, L. M. Gol'shtein, and M. F. Lutov - "Method of Determining the Number of a Calling Subscriber and a Device for Achieving it."

Authors' Certificates, Elektrosvyaz', 1956, No. 7, pp 77.

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20479
S/193/60/000/002/013/013
A004/A001

6.7300 (1524, 2103)

AUTHORS: Sobolev, O. A., and Ponomareva, Ye. M.

TITLE: Electronic telephone exchange equipped with semiconductor devices

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 2, 1960, 40-42

TEXT: The author points out the deficiencies of telephone exchanges of the electromagnetic type and mentions the fact that work is being carried out to replace the electromagnetic commutation mechanisms (relays, selectors) by non-contact commutation units: semiconductor devices, magnetic cores with square hysteresis loop, miniature thyratrons with cold cathodes, etc. In 1957 the Nauchno-issledovatel'skiy institut Gosudarstvennogo komiteta Ministrov SSSR po radiolektronike (Scientific Research Institute of the State Committee for Radio-electronics at the Council of Ministers USSR) had developed the first effective electronic telephone exchange of the Soviet Union which was intended for 10 numbers and in which thyratrons with a cold cathode were utilized as commutation unit. In 1958 the ЭАТС-20 (EATS-20) electronic telephone exchange for 20 numbers equipped with semiconductor devices was developed, a pilot model of which was shown at the USSR Industrial Exhibition in New York, while the second pilot model

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A004/A001

Electronic telephone exchange ...

is exhibited at the Exhibition of Achievements of the National Economy in Moscow. Soviet-produced germanium diodes and triodes, mostly of the П13 (P13) type, are used as commutation units. Based on these units, the block circuits have been constructed: trigger circuit, monovibrator, multivibrator, electron "contact" of the speech channel and the logical "and", "or", and "not" circuits. The EATS-20 circuit (see figure) has been designed on the principle of steric construction of the speech channel and mixed control, using both static and dynamic (pulse) circuits.

Figure:
ЭКС (EKS) - electronic coordinate connector; AK1, AK20 - subscriber units; A1, A20 - telephone sets of subscribers 1 and 20; ИСШ (ISSh) - free-line selector; PM1, PM2 - register markers; СВУ (SVU) - ringing device; ИГ (IG) - pulse oscillator; ЭК (EK) - 1, EK 20-1, EK21-1; EK1-11, EK20-11, EK21-11 - electronic contacts; УЭ (UE) 1-1, UE 20-1, UE21-1, UE1-11, UE20-11, UE21-11 - control units.

The electronic coordinate connectors are two coordinate circuits, the speech circuit and control circuit. The electronic contacts of the EK speech channel are connected to the cross-over points of the speech circuit, while the UE trigger circuits, controlling the electronic contacts, are connected to the

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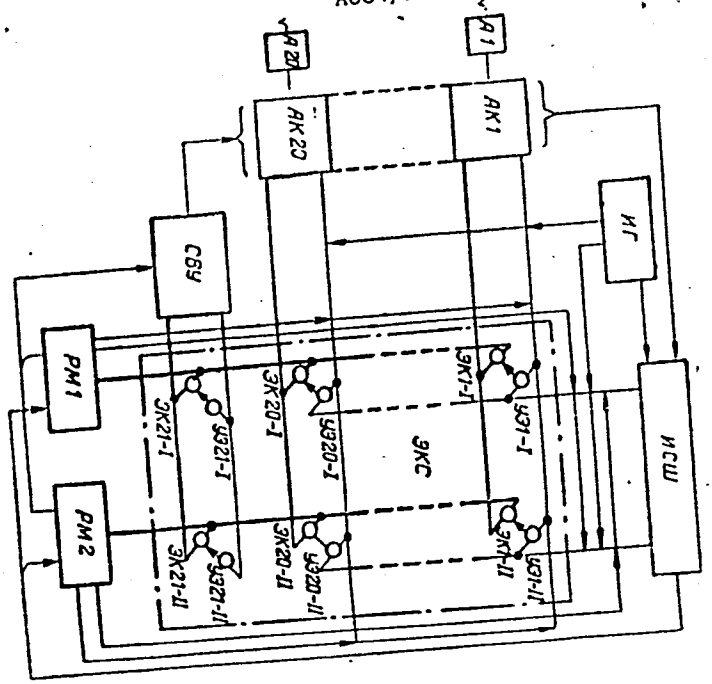
A004/A001

Electronic telephone exchange ...

cross-over points of the control circuit. The electronic coordinate connector has 21 horizontals and 2 verticals. 20 subscriber units are connected to the 20 horizontals, while the ringing device is connected to the 21st. The connection of the controlling triggers of the control circuit is effected by the pulse oscillator which has three different connecting possibilities - the subscriber is calling, the first register marker calls the subscriber, the second register marker calls the subscriber, and thus generates three series of



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S/193/60/000/002/013/013
A004/A001

Electronic telephone exchange ...

pulses which are shifted in time. One of the specific features of the EATS-20 circuit is the utilization of a pulse generator and a pulse control system with the EKS electronic contacts together with the static control system in other units. This combination of pulse and static conditions made it possible to reduce the number of commutation units without complicating the circuits. Another distinguishing feature of the EATS-20 circuit is the utilization of zero-level a-c for all necessary signals. The various signals are transmitted by 450 cps current. The calling signal is modulated in the subscriber's set by low-frequency current of 25-50 cps, is amplified in the telephone apparatus and acts on the ringing device. The EATS-20 telephone exchange is housed in a table locker of the block type, all its units are mounted on printed circuits. The overall dimensions of the exchange are 530 x 435 x 380 mm. 660 germanium triodes and 780 diodes are utilized, apart from ordinary radio parts, like resistors and capacitors. The main electric parameters of the EATS-20 exchange are: operating attenuation of the speech channel at a frequency of 800 cps - 0.3 nep; transient attenuation between the physical channels of the speech channel - not less than 8 nep; power consumption at full load - 25 w, in inoperative state - - 18 w. The power source is a rectifying device connected to the a-c mains of

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Electronic telephone exchange ...

127/220 v and 50 cps. This device ensures the supply of a stabilized d-c voltage of 12 and 24 v, the network voltage variations being in the range of ± 10%. There is 1 figure.

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AYZERMAN, Mark Aronovich; SOBOLEV, O.K., redaktor; MURASHOVA, N.Ya, tekhnicheskiy redaktor

[Lectures on the theory of automatic control] Lektsii po teorii avtomaticheskogo regulirovaniia. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1956. 427 p. (MLRA 9:10)
(Automatic control)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

AYZERMAN, Mark Aronovich; SOBOLEV, O.K., red.; AKHLAMOV, S.N., tekhn.red.

[Lectures on the theory of automatic control] Lektsii po teorii avtomaticheskogo regulirovaniia. Izd. 2., dop. i perer. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1958. 520 p. (MIRA 12:1)
(Automatic control)

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MEYEROV, Mikhail Vladimirovich; SOBOLEV, O.K., red.; GAVRILOV, S.S., tekhn.red.

[Synthesis of high precision automatic control systems] Sintez struktur sistem avtomaticheskogo regulirovaniia vysokoi tochnosti. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1959. 284 p. (MIRA 12:9)

(Electronic control)

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SOLODOVNIKOV, Vladimir Viktorovich. Prinimali uchastiye: BATKOV, A.M.; KUZIN, L.T.; USKOV, A.S.; VAL'DENBERG, Yu.S.; MATVEYEV, P.S.; SORENKOV, E.I.; ALEKPEROV, V.P. SOBOLEV, O.K., red.; MURASHOVA, N.Ya., tekhn.red.

[Statistical dynamics of linear automatic control systems] Statisticheskaia dinamika lineinykh sistem avtomaticheskogo upravleniia. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1960. 655 p. (MIRA 13:12)

(Automatic control)

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POPOV, Ye.P.; PAL'TOV, I.P.; SOBOLEV, O.K., red.; TUMARKINA, N.A., tekhn.red.

[Approximation methods of investigating nonlinear systems of automatic control] Priblizhennye metody issledovaniia nelineinykh avtomaticheskikh sistem. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1960. 792 p. (MIRA 13:8)
(Automatic control)

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FRIDLENDER, Gavriil Oskarovich; SOBOLEV, O.K., red.; AKSEL'ROD, I.Sh., tekhn. red.

[Inertial systems of navigation] Inertsial'nye sistemy navigatsii. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 153 p. (MIRA 14:11)

(Inertial navigation (Aeronautics))

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FRIDLENDER, Gavriil Oskarovich; SOBOLEV, O.K., red.; AKSEL'ROD, I.Sh., tekhn. red.

[Inertial navigation systems]Inertsial'nye sistemy navigatsii. Moskva, Fizmatgiz, 1961. 153 p. (MIRA 15:8)
(Inertial navigation (Aeronautics))

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PUGACHEV, Vladimir Semenovich; SOBOLEV, O.K., red.; MURASHOVA, N.Ya., tekhn. red.

[Theory of random functions and its application to problems of automatic control]Teoriia sluchainykh funktsii i ee primenenie k zadacham avtomaticheskogo upravleniia. Izd.3., ispr. Moskva, Fizmatgiz, 1962. 883 p. (MIRA 15:12)
(Automatic control) (Functions)

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PUGACHEV, Vladimir Semenovich; SOBOLEV, O.K., red.; MURASHOVA, N.Ya., tekhn.red.

[Theory of random functions and its application in problems on automatic control] Teoriia sluchainykh funktsii i ee primenenie k zadacham avtomaticheskogo upravleniia. Izd.2., perer. i dop. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1960. 883 p. (MIRA 13:9)

(Probabilities) (Automatic control)

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PERVOZVANSKIY, Anatoliy Arkad'yevich; SOBOLEV, O.K., red.; AKSEL'ROD, I.Sh., tekhn. red.

[Random processes in nonlinear automatic systems]Sluchainye protsessy v nelineinykh avtomaticheskikh sistemakh. Moskva, Fizmatgiz, 1962. 351 p. (MIRA 16:2)
(Random processes) (Automatic control)

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POPOV, Yevgeniy Pavlovich; SOBOLEV, O.K., red.; BRUDNO, K.F., tekhn.red.

[Automatic regulation and control]Avtomaticheskoe regulirovanie i upravlenie. Moskva, Fizmatgiz, 1962. 388 p. (MIRA 16:3)
(Automatic control)

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BESEKERSKIY, Viktor Antonovich; PAL'TOV, Ivan Petrovich; FABRIKANT, Yevgeniy Anatol'yevich; FEDOROV, Stepan Mikhaylovich; CHINAYEV, Petr Ivanovich; SOBOLEV, O.K., red.; MURASHOVA, N.Ya., tekhn. red.

[Collection of problems on the theory of automatic control] Sbornik zadach po teorii avtomaticheskogo regulirovaniia. [By] V.A.Besekerskii i dr. Moskva, Fizmatgiz, 1963. 408 p. (MIRA 16:12)

(Automatic control)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

KOGAN, Boris Yakovlevich; SOBOLEV, O.K., red.; YERMAKOVA, Ye.A., tekhn. red.

[Electronic simulating devices and their use in the study of automatic control systems] Elektronnye modeliruiushchie ustroistva i ikh primenenie dlia issledovaniia sistem avtomaticheskogo regulirovaniia. Izd.2., ispr. i dop. Moskva, Fizmatgiz, 1963. 509 p. (MIRA 16:7)
(Automatic control) (Electronic analog computers)
(Electromechanical analogies)

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YERMAN, V.L. (Moskva); SOBOLEV, O.K. (Moskva); TSATURYAN, K.T. (Moskva)

Problems concerning the theory of self-adjusting control systems. Izv. AN SSSR. otd. tekh. nauk. tekh. kib. no.3:103-111 My-Je '63. (MIRA 16:7)

(Automatic control)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOKOLOV, Nikolay Ivanovich; SOBOLEV, O.K., red.; BUL'DYAYEV, N.A., tekhn. red.

[Synthesis of linear automatic control systems with random action] Sintez lineinykh sistem avtomaticheskogo regulirovaniia pri sluchainykh vozdeistviiakh. Moskva, Izd-vo "Energiia," 1964. 127 p. (Biblioteka po avtomatike, no.93) (MIRA 17:3)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

DRUZHININ, Georgiy Vasil'yevich; SOBOLEV, O.K., red.; BORUNOV, N.I., tekhn. red.

[Reliability of automatic control devices] Nadezhnost' ustroistv avtomatiki. Moskva, Izd-vo "Energiia," 1964. 319 p. (MIRA 17:3)

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POLOVKO, Anatoliy Mikhaylovich, [illegible], Yu.E., [illegible] tekhn. [illegible] retsenzent; SOBOLEV, G.A., red.

[Fundamentals of the theory of reliability] Osnovy teorii nadezhnosti. Moskva, Nauka, [illegible] p. [illegible]

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, Oleg

Squeeze your hand, Ikar; a tale (to be continued). Kryl. rod. 15 no.5:29-31 My '64. (MIRA 17:8)

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ACCESSION NR: AP4033358 S/0103/64/025/003/0347/0355

AUTHOR: Sobolev, O. S. (Moscow)

TITLE: Analysis of the structure of a multidimensional automatic system with a nonlinear connection

SOURCE: Avtomatika i telemekhanika, v. 25, no. 3, 1964, 347-355

TOPIC TAGS: automatic control, nonlinear automatic control, distribution automatic control, flow distribution stabilization

ABSTRACT: The problem of automatic stabilization of the distribution of flow among parallel identical channels interconnected through a common load is considered. The plant (the channels) is described by this set of differential-difference equations: $y = W_0(p)Au + \varphi$, where $p \equiv d/dt$, y is an n-dimensional vector of controlled parameters, n is the number of parallel channels, u is the vector of control variables, φ is the vector of loads of parallel channels, $W_0(s)$ is the transfer function common to all channels, s is the Laplace's operator, A is a degenerate $n \times n$ matrix of interconnections with real s-independent coefficients. The automatic system consists of two principal parts: (1) a distribution-

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ACCESSION NR: AP4033358

stabilizing unit and (2) a correcting tie (see Enclosure 1). The degeneracy of interconnections results in additional requirements of the system and in the introduction of substantial nonlinearities. The problem of distribution is solved by the successive closing of ties; first, the distribution-stabilization unit is investigated and then the correcting tie is closed and the changes thereby introduced into the system dynamics are studied. The theory of invariance is used; the complex automatic system is broken into a number of simple systems with nonlinearities introduced only in one closed loop. Orig. art. has: 4 figures and 36 formulas.

ASSOCIATION: none

SUBMITTED: 04Jul63 DATE ACQ: 15May64 ENCL: 01

SUB CODE: DP, IE NO REF SOV: 008 OTHER: 002

Card 2/3

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, O.S. (Moskva)

Equivalent representation of the automatic control system of identical units in parallel operation. Izv. AN SSSR. Energ. i transp. no.2:101-111 Mr-Ap '65.

(MIRA 18:6)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, P., mekhanik-nastavnik

Consumption and standardization of lubricants on river motorships. Rech.transp 21 no.4:25-26 Ap '62. (MIRA 15:4)

1. Volzhskoye ob"yedinennoye rechnoye parokhodstvo.
(Marine diesel engines--Lubrication)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, P., mekhanik-nastavnik

Using lubricating oils on ships. Rech. transp. 24 no.7: 24-26 '65. (MIRA 18:8)

1. Sluzhba sudovogo khozyaystva Volzhskogo ob"yedinennogo rechnogo parokhodstva.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651820015-2

SOBOLEV, P., inzh.

Selecting the width of earth roadbed in shifting sands.
Avt.dor. 28 no.10:13 O '65.
(MIRA 18:11)

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