X

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B102/B205

Theory of the ...

interval $(E_1, E_1+\epsilon)$ is given by $\overline{\sigma_x(E)} = (1/\epsilon)\int_{E_1}^{E_1+\epsilon} \sigma_x(E')dE'$. Here, a range of energies is considered, in which the actual cross section differs only slightly from the mean cross section: $|(\sigma - \bar{\sigma})|/\bar{\sigma} \ll 1$. If $\bar{\sigma} + (\sigma - \bar{\sigma}) = \sigma$, then

$$\frac{\sigma_x}{\sigma} = \frac{\sigma_x}{\bar{\sigma}+(\sigma-\bar{\sigma})} = \frac{\sigma_x}{\bar{\sigma}} - \frac{\sigma_x(\sigma-\bar{\sigma})}{\bar{\sigma}^2} + \ldots; \quad (3), (4).$$

$$\frac{1}{\sigma} = \frac{1}{\bar{\sigma}} - \frac{\sigma-\bar{\sigma}}{\bar{\sigma}^2} + \ldots$$

By substituting this result in the initial equation, one obtains a simple expression for $\langle\sigma_x(E)\rangle$ [Abstracter's note: This formula is incorrect].

The correction to the mean cross section is calculated next. This correction determines the dependence of the cross section on both the absorber concentration in the medium and on the temperature. The cross section for

Card 2/8

Theory of the ...

the energy E is represented in the form of a sum of the contributions of the various resonances: $\sigma_x(E) = \sum_\gamma \sum_{m=-\infty}^{\infty} \sigma_{x\gamma}^m(E - E_m)$, where m denotes the m-th resonance. The total cross section is given by

$\sigma(E) = \sum_\gamma \sum_{m=-\infty}^{\infty} \sigma_{r\gamma}^m (E - E_m) + \sigma_{s_{pot}} = \sigma_r + \sigma_{s_{pot}}$. The subscript γ refers to a certain system of resonance levels which are characterized by the total spin J and the parity. The ordinary formula

$\sigma_{x\gamma}^m(E) = \sigma_{x\gamma}^{0m} \psi(\frac{E - E_m}{\Gamma} 2; \Gamma/\Delta)$, where $\sigma_{x\gamma}^{0m}$ and ψ are the cross section in the maximum and the Doppler function, respectively. Next, the case is discussed, in which the Doppler function is greater than the total resonance width, which is characteristic of heavy nuclei. Here, the form of resonance is satisfactorily described by

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Theory of the ...

$\psi(\frac{E - E_m}{\Gamma} 2; \Gamma/\Delta) \simeq \frac{\sqrt{\pi}}{2} \frac{\Gamma}{\Delta} \exp\left[-\frac{(E - E_m)^2}{\Delta^2}\right]$. Supposing that $\bar{D}_J$ is the mean distance between levels with given J and given parity in the energy interval concerned, and that the levels are equally distant from one another, it can be shown that taking account of the spread of D_J^m leads to a deviation of 4-5% from the mean cross section. Consideration of the distribution of reduced resonance widths has a much greater influence. For nearly equidistant levels one has

$$\sigma_x(E) \simeq \sum_\gamma \sum_m \alpha_\gamma^{xm} e^{-(y+mb_J)^2}. \quad (10)$$

(10).

$$\alpha_\gamma^{xm} = \frac{\sqrt{\pi}}{2} \frac{\Gamma}{\Delta} \sigma_{x\gamma}^{xm}; \; y = \frac{E - E_0}{\Delta}; \; b_J = \frac{\bar{D}_J}{\Delta}.$$

Now, the mean value of the product

$\bar{\sigma}_x \bar{\sigma}_r = \sum_{\gamma\gamma'} \sum_{mm'} \alpha_\gamma^{xm} e^{-(y + mb_J)^2} \alpha_{\gamma'}^{rm'} \cdot e^{-(y + mb_{J'})^2}$ is calculated:

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Theory of the ...

$$\overline{\sigma_x\sigma_{x'}}=\frac{\Delta}{e}\left[\sum_{\nu\nu'}\overline{\alpha_\nu^x\alpha_{\nu'}^{x'}}\int\limits_{\left(\frac{e}{\Delta}\right)}\Theta^2\left(b_j,\frac{y}{b_j}\right)dy+\right.$$

$$\left.+\sum_{\nu}\left(\overline{\alpha_\nu^x\alpha_\nu^{x'}}-\overline{\alpha_\nu^x}\,\overline{\alpha_\nu^{x'}}\right)\int\limits_{\left(\frac{e}{\Delta}\right)}\Theta\left(\sqrt{2}\,b_j,\frac{y}{b_j}\right)dy\right]. \quad (12)$$

(12).

$\Theta(u, z) = \sum_{m=-\infty}^{\infty} e^{-u^2(z+m)^2}$ is a periodic function with the period $z = 1$.

It is expanded in a Fourier series which converges rapidly for $u<\pi$. This is the case with heavy nuclei for E>1kev. If the expansion is discontinued after the second term, one has

$\Theta(u, z)\simeq\frac{\sqrt{\pi}}{u}(1 + 2e^{-\pi^2/u^2}\cos 2\pi z)$. Substitution of this expression leads to

$$\overline{\sigma_x\sigma}-\bar{\sigma}_x\bar{\sigma}=\sum_{\nu}\overline{\sigma_\nu^x\sigma_\nu^{x'}}\left\{2\exp\left[-\left(\frac{2\pi}{b_j}\right)^2\right]+\right.$$

$$\left.+\frac{b_j}{\sqrt{2\pi}}\frac{\Phi_x}{S_x}\right\}. \quad (16)$$

(16).

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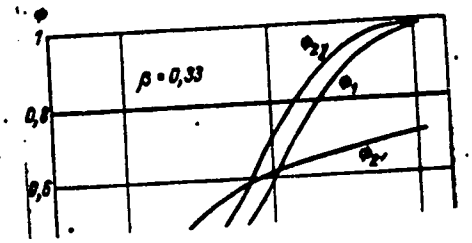
S_x and Φ_x account for the effect of the distribution of reduced widths upon the cross section. The function

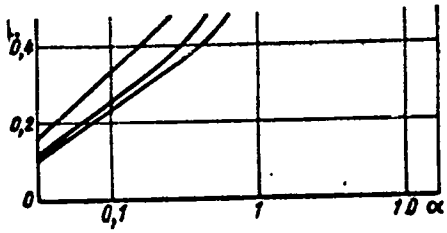
$$\Phi_x(E) = \left\langle \frac{\Gamma_n^2 \Gamma_x}{\Gamma} \right\rangle \Big/ \frac{\langle \Gamma_n \rangle^2 \langle \Gamma_x \rangle}{\langle \Gamma \rangle} - \left\langle \frac{\Gamma_n \Gamma_x}{\Gamma} \right\rangle \Big/ \frac{\langle \Gamma_n \rangle \langle \Gamma_x \rangle}{\langle \Gamma \rangle} \qquad (17)$$

was calculated for one (Φ_1) and two (Φ_{2f}, $\Phi_{2\gamma}$) channels of the reaction



Card 6/8

Theory of the ...



(cf. Fig.) with $\alpha = (\langle\Gamma_\gamma\rangle/\langle\Gamma_n\rangle)$ and $\beta = (\langle\Gamma_\gamma\rangle/\langle\Gamma_f\rangle)$. Results of calculation of the cross sections, in which the resonance blocking for an infinite U^{235} lump ($\sigma_{s_{pot}}$ = 10 barns) at 300°K has been taken into account, are summarized in a table. The blocking effect of resonances is significant only at energies of up to 10 kev. At higher energies, the resonances overlap. The method is particularly suited for the calculation of heavy nuclei, and for estimating thermal effects in systems with fast and intermediary neutrons. Thus, the authors used this method to calculate the concentration ratio of U^{238} to U^{235} in an infinite medium at 300°K and obtained $\varrho_8/\varrho_5 \leqslant 0.675$, which gives a better description illustration of the actual situation than do the results of other authors. There are 1 figure, 1 table,

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Theory of the ...

and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc.

SUBMITTED: April 27, 1960

E, MeV	$\bar{\sigma}_1$	$\bar{\sigma}_\gamma$	$\langle\sigma_1\rangle$	$\langle\sigma_\gamma\rangle$
1	12,75	8,46	6,88	4,51
2	9,66	6,08	6,45	4,47
5	6,43	3,70	5,51	3,24
7	5,94	3,27	5,39	2,97
10	5,05	2,67	4,82	2,51
50	2,30	0,67	2,29	0,67

Card 8/8

BRODER, D.L., red.; VESELKIN, A.P., red.; YEGOROV, Yu.A., red.; ORLOV, V.V., red.; TSYPIN, S.G., red.; PODOSHVINA, V.A., red.; NIKITINA, T.K., red.; VLASOVA, N.A., tekhn. red.

[Problems in the physics of reactor shielding] Voprosy fiziki zashchity reaktorov; sbornik statei. Moskva, Gosatomizdat, 1963. 345 p. (MIRA 16:12)
(Nuclear reactors--Shielding (Radiation))

ACCESSION NR: AT4019028 S/0000/63/000/000/0007/0024

AUTHOR: Abagyan, A. A.; Orlov, V. V.; Rodionov, G. I.

TITLE: The functions of neutron danger in the design of radiation shielding

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 7-24

TOPIC TAGS: reactor shielding, radiation hazard, neutron, neutron danger calculation, conjugate equation

ABSTRACT: The authors note that in the design of nuclear reactors the use of conjugate equations has proven to be extremely fruitful. In the present work, problems of the conjugate equation theory are discussed in the light of the study and calculation of radiation shielding. The basic problems encountered in the calculation of shielding are the computations of the following values: a) the neutron flow behind the shielding and the dose created by these neutrons; b) the flow and dose of gamma quanta behind the shielding; c) the integral flows of neutrons incident to individual structural elements of the reactor and the shielding, for the purpose of estimating the degree of radiation impairment of the metals; d) thermal emissions in individual structural elements of the reactor and shielding, arising as the result of gamma radiation absorption, and also deceleration and absorption

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ACCESSION NR: AT4019028

of neutrons. The different role (and, hence, danger) of the neutron in the reactor and in the shielding is noted. Of the possible applications of conjugate functions to the theory of perturbations, the authors single out two for special consideration. In the first place, a knowledge of the conjugate function makes it possible to select the most rational positioning of the materials in the shielding. In the second place, it makes it possible to derive the variations of the values of interest to the specialist (dosages, thermal emissions, etc.), connected with certain changes in the structure and planes of interaction, and also with effects not previously considered, without the repetition of unwieldy computations, but merely through the application of the perturbation theory ratio. From this point of view, the authors consider and derive the formulas of this theory and certain functions in the theory of shielding. The use of the method of consecutive approximations for the determination of the optimal disposition of shielding materials is considered, as well as the efficiency function of the shielding materials themselves. The article concludes with a study of certain effects in shielding made of iron (and of iron with 1% by weight of boron), 20 cm thick, in the light of the theory of perturbations. "The authors express their gratitude to A. I. Leypunskiy, V. Ya. Pupko and E. Ye. Petrov for their valuable counsel and commentary." Orig. art. has: 52 formulas, 9 figures and 4 tables.

ASSOCIATION: none

Card 2/3

ACCESSION NR: AT4019028

SUBMITTED: 14Aug63	DATE ACQ: 27Feb64	ENCL: 00
SUB CODE: NS, MM	NO REF SOV: 005	OTHER: 002

Card 3/3

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

ORLOV, V. V.; ANDREYANOV, V. S.; GRISHANIN, Ye. I.

"Choice of some optimum characteristics of control elements for nuclear reactors."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva, 31 Aug-9 Sep 64

L 1162-66 EWT(m)/EPF(n)-2/EWA(h)

ACCESSION NR: AT5023148 UR/2892/65/000/004/0043/0060

AUTHOR: Kazachenkov, Yu. N.; Orlov, V. V. 44,55 44,55

TITLE: Diffusion of neutrons in a polarizing medium 38 B+1

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Voprosy dozimetrii i zashchity ot izlucheniy, no. 4, 1965, 43-60 44,55

TOPIC TAGS: neutron diffusion, neutron scattering, neutron polarization, spin orbit coupling, light nucleus, helium

ABSTRACT: It has been established that during scattering of nucleons in nuclei with energies exceeding a few hundred thousand electron volts, polarization always occurs. During scattering of nucleons in light nuclei such as He^4, polarization is satisfactorily described by a shell model with a strong spin orbit coupling. During scattering in heavy nuclei, it can also be assumed that the scattered nucleon moves within the collective potential of the nucleon shell. However, in this case the finite probability of the formation of an intermediate nucleus must

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L 1162-66

ACCESSION NR: AT5023148 O

be taken into account. Polarization is possible due to the interaction of the anomalous magnetic moment with the Coulomb field of the nucleus. This polarization is considerable in magnitude, but occurs only at small scattering angles. The article proceeds to a mathematical treatment of the basic principles governing the polarization of neutrons. It goes on to derive a kinetic equation which takes into consideration the polarization of the neutrons and a kinetic equation for a flux averaged with respect to polarization. Orig. art. has: 53 formulas and 3 figures

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: NP

NR REF SOV: 002 OTHER: 009

Card 2/2

L 48837-65 EWT(m)/EWA(h) DM

ACCESSION NR: AP5005810 S/0089/65/018/002/0179/0181

AUTHOR: Kasachenkov, Yu. N.; Orlov, V. V.

TITLE: Diffusion of neutrons in spin-orbit interaction

SOURCE: Atomnaya energiya, v. 18, no. 2, 1965, 179-181

TOPIC TAGS: spin orbit interaction, neutron diffusion, neutron scattering, multiple scattering, neutron polarization

ABSTRACT: The authors present a quantitative estimate of the spin-orbit interaction on the polarization of fast neutrons scattered by nuclei. The starting premise is that multiple scattering of neutrons diffusing in matter leads to a certain average neutron polarization, which in turn affects the diffusion process. The change in the neutron diffusion coefficient, due to the polarization, is calculated

[illegible] respectively, which is regarded as appreciable.

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L 48837-65
ACCESSION NR: AP5005810

More exact calculations necessitate the acquisition of more experimental polarization data. "The authors thank the late I. I. Bondarenko and P. S. Ostavnov for useful discussions." Orig. art. has: 8 formulas.

ASSOCIATION: None

SUBMITTED: 13Feb64 ENCL: 00 SUB CODE: NP

NR REF SOV: 001 OTHER: 003

Card 2/2

L 45592-65 EWT(m) DM

ACCESSION NR: AP5009111 S/0089/65/018/003/0226/0232

AUTHOR: Kazachenkov, Yu. N.; Orlov, V. V. 12 B

TITLE: Use of the Ivon-Mertens method to solve albedo problems in the theory of neutron diffusion 19

SOURCE: Atomnaya energiya, v. 18, no. 3, 1965, 226-232

TOPIC TAGS: albedo, neutron diffusion, slow neutron, neutron spectrum, neutron temperature

ABSTRACT: Approximate albedo equations are formulated, in which, unlike in the customarily employed diffusion approximations, use is made of the approximate Ivon-Mertens method if expanding of the angular dependence of the flux of neutrons through the boundary between two media in both directions. Preliminary estimates have shown that even in the zeroth approximation this method is in good agreement with the

be used successfully not only for single-velocity problems, but also in the problem

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L 45592-65

ACCESSION NR: AP5009111

of thermalization of neutrons. To this end, albedo equations are formulated for the spectrum of slow neutrons reflected from media containing heavy atoms, and expressions are derived for the albedo and the temperature of the reflected neutrons. Orig. article has: 1 figure and 21 formulas.

ASSOCIATION: None

SUBMITTED: 19Mar64 ENCL: 00 SUB CODE: NP

NR REF SOV: 005 OTHER: 004

Card 2/2

L 16724-66 EWT(m) DIAAP

ACC NR: AP6008460 SOURCE CODE: UR/0089/65/019/005/0459/0460

AUTHOR: Grishanin, Ye. I.; Kukavadze, G. M.; Lependin, V. I.; Mamelova, L. Ya.; Morozov, I. G.; Orlov, V. V.; Pilipets, D. T.

ORG: none

TITLE: Measurement of the absorption cross section of sup 156 Gd

SOURCE: Atomnaya energiya, v. 19, no. 5, 1965, 459-460

TOPIC TAGS: gadolinium, neutron cross section, thermal neutron, neutron irradiation, mass spectrometer, neutron spectrum, nuclear reactor, neutron

ABSTRACT: Samples of gadolinium oxide were irradiated in a reactor with thermal neutrons to various integral fluxes. The thermal-neutron absorption cross section of ^{156}Gd was determined from the values of the ^{156}Gd and ^{157}Gd concentrations in the irradiated samples, measured on a mass spectrometer, and the value of the ^{157}Gd absorption cross section, obtained by averaging the cross section from resonance parameters over the neutron spectrum of the reactor. The cross section for 0.025-ev neutrons was found to be 13 ± 3 barns. [NA]

SUB CODE: 18, 20 / SUBM DATE: 02Apr65 / OTH REF: 003

Card 1/1

GRISHANIN, Ye.I.; KUKAVADZE, G.M.; LEPENDIN, V.I.; MAMELOVA, L.Ya.; MOROZOV, I.G.; ORLOV, V.V.; PILIPETS, D.T.

Measurement of the absorption cross section for Gd^{156}. Atom. energ. 19 no.5:459-460 N '65. (MIRA 18:12)

L 22416-66 EWT(m)/EPF(n)-2/EWG(m) WW
ACC NR: AP6007949 SOURCE CODE: UR/0089/66/020/002/0142/0142

AUTHORS: Isakova, L. Ya.; Orlov, V. V. 32 B

ORG: none

TITLE: Method of calculating neutron distribution and the efficiency of a system of absorbing rod in a three dimensional reactor 19

SOURCE: Atomnaya energiya, v. 20, no. 2, 1966, 142

TOPIC TAGS: neutron flux, neutron distribution, neutron absorption, nuclear reactor control equipment, Green function, neutron spectrum

ABSTRACT: This is an abstract of Article No. 59/3395 submitted to the source editor but not published in full. The authors solve the problem of the effective multiplication factor and of the distribution of the neutron flux in a cylindrical reactor with a system of partially inserted control rods arbitrarily disposed through the cross section of the reactor in the one-group approximation with the aid of the Green's function. The Green's function is defined in the form of an expansion in the eigenfunctions of the reactor equations without

Card 1/2 UDC: 621.039.51

L 22416-66
ACC NR: AP6007949

the rods. The flux is determined as a sum of the integrals over the surfaces of the rods. The solutions for the flux equations are obtained by successive approximation in the form of series, each term of which describes the interaction of a definite order, so that it becomes possible to determine the interactions between pair of rods, groups of three rods, etc. Comparison between single-group and multi-group calculations shows that the approximate nature of the single-group model is connected not with neglect of the energy spectrum of the neutrons but with the assumption that the rods are located in the asymptotic region and at sufficiently large distances from one another. It is therefore concluded that the method employed in this article is applicable to reactors with arbitrary spectrum. Orig. art. has: 6 formulas.

SUB CODE: 18 SUBM DATE: 30Jul65/

Card 2/2

L 05053-67 EWT(m) JR/GD
ACC NR: AT6027917 SOURCE CODE: UR/0000/66/000/000/0005/0021

AUTHOR: Orlov, V. V.; Abagyan, A. A.; Fedorenko, R. P.; Dubinin, A. A.; Suvorov, A. P.

45
B+1

ORG: None

TITLE: Optimizing the physical characteristics of radiation shielding 19

SOURCE: Voprosy fiziki zashchity reaktorov (Problems in physics of reactor shielding); sbornik statey, no. 2. Moscow, Atomizdat, 1966, 5-21

TOPIC TAGS: radiation shielding, variational problem, successive approximation, perturbation theory, REACTOR SHIELDING

ABSTRACT: The authors consider the problem of selecting the ratio of components in reactor shielding to give minimum weight or overall dimensions for a given reduction in radiation intensity or to achieve a minimum radiation dose for given shielding weight or dimensions. The problem is formulated as a variational problem on the optimum of some quantity when given conditions are imposed on other quantities. The various approaches to solution of the problem given in the literature are briefly reviewed. The physical characteristics of the shielding (neutron and gamma doses, heat release, weight, etc.) are considered within the framework of perturbation theory and the concept of functions of effectiveness of shielding materials is intro-

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L 05053-67

ACC NR: AT6027917

duced, i. e. functions which give information on the changes in various quantities under given conditions which result from some small change in the densities of the materials. The classical methods of variational calculus are used for determining optimum conditions for functionals representing the various physical characteristics of the shielding. The method of successive approximations is used for solving the problem of optimizing the distribution of shielding components in the general case. An example is given illustrating application of the proposed method. Orig. art. has: 9 figures, 31 formulas.

SUB CODE: 18/ SUBM DATE: 12Jan66/ ORIG REF: 014/ OTH REF: 002

Card 2/2

L 05044-67 EWT(m) JD/GD

ACC NR: AT6027928 SOURCE CODE: UR/0000/66/000/000/0123/0140

43

AUTHOR: Orlov, V. V.; Suvorov, A. P.

B+/

ORG: None

TITLE: Irradiation integral as a function of the neutron energy spectrum and the optimum structure for radiation shielding in a reactor vessel

SOURCE: Voprosy fiziki zashchity reaktorov (Problems in physics of reactor shielding); sbornik statey, no. 2. Moscow, Atomizdat, 1966, 123-140

TOPIC TAGS: neutron spectrum, radiation shielding, radiation damage

ABSTRACT: The literature on radiation damage in solids and optimum structure of radiation shielding is briefly reviewed and the radiation effect of neutrons on steel is considered. The study is simplified by restriction to the main component of steel, i. e. iron, disregarding the remaining alloying elements. Models of radiation damage in metals are described and applied to the selection of optimum structure for radiation shielding in nuclear reactor vessels. It is shown that the characteristics of optimum compositions for radiation shielding are considerably dependent on the method used for description of radiation damage in the materials used. The expressions derived in the paper are illustrated by application to iron-water shielding. The results may be used for calculating the irradiation integral of reactor vessels and for selecting optimum radiation shielding. In conclusion the authors thank V. I. Liforov for carrying out the numerical calculations. Orig. art. has: 8 figures, 1 table, 32 formulas.

SUB CODE: 18/ SUBM DATE: 12Jan66/ ORIG REF: 014/ OTH REF: 017

Card 1/1 pla

L 09327-67 EWP(m)/EWT(1) WW
ACC NR: AP6030931 SOURCE CODE: UR/0207/66/000/004/0124/0126

AUTHOR: Orlov, V. V. (Novosibirsk)

ORG: none

TITLE: Experimental study of the turbulence next to the wall of a channel

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 4, 1966, 124-126

TOPIC TAGS: hydrodynamics, turbulent flow, viscous flow, velocity measuring instrument

ABSTRACT: In view of the scarcity of data on the hydrodynamics of the viscous sublayer and the transition layer in a turbulent stream, the authors have measured the instantaneous velocities near the wall (including the viscous sublayer) of a channel with a turbulent stream of water, using a specially developed stroboscopic instrument (Fig. 1). The operating principle of the instrument is based on illuminating periodically certain areas of the moving liquid and photographing them. The photography is facilitated by introducing into the liquid small solid particles (powdered Al or Al_2O_3) to reflect or scatter the light. In the procedure, the image

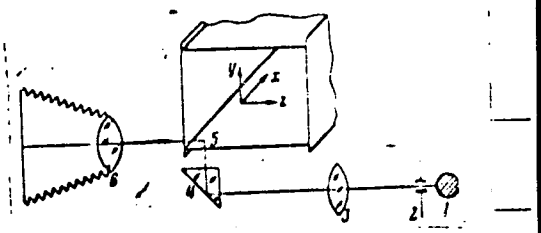

Fig. 1. Optical diagram of setup: 1 - Tubular flash lamp, 2 - slit, 3 - lens, 4 - prism, 5 - channel with transparent walls, 6 - camera (still or motion picture)

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of the slit produces on each frame tracks corresponding to the motion of the fluid as well as time markers, in such a way that each frame produced the field of instantaneous velocities. The channel was made of organic glass and its dimensions were 17 x 16 mm. Water at room temperature and at a Reynolds number of 20,000 was used. Measurements were made of the average longitudinal velocity as a function of the distance from the wall and of the average longitudinal and transverse pulsations. The results agreed with those obtained by others by thermoanemometric means. While the procedure used is much simpler than the use of thermoanemometers, the accuracy is somewhat lower. The data obtained on the pulsations in the viscous sublayer are still tentative, but indicate that the pulsations have an asymmetrical distribution in magnitude and in sign. The author thanks V. M. Karsten and Ye. S. Mikhaylov for help with the work and Ye. M. Khabakhpashev for useful advice. Orig. art. has: 4 figures and 3 formulas.

SUB CODE: 20/ SUBM DATE: 10Feb66/ ORIG REF: 001/ OTH REF: 004

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

ACC NR: AP7000905 (N) SOURCE CODE: GE/0025/66/009/009/0273/0281

AUTHOR: Lejpunskij, A. I.; Krasnojarov, N. V.; Nikolaev, M. N.; Orlov, V. V.; Trojanov, M. F.; Chromov, V. V.

ORG: Institute of Physical Energy, Obninsk, SSSR (Physikalish-Energetisches Institut)

TITLE: Physical problems in the development of fast power reactors (Summarizing report) [Presented at a Conference on Reactor held in Budapest in 1965]

SOURCE: Kernenergie, v. 9, no. 9, 1966, 273-281

TOPIC TAGS: fast reactor, nuclear power reactor, nuclear reactor technology

ABSTRACT: The state of the developments in the theoretical and experimental physics of the fast energy reactors in the Soviet Union is reviewed. Work on the fast reactor BN-350 having a thermal power of 100 MW and an electric power of 350 MW has been recently initiated and its construction is expected to be completed by 1968--1969. The physical and technological feasibility of a fast reactor having an electric power of 1000 MW is being studied at the present. The experimental reactor BOR has been developed for the study of operational characteristics of high temperature and high pressure reactors. In a general way the review covers the following subjects: 1. development of methods for physical analysis, including multidimensional multigroup calculations, systematization of computation methods and various approximations related to their accuracy, complex computations and optimization of the reactor

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ACC NR: AP7000905

operations; 2. experimental study of the physics of fast reactors, which include large scale experiments on critical systems, exponential experiments, heterogeneous effects, Doppler effect; 3. problems encountered when determining the nuclear data for the physics of the reactor. The experimental work, especially the exponential experiments for fast neutrons, were performed at the Institute of Physical Energy (Physikalish-Energetisches Institut) on the reactor BR-1. Orig. art. has: 2 tables and 3 figures.

SUB CODE: 18/ SUBM DATE: 05Jan66/ ORIG REF: 008/ OTH REF: 023

Card 2/2

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Technology

Metallic bracing in shafts of the Kuybyshev coal trust of the Stalin Coal combine. Moskva, Ugletekhizdat, 1950.

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ORLOV, V.V., kandidat tekhnicheskikh nauk.

Organizing rapid drift mining. Mekh.trud.rab.8 no.1:11-14 Ja-F '54.
(MLRA 7:2)
(Coal mines and mining)

ORLOV, Vasiliy Vasil'yevich; PONOMARENKO, Aleksey Kuz'mich; GUDZ', Aleksandr Grigor'yevich; PETROV, Anatoliy Moiseyevich; TARASENKO, Vasiliy Konstantinovich; SIDYAK, A.Ya., otv. red.; VAYNBERG, D.A., red.; PLETENITSKIY, V.Yu., tekhn. red.

[Handbook of examples and problems on mining engineering] Sbornik primerov i zadach po provedeniiu gornykh vyrabotok. Khar'kov, Izd-vo Khar'kovskogo gos. univ. im. A.M.Gor'kogo, 1961. 352 p. (MIRA 15:2)
(Blasting) (Mining engineering)

ORLOV, V.V., kand.tekhn.nauk; GUDZ', A.G., gornyy inzh.

Determining rock pressure on the supports of horizontal workings.
Ugol' Ukr. 5 no.4:1-5 Ap '61. (MIRA 14:4)

1. Donetskiy politekhnicheskiy institut.
(Rock pressure) (Mine timbering)

ORLOV, V.V., dotsent; PONOMARENKO, A.K., inzh.

Cement injection behind a gallery timber. Shakht. stroi. 5 no.7:26 Jl '61. (MIRA 15:6)

1. Donetskiy politekhnicheskiy institut.
(Mine timbering)
(Grouting)

ORLOV, Vasiliy Vasil'yevich; YANCHUR, Aleksandr Mikhaylovich; BABICHEV, Nikolay Semenovich; PETROV, Anatoliy Moiseyevich; POMOMARENKO, Aleksey Kuz'mich; GUDZ', Aleksandr Grigor'yevich; POKROVSKIY, N.M., zasl. deyatel' nauki i tekhniki RSFSR, prof., doktor tekhn. nauk, retsenzent;CHERNEGOVA, E.N., ved. red.

[Mine workings and their support] Provedenie i kreplenie gornykh vyrabotok. [By] V.V.Orlov i dr. Moskva, Nedra, 1965. 496 p. (MIRA 18:7)

ORLOV, V.V.; ROZHANSKIY, N.A.

Effect of duration of intervals between stimulations on the formation of conditioned motor reflexes in monkeys. Fiziol.zh.SSSR 37 no.1:20-27 Jan-Feb 51. (CIML 20:8)

1. Department of Normal Physiology of Rostov Medical Institute and Sukhumi Medico-Biological Station of the Academy of Medical Sciences USSR.

ORLOV, V. V.

ORLOV, V. V. - "Vascular unconditioned and conditioned reflexes of dogs, and changes in them from direct stimulation of the cerebral cortex". Leningrad, 1955. Acad Sci USSR. Inst of Physiology imeni I. P. Pavlov. Laboratory of the Physiology and Pathology of Digestion and Blood Circulation. (Dissertation for the degree of Candidate of Medical Sciences).

SO: Knizhnaya Letopis' No. 46, 12 November 1955. Moscow

ORLOV, V.V.

Pneumo-electric finger plethysmograph with a semiconductor tensiometer.
Fiziol. zhur. 44 no.3:258-260 Mr '58. (MIRA 11:4)

1. Laboratoriya fiziologii i patologii pishchevareniya i krovoobrashcheniya Instituta fiziologii im. I.P. Pavlova AN SSSR, Leningrad.
(PLETHYSMOGRAPHY, apparatus & instruments
pneumo-electrical finger plethysmograph with semiconductor tensiometer (Rus)

EXCERPTA MEDICA Sec 18 Vol 3/8 Cardio. Dis. Aug 59

2282. **Periodic waves in plethysmographic records obtained under conditions of chronic experimentation in dogs (Russian text)** ORLOV V. V. I. P. Pavlov Inst. of Physiol., Leningrad *Fiziol. Zh.* 1958, 44/8 (727—735) Illus. 4

Plethysmograms were obtained in unanaesthetized dogs by means of a mechanically recording hind-limb water plethysmograph. The appearance of respiratory waves was due mainly to respiratory disturbance of cardiac rhythmicity. Third order waves included different types, one consisting of waves of highly variable rhythm and magnitude, attributed to reflex responses of blood vessels to miscellaneous external or internal stimuli. Waves of another type had a regular rhythm and could be evoked by reflex or direct stimulation of the cerebral cortex.

Simonson - Minneapolis, Minn. (II, 18)

ORLOV, V.V.

Vascular conditioned reflexes in direct electrical stimulation of the separate parts of the cerebral cortex. Nauch. soob. Inst. fiziol. AN SSSR no.1:132-134 '59. (MIRA 14:10)

1. Laboratoriya fiziologii pishchevareniya (zav. - A.V.Solov'yev) Instituta fiziologii imeni Pavlova AN SSSR.
(CONDITIONED RESPONSE) (CEREBRAL CORTEX)
(ELECTROPHYSIOLOGY)

ORLOV, V.V.

Mechanisms of the effect of the cerebral cortex on the reaction of the peripheral vessels. Zhur.vys.nerv.deiat. 9 no.5:712-722 S-O '59.
(MIRA 13:3)

1. Institut fiziologii im. I.P. Pavlova Akademii nauk SSSR.
(CEREBRAL CORTEX physiol.)
(BLOOD VESSELS physiol.)

ORLOV, V.V.

Characteristics of vascular unconditioned responses to certain external stimuli in dogs. Fiziol.zhur. 45 no.6:652-660 Je '59. (MIRA 12:8)

1. Laboratoriya fiziologii i patologii pishchevareniya i krovoobrashcheniya Instituta fiziologii im. I.P.Pavlova AN SSSR, Leningrad.

(REFLEX
unconditioned vasc. reflexes, eff. of external stimuli in dogs (Rus))
(BLOOD VESSELS, physiol.
vasc. reflexes, unconditioned, eff. of external stimuli in dogs (Rus))

ORLOV, V.V.

Bloodless method for the continuous registration of systolic pressure with the aid of a simple tracing system. Biul. eksp. biol. med. 47 no.1:114-117 Ja '59. (MIRA 12:3)

1. Iz laboratorii fiziologii i patologii pishchevareniya (zav. - prof. A. V. Solov'yev) Instituta fiziologii imeni I.P. Pavlova (dir.- akademik K.M. Bykov) AN SSSR, Leningrad. Predstavlena akademikom K.M. Bykovym.

(BLOOD PRESSURE, determination
bloodless continuous registration of systolic pressure (Rus))

ORLOV, V.V.

Characteristics of the plethysmograph as a recording instrument. Fiziol.zhur. 46 no.6:752-757 Je '60. (MIRA 13:8)

1. From the Laboratory of physiology and pathology of digestion, I.P.Pavlov Institute of Physiology of the U.S.S.R. Academy of Sciences, Leningrad.

(PLETHYSMOGRAPHY)

ORLOV, V.V.; PAROLLA, D.I.

Caudal plethysmograph with optical recording. Fiziol. zhur. 46 no.11: 1414-1417 N '60. (MIRA 13:11)

1. From the Pavlov Institute of Physiology, U.S.S.R. Academy of Sciences, Leningrad. (PLETHYSMOGRAPHY)

ORLOV, Vladimir Vladimirovich; KONRADI, G.P., otv. red.; SHERSTOBITOV, O.Ye., red. izd-va; ARONS, R.A., tekhn. red.

[Plethysmography; methods and use in experimental and clinical investigations]Pletizmografiia; metody i primenenie v eksperimental'nykh i klinicheskikh issledovaniiakh. Moskva, Izd-vo Akad. nauk SSSR, 1961. 253 p. (MIRA 14:7)

(PLETHYSMOGRAPHY)

OSADCHIY, L.I.; LEVATOV, V.A.; ORLOV, V.V.; VOSTRIKOV, N.A.

Simple model of a tensiometric electromanometer for recording intravascular pressure. Biul.eksp.biol.i med. 57 no.5:120-122 My '64. (MIRA 18:2)

1. Laboratoriya fiziologii krovoobrashcheniya Instituta fiziologii imeni Pavlova AN SSSR, Leningrad. Submitted June 15, 1963.

ORLOV, V.V.

Study of vascular unconditioned reflexes to thermal stimulations of limited areas of the skin. Fiziol.zhur. 51 no.4:479-486 Ap '65. (MIRA 18:6)

1. Laboratoriya fiziologii krovoobrashcheniya Instituta fiziologii imeni Pavlova AN SSSR, Leningrad.

L 29370-66

ACC NR: AP6019801 SOURCE CODE: UR/0239/65/051/004/0479/0486

AUTHOR: Orlov, V. V.

ORG: Laboratory of the Physiology of Blood Circulation, Institute of Physiology im. I. P. Pavlov, AN SSSR, Leningrad (Laboratoriya fiziologii krovoobrashcheniya Instituta fiziologii AN SSSR)

TITLE: Investigation of unconditioned vascular reflexes in response to thermal irritation of restricted skin areas

SOURCE: Fiziologicheskiy zhurnal SSSR, v. 51, no. 4, 1965, 479-486

TOPIC TAGS: reflex activity, cardiovascular system, animal physiology

ABSTRACT: Restricted skin areas (2 or 30 cm^2) of human subjects were subjected to a thermal irritation consisting of cooling to 0-1° or 8-10° or heating to 44-46°; the vascular reaction was then determined by measuring the expansion and contraction of blood vessels in the fingers (i.e., by taking plethysmograms). Heating of the skin of the shoulder or forearm did not as a rule produce any vascular reaction in the fingers. Cooling of the skin of the shoulder or forehead resulted in a reflex contraction of the blood vessels of the fingers. The magnitude of this contraction depended on the temperature and skin area that was irritated; it did not depend on the duration of the irritation or the place where it was applied. The variability of the response to cooling makes the study of vascular unconditioned reflexes by this method rather uncertain. Orig. art. has: 2 figures and 3 tables. [JPRS]

SUB CODE: 06 / SUBM DATE: 11Dec63 / ORIG REF: 007

Card 1/1 UDC: 612.18

ORLOV, V.Ya.

Retroperitoneal tumor of the sympathetic trunk. Kaz. med. zhur. no.2:67-69 Mr-Ap '62. (MIRA 15:6)

1. Kafedra fakul'tetskoy khirurgii (zav. - prof. I.Ye. Matsuyev) Ryazanskogo meditsinskogo instituta imeni I.P. Pavlova.

(NERVOUS SYSTEM, SYMPATHETIC—TUMORS)

ORLOV, V.Ya. (Ryazan', 5, ul. Kommunal'nikov, d.4, korpus 1, kv.16)

Obturation of bronchi by a foreign body during an operation. Grud. khir. 6 no.5:117-118 S-O '64. (MIRA 18:4)

ORLOV, V.Ya.

Prevention of some respiratory disorders during resection of the stomach under anesthesia. Nauch.trudy Riaz.med.inst. 18 no.2:163-170 '64. (MIRA 19:1)

1. Kafedra fakul'tetskoy khirurgii (zav. - prof. Matruyev, V.Ya. [deceased]) Ryazanskogo meditsinskogo instituta.

ZHINKIN, G.N., kand.tekhn.nauk, dotsent; ORLOV, V.Yu., inzh.

Operation of scrapers under winter conditions. Trudy LIIZHT no.180:47-53 '61. (MIRA 15:7)
(Scrapers--Cold weather operations)
(Railroads--Earthwork)

ORLOV, V. Y.

B-7

USSR/Physical Chemistry. Isotopes.

Abs Jour : Ref Zhur - Khimiya, No 7, 1957, 22213

Author : V. Yu. Orlov, N. I. Chavoronov.
Inst : Not given
Title : About the separation of silicon isotopes by method of $SiCl_4$ rectification.

Orig Pub : Zh. Prikl. Khimii. 1956, 29 No 6, 959-960.

Abstract : The separation of isotopes Si^{28} Si^{29} and Si^{30} was studied by method of $SiCl_4$ rectification in a glass column 1.5m. high and an inner diameter of 25mm with a nozzle made of coils of 2x2mm diam(wire made of stainless steel of 0.2mm diam) at 57 ± 1^0 and at atmospheric pressure. In the upper part of the column were separated samples of $SiCl_4$ which was transformed into SiF_4 and was subjected to mass-spectrometric analysis. The isotopic composition of the standard samples of Si thus obtained (Si^{26} 92.16 ± 0.04; Si^{29} 4.70 ± 0.02; Si^{30} 3.14 ± 0.02%) is in conformity with that obtained before (R.Zh.Khim.1954,35621) After 12 days of incessant work of the column, the enrichment Q (equal to the relation of average isotopic relations for alternately measured standard and enriched samples) was: Q_1 =

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-78-

ORLOV, V. Yu.

Separation of isotopes of silicon by the method of rectification of silicon tetrachloride. V. Yu. Orlov and N. M. Zhavoronkov. *J. Appl. Chem. U.S.S.R.* 29, 1047-9 (1956) (English translation).—See *C.A.* 50, 16485g.

B, M. H.

ZHAVORONKOV, N.M.; BABIKOV, S.I.; ORLOV, V.Yu., kand.khimicheskikh nauk; SAKODYNSKIY, K.I., kand.khimicheskikh nauk; SEVRYUGOVA, N.N.; SOKOL'SKIY, V.A.; CHERNYKH, G.N.

Production and uses of stable isotopes. Khim.nauka i prom. 4 no.4:487-498 '59. (MIRA 13:8)
(Isotope separation)
(Isotopes--Industrial applications)

66496

~~5(4), 24(1)~~ 5.1105, 24.1200 SOV/20-129-1-44/64

AUTHORS: Orlov, V. Yu., Zhavoronkov, N. M., Corresponding Member, AS USSR

TITLE: The Effect of Ultrasonics on the Absorption of Carbonic Acid Gas by Water

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 1, pp 161-164 (USSR)

ABSTRACT: Preliminary experiments showed that the absorption of CO_2 in H_2O is increased considerably by ultrasonics. To obtain an exact understanding of the existing relationships an apparatus was constructed (Figs 1,2) in which a film of water, in countercurrent to CO_2, flowed through a barium titanate cylinder used as sound transmitter. Generators of types UZG, GU-3, and RFT-602 were applied. Frequency measurements were carried out by means of the oscillograph type EO-7, and the generator type GSS-6. The barium titanate cylinders (Table 1) were made partly at the Gosudarstvennyy elektrokeramicheskiy institut (State Institute of Electroceramics) and partly at the Akusticheskiy institut AN SSSR (Institute of Acoustics AS USSR). Table 2 gives the values for C/C_p (C = CO_2-content obtained, C_p = equilibrium con-

Card 1/2

The Effect of Ultrasonics on the Absorption of Carbonic Acid Gas by Water

centration at the respective temperature). Experimental data are given in table 3. Formation of circular waves (wave intervals about 3 mm at 800 kilocycles and about 1 mm at 100 kilocycles) and cavitation were observed. The dependence of the rate of absorption on the ultrasonic frequency is shown in figure 3. 50 kilocycles proved the most effective (CO_2-concentration raised 4-fold), whereas both 800 and 100 kilocycles raised the CO_2-concentration only 2 1/2-fold. An increase in the intensity of the ultrasonic waves above 2 - 3 w/cm^2 led to partial drying up of the water film. R. A. Ivanova took part in the experiments. The authors thank B. I. Konobeyev for criticism of the paper. There are 3 figures, 3 tables, and 3 references, 2 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: July 6, 1959

Card 2/2

ORLOV, V. YU., UMNIK, N. N., SHAVORONKOV, N. M., MALYUSOV, V. A. & MALAFEYEV, N. A.

"Uterschung uber der Trenneg der Isotope des Lithiums durch Molekulardestillation."

Report presented at the 2nd Conf. on Stable Isotopes.
East German Academy of Sciences, Inst. for Applied Physical Material
Leipzig, GDR, 30 Oct - 4 Nov 1961

S/081/62/000/006/009/117
B166/B101

AUTHORS: Agafonov, I. L., Kukavadze, G. M., Borisov, G. K., Orlov, V. Yu.

TITLE: Mass spectra of monosilane and monogermane

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 16, abstract 6B76 (Tr. po khimii i khim. tekhnol. (Gor'kiy), no. 2, 1961, 227 - 229)

TEXT: The mass spectrum of monosilane SiH_4 was taken and calculated for the monoisotopic spectrum. The intensities of the ion currents of SiH_4^+, SiH_3^+, SiH_2^+, SiH^+, and Si^+ are in the ratio of 0.4 : 73.5 : 100 : 26.5 :25.8 (for the MC-4(MS-4) instrument). Using these data as well as data on the monoisotopic mass spectra of CH_4 and GeH_4 as a basis the authors confirm the rule that there is an increase in the probability of dissociation with an increase in mass of the molecule. It is concluded that the law according to which ions, obtained when an odd number of hydrogen atoms is lost, are

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S/081/62/000/006/009/117
B166/B101

Mass spectra of monosilane and monogermane

formed in a relatively large quantity during dissociation cannot be extended to the aforesaid compounds (CH_4, SiH_4, and GeH_4). [Abstracter's note: Complete translation.]

Card 2/2

ORLOV, V.Yu.

Linearizing the scale of a thermistor thermometer. Prib. i tekh. eksp. 6 no.1:191-192 Ja-F '61. (MIRA 14:9)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut.
(Thermometers)

ORLOV, V.Yu.; ZHAVORONKOV, N.M.

Intensification of mass transfer in countercurrent extraction under the effect of sonic and ultrasonic vibrations. Zhur.VKHO 6 no.5:595-596 '61. (MIRA 14:10)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Mass transfer) (Extraction (Chemistry)) (Ultrasonic waves)

29539
S/089/61/011/005/004/017
B102/B101

24.6210
21.4200

AUTHORS: Malyusov, V. A., Orlov, V. Yu., Malafeyev, N. A., Umnik, N. N., Zhavoronkov, N. M.

TITLE: Lithium isotope separation by the method of molecular distillation of liquid lithium

PERIODICAL: Atomnaya energiya, v. 11, no. 5, 1961, 435 - 439

TEXT: Experiments are described which were made in 1955-1956 with the assistance of I. V. Aristov and N. P. Abramov. The authors determined the lithium isotope separation factor in a single-stage apparatus for liquid lithium evaporation. $\alpha = 1.08 \pm 0.02$ was found for 500°C, a result which agreed with that of Trauger et al. (see below). Because of this relatively high value, further experiments were made with a multi-stage apparatus of the same type as had been proposed by Brewer and Madorsky (see below). The construction of this apparatus was described in detail by V. A. Malyusov, N. A. Malafeyev, and N. M. Zhavoronkov (Khim. mashinostroyeniye, no. 4, 4, 1959). The apparatus has eight cells and operates with a counterflow mechanism. In the upper cell, Li^6 is concentrated. In

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29539
S/089/61/011/005/004/017
B102/B101

Lithium isotope separation by the ..

the lower (first), Li^7. The degree of enrichment in Li^6 was calculated from the relation $K = x_2(1-x_1)/x_1(1-x_2)$, where x_1 and x_2 denote the Li^6 concentrations in the first and the eighth cell. Detailed measurements showed that the apparatus did not work steadily: the metal levels differed considerably and the characteristics were dependent on the angle of inclination of the apparatus in an unwanted manner. At an inclination of 3.5^o, even impoverishment in Li^6 was observed in the upper part of the apparatus. In order to improve its operation, all cells except for the first and the fourth were filled with rings of a 30-mesh metallic grid, 5 - 6 mm in diameter and height. With the improved apparatus two series of measurements were made with an inclination of 1.5^o, a residual gas pressure of $9 \cdot 10^{-3}$ mm Hg, and condenser temperatures of 265-270°C (first) and 340 - 350°C (second series). The apparatus was found to work more steadily and yielded better results. From samples taken from the cells the isotope concentrations were determined by an МСЛ-3 (MSL-3) mass spectrometer, and the time dependence of the total enrichment was determined (Fig. 3). There are 3 figures, 3 tables, and 12 references: 3 Soviet and 9 non-Soviet. The four most recent references to English

Card 2/3

Lithium isotope separation by t....

language publications read as follows: L. Love et al. Proceedings of the International Symposium on Isotope Separation. Amsterdam, 1956, p. 615; D. Trauger et al. Proceedings of the International Symposium on Isotope Separation. Amsterdam, 1958, p. 350; F. Kelley. Canad. J. Phys., 32, No. 1, 31 (1954); A. Brewer, S. Kadorsky. J. Res. Nat. Bur. Standards, 38, No. 1, 129 (1947).

SUBMITTED: July 14, 1960

Fig. 3. Enrichment in Li^6 as a function of time. Abscissa: time in hr. Ordinate: total enrichment coefficient.

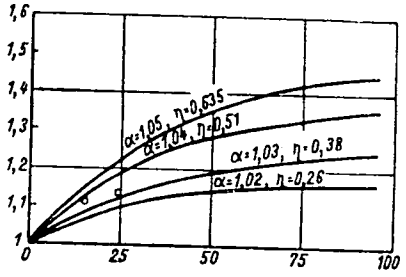

Fig. 3

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ORLOV, V.Yu.

Absorption of carbon dioxide by water under the action of ultrasound. Prim. ul'traakust. k issl. veshch. no.14:167-170 '61. (MIRA 14:12)
(Absorption of sound) (Ultrasonic waves) (Carbon dioxide)

ACCESSION NR: AT3012831 S/2965/63/000/003/0123/0129

AUTHOR: Orlov, V. Yu.

TITLE: Use of barium titanate ultrasonic columns for intensification of mass-transfer in the processes of absorption and extraction

SOURCE: Moscow. Fiziko-khimicheskiy institut. Problemy* fizicheskoy khimii, no. 3, 1963, 123-129.

TOPIC TAGS: barium titanate, mass-transfer, absorption, extraction, ultrasonic oscillation, water carbon dioxide system, water hydrocarbon system

ABSTRACT: For investigation of the effect of ultrasonic oscillation on the speed of mass-transfer with film absorption, a water-carbon dioxide model system was chosen which was characterized by resistance to the liquid phase. In differentiating between the usual pulsation column and the longitudinal types, which are conducted under an increase intensity resulting in the harmful effect of phase-mixing, the oscillation of the liquid in the experiments conducted was in the main diameter and longitudinal mixing was not

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ACCESSION NR: AT3012831

provoked. Experiments were conducted using a water-diethylamine-four membered chlorine hydrocarbon model system. It was known that the organic phase was continuous, but the aqueous solution of diethylamine which was injected into the column from below across the nozzle (0.3 aperture diameter). The resultant liquid drop is 1-2 mm. in size. The basic frequencies of the barium titanate cylindrical emitters are polarized by the thickness of the walls. Orig. art. has: 6 figures, 8 formulas and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut, Moscow (Physicochemical Institute)

SUBMITTED: 00 DATE ACQ: 16Sep63 ENCL: 00

SUB CODE: CH NO REF SOV: 005 OTHER: 002

Card 2/2

ORLOV, Ya., kand. ekonom. nauk

Demand, price, quality. Tekh. est. no.4:3-5 Ap '65. (MIRA 18:6)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001238

BROMBERG, B.Z.; GRIGOV, Yu.B.; MYAKOTKIN, Yu.I.

PGS sectional gas stove. Gaz. prom. 8 no.2:32-35 '63.

(MIRA 16:2)

ORLOV, Yakov L'vovich, kand. ekon. nauk; YUZBASHEV, V.G., red.; RAKITIN, I.T., tekhn. red.

[For the best products in the world] Za luchshuiu v mire produktsiiu. Moskva, Izd-vo "Znanie," 1963. 46 p. (Novoe v shizni, nauke, tekhnike. III Seriia: Ekonomika, no.8) (MIRA 16:4)

(Quality control)

ORLOV, Yakov L'vovich, kand. ekon. nauk; KOGAN, Ye.L., red.;
ATROSHCHENKO, L.Ye., tekhn. red.

[Trade today and tomorrow] Torgovlia segodnia i zavtra. Moskva, Izd-vo "Znanie," 1964. 39 p. (Novoe v zhizni, nauke, tekhnike. III Seriia: Ekonomika, no.5)
(MIRA 17:3)

S/110/61/000/001/014/023
E194/E455

AUTHORS: Shtermin, L.A., Engineer, Prokof'yev, S.N., Engineer, Orlov, Ya.M., Engineer and Kobyl'nitskaya, M.I., Engineer

TITLE: The Introduction of Friction Welding of Copper Current-Conducting Parts

PERIODICAL: Vestnik elektropromyshlennosti, 1961. No.1, pp.44-45

TEXT: This article describes experience of using a friction welding machine type MCT-6 (MST-6) for friction welding of a small copper assembly. In the old method of construction, a copper pin 12 mm diameter was turned down at one end to fit a brass washer and was soldered to a strip of copper 2 mm thick. Friction welding was the most suitable for such parts, as arc welding could not be used. The machine type MST-6 has a motor of 2.8 kW, the spindle is driven at 4000 rpm and an axial force of 50 to 1000 kg can be applied pneumatically. The welding time can be controlled within the range 0.5 to 2.5 sec, and the complete cycle has a duration variable between 5 and 15 sec. The machine automatically loads the pins into the pressure device of the spindle, brings the strip up to the spindle, makes the weld and discharges the welded products.

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S/110/61/000/001/014/023
E194/E455

The Introduction of Friction Welding of Copper Current-Conducting Parts

The parts are carried on a rotating table with eight positions. Pneumatic drive is used to turn the table. Welding can be effected with very little distortion of the parts. The use of the machine has simplified production of the parts; there is no need to make the brass washers, to roll the parts together or to clean them after soldering. By use of the machine, the standard time for making the parts was reduced from 1.6 to 0.25 hours per hundred. The economy of wages was 6.95 roubles per 100 parts. The properties of the finished parts are improved. It is necessary that the surfaces of all the parts should be equally clean. This is achieved by etching in a mixture of sulphuric and nitric acids, followed by water washing and compressed-air drying. There are 2 figures.

SUBMITTED: June 14, 1960

Card 2/2

LUNEVSKIY, I., kand. tekhn. nauk; OKHOV, Ye., inzh.

Comparison of burnishing and honing of engine cylinders.
Avt. transp. 43 no.9:26-28 S '65. (MIRA 18:9)

GLAGOLEV, N.S.; ORLOV, Ye.A.; TOPAZOV, N.G.; DE-PEL'POR, G.Ye.; CHURAYEV, P.N., red.; SELIVERSTOVA, A.I., red.izd-va; VORONINA, R.K., tekhn. red.

[Mathematics for correspondence technical schools] Matematika dlia zaochnykh tekhnikumov. Moskva, Vysshaia shkola. Pt.2. [Geometry] Geometriia. 1963. 219 p. Pt.3. [Elements of higher mathematics] Elementy vysshei matematiki. 1963. 430 p. (MIRA 17:2)

GLAGOLEV, Nikolay Sergeyevich; ORLOV, Yevgeniy Aleksandrovich; TOPAZOV, Nikolay Gennadiyevich; DE-PEL'POR, Georgiy Yevgen'yevich; CHURAYEV, P., red.; SELIVERSTOVA, A., red.izd-va; VORONINA, R., tekhn. red.

[Mathematics for technical correspondence schools] Matematika dlia zaochnykh tekhnikumov. Moskva, Vysshaia shkola. Pt.1.[Algebra and simple functions] Algebra i prosteishie funktsii. 1963. 481 p. (MIRA 17:2)

1. Zaveduyushchiy kafedroy matematiki Moskovskogo arkhitekturnogo instituta (for Churayev).

ORLOV, Ye.A.

Photoelectric FB-2 instrument for luster measurement. Lakokras.mat. i ikh prim. no.2:69-70 '63. (MIRA 16:4)
(Photoelectric measurements)

KONYUSHENKO, A.T.; GOLOVKIN, R.V.; GOL'BERG, V.Ya.; ORLOV, Ye.D.

Radio-requency welding of straight-seam tubes on the 6-32 machine. Metallurg 8 no.10:24-26 O '63. (MIRA 16:12)

1. Moskovskiy trubnyy zavod.

Orlov, Yevgeniy Ivanovich

MEL'KUMOV, Lev Georgiyevich; NAZAROV, Petr Petrovich; ORLOV, Yevgeniy Ivanovich; FILIMONOV, Nikolay Andreyevich; KOZIN, Yu.V., redaktor; [redacted], Z.A., tekhnicheskiy redaktor; ALADOVA, Ye.I., tekhnicheskiy redaktor

[Mining machinery] Gornye mashiny. Moskva, Ugletekhizdat, 1955. 458 p. (MLRA 9:4)

(Mining machinery)

ORLOV, Yevgeniy Ivanovich. Prinimala uchastiye BYKHOVSKAYA, S.N., gorn. inzh.; DIDKOVSKIY, D.Z., otv. red.; KIT, I.K., red. izd-va; LOILINA, L.N., tekhn. red.

[Surface mining in coal pits] Otkrytye gornye raboty na ugol'nykh kar'erakh. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1961. 224 p. (MIRA 15:2)
(Coal mines and mining)

MEL'KUMOV, Lev Georgiyevich; ORLOV, Yevgeniy Ivanovich; FILIMONOV, Nikolay Andreyevich; LYUBIMOV, N.G., otv. red.; LOMILINA, L.N., tekhn. red.

[Mining machinery for strip mining]Gornye mashiny dlia otkrytykh rabot. Moskva, Gosgortekhizdat, 1962. 470 p. (MIRA 15:12)

(Mining machinery)

ORLOV, Ye.P., inzh.

Building roads to convey earth for the construction of a roadbed. Transp. stroi. 14 no.5:4-6 My '64.
(MIRA 18:11)

ORLOV, E. I.

"The Dynamics of the Situation and the Prospects for Eradication of Tick-Breeding Places in the Saratov Volca Region."

Tenth Conference on Parasitological Problems and Diseases with Natural Reservoirs, 22-29 October 1959, Vol. II, Publishing House of Academy of Sciences, USSR, Moscow-Leningrad, 1959.

Saratov Veterinary Institute

ORLOV, YE. I.

17(1) SOV/30-59-4-36/51

AUTHOR: Naumov, S. A., Candidate of Biological Sciences

TITLE: Problems of Ecological Physiology (Problemy ekologicheskoy fiziologii)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 4, pp 121-125 (USSR)

ABSTRACT: The All-union Conference held by the Institut fiziologii im. I. P. Pavlova (Physiological Institute imeni I. P. Pavlov) in Leningrad between January 12th and January 17th dealt with these problems. Altogether 58 reports were delivered, e.g. A. D. Slonim spoke about "Essential Trends of Research of the Ecological-physiological Specialization in Mammals"; D. A. Biryukov on "Ecological Factors in Animal Physiology"; Z. D. Strel'nikov on "the Ecological Heat Balance in Several Invertebrates (Insects) and Vertebrates (Reptiles and Mammals)"; I. A. Arshavskiy spoke about "the Comparative Ontogenetic Characteristics of Several Physiological Features in Rabbits and Hares in Connection With Particularities of Their Ecology"; Ye. M. Kreps, N. A. Vershbinskaya and A. A. Smirnov reported on "Physiological Characteristics of Various Hemocyanins of Species of Crabs in Dependence of Their Conditions of Life"; Ye. I. Orlov spoke about

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"the Behavior and Survival of "Ikeodovyye Kleshchi" (mites) in the Case of Irrigation and Flooding of the Irrigated Regions"; N. P. Naumov spoke about "the Internal Structure of Higher Vertebrates and Some Problems of Their Investigation by Ecological-physiological Methods"; I. Ya. Polyakov dealt with "the Morpho-physiological Variability of the Population of Rodents Under the Effect of Ecological Conditions"; N. I. Kalabukhov, N. A. Morkiyevich and E. A. Petrosyan spoke about "Several Ecological-physiological Characteristics of Various Species and Geographical Populations of a Type of Sandstone"; M. V. Kirsch, N. P. Naumov, N. M. Dukel'skaya and L. V. Boritsey reported on "the Ecological and Physiological Trend of the Investigation of the Effect of Rat Poisons". In their resolution the members of the Conference underlined the great importance of ecological physiology and indicated the most important ways of further research in this field. Special attention was paid to the increased research work carried out by ecologists, zoologists, physiologists and biochemists.

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ORLOV, Ye.I., prof.; BUDNIK, V.S., kand.veterinarnykh nauk

Epizootological significance of the characteristics of the tick factor in piroplasmosis in horses under the natural conditions of the lower Volga Valley. Sbor.nauch.rab.Sar.NIVS 4:101-110 '60. (MIRA 15:7)

(Piroplasmosis) (Volga Valley--Ticks as carriers of disease)
(Horses--Diseases and pests)

ORLOV, Ye.I., prof.

Spotted suslik (Citellus suslica Guld.) as a carrier of ticks in the Saratov area of the Volga Valley. Trudy SZVI 11:255-269 '62. (MIRA 16:7)

(Saratov Province--Parasites--Susliks)
(Saratov Province--Ticks)

ORLOV, Ye.I., insh.

Start and operation of the water supply structures of a state regional electric power plant during low temperatures. Elek. sta. 34 no.1:79-80 Ja '63. (MIRA 16:2)
(Electric power plants—Water supply)
(Hydraulic structures)

ORLOV, Ye.I.(Moscow)

Waterspout on the Black Sea. Priroda 44 no.8:115-116 Ag '55.
(Black Sea--Waterspouts) (MLR 8:10)

Orlov, Ye. F.

46-3-11/15

AUTHORS: Gershman, S.G. and Orlov, Ye. F.

TITLE: A Correlational Method of Measuring the Acoustic Ratio. (Korrelyatsionnyy metod izmereniya akusticheskogo otnosheniya)

PERIODICAL: Akusticheskiy Zhurnal, 1957, Vol.III, Nr 3, pp.285-288 (USSR)

ABSTRACT: In considering certain acoustic problems of architecture of enclosed spaces, the concept of acoustic ratio is used (Ref.1). The present note describes a method of direct measurement of this ratio in an enclosed space and a number of results obtained using this method are given. Suppose that in a closed space a linear sound transmitting channel is working, emitting a sonic signal $x(t)$. Using the principle of superposition for a linear system one can say that a process $y(t)$ received at some point within this enclosed space is described by the expression:

$$y(t) = \int_0^\infty x(t - \theta)\, f(\theta)\, d\theta \qquad (1)$$

where $f(\theta)$ is the response of the system to a δ-impulse. It may be shown that the coefficient of mutual correlation

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A Correlational Method of Measuring the Acoustic Ratio.

R_{xy} between the received sound $y(t)$ and the emitted sound delayed for a time τ by the process $x(t-\tau)$ is given by:

$$R_{xy} = \frac{\sigma_x}{\sigma_y} \int_0^\infty R_{xx}(\tau - \theta) f(\theta) d\theta \qquad (2)$$

where σ_x and σ_y are the effective values of the emitted and received processes respectively and R_{xx} is the coefficient of autocorrelation of the process $x(t)$. Eq.(2) gives the relation between the coefficient of mutual correlation, the autocorrelation function of the emitted signal and the response of the sonic transmission system to a single impulse. From these expressions it is shown that:

$R_{xy} = \frac{\sigma_i}{\sigma_y}$ with $\tau = \frac{r_i}{c}$ where $\frac{r_i}{c}$ is the time

A Correlational Method of Measuring the Acoustic Ratio.

taken by the i^{th} wave and $\sigma_i = \alpha_i \sigma_x$ where α_i are coefficients taking into account the divergence of waves in space and their absorption on the reflections. Thus, R_{xy} turns out to be a direct measure of the acoustic ratio. The experimental part of this work was carried out using the apparatus shown in Fig.1. The apparatus consisted of a correlation meter, 1 (cf.Ref.2) in series with a delay device,2, and a noise meter, 3. To the radiator, 4, a noise signal, $x(t)$ was applied. The position of the radiator was kept fixed. The receiver, 5, could be placed at 7 different points along the axis of the emitter. At each of these points $R_{xy}(\tau)$ was measured as well as the level of total sound in the enclosed space, i.e., 20 lg σ_y . The results of measurements are summarised in 3 figures. The following persons collaborated: E.L.Feynberg, V.S.Grigor'yev, N.S. Antonov and V.M.Shatalov. There are 3 figures, no tables and 3 references of which 2 are Russian and 1 English.

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46-3-11/15

A Correlational Method of Measuring the Acoustic Ratio.

ASSOCIATION: Institute of Acoustics of the Academy of Sciences, USSR, Moscow (Akusticheskiy institut AN SSSR, Moskva)

SUBMITTED: May 14, 1957.

AVAILABLE: Library of Congress.

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AUTHORS: Zverev, V.A. and Orlov, Ye.F.

TITLE: Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 1, pp 50 - 57 (USSR)

ABSTRACT: The instrument is illustrated schematically in Figure 1. S is a light source which illuminates two parallel films Π_1 and Π_2. The processes to be investigated $g(x_1)$ and $f(x)$ are recorded on the films along the "window" having a length $D_{makc} = 300$ mm. The transparency $f(x)$ of the film Π_2 as a function of x corresponds to a time-dependent process $f(t).x = vt$, where v is the velocity of motion of the film during the recording of the signal. The light transmitted through the superimposed films Π_1 and Π_2 falls on a set of photo cells. The current of the photo

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Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

cells is proportional to the light flux impinging on it and can be expressed by:

$$i = B \int_{-D/2}^{+D/2} f(x)g(x_1)dx \qquad (3) .$$

If the film Γ_1, having a transparency $g(x_1)$ is moved with respect to Γ_2 by a quantity ζ, the current is:

$$i_\zeta = B \int_{-D/2}^{+D/2} f(x)g(x - \zeta)\, dx \qquad (4) .$$

The quantity measured by the meter 1 (Figure 1) and recorded by a registering device 2 is proportional to the correlation function of the process $f(t)$ and $g(t)$ at the point ζ. By changing ζ, which can be done by

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Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

moving one of the films with respect to the other, it is possible to determine the type of the correlation function. In order to determine the spectrum of $f(x)$ it is necessary to express $g(x)$ in the form:

$$g(x) = \cos k_n (x - \xi) \qquad (5)$$

with different k_n . If $k_n = 2\pi n/D$, then:

$$i_\xi = BDC_n \cos (k_n \xi - \varphi_n) \qquad (6)$$

which shows that the amplitude of the output signal is proportional to the spectral amplitude of the signal $f(x)$. The instrument constructed on the above principle had the frequency range from 1/300 to 3 c/s. The averaging time could be as high as 300 sec. Some of the experimental results obtained by means of the instrument

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Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

are shown in Figures 2-11. Figure 3 shows a comparison of the correlation function measured by the instrument (solid line) with the calculated results which are indicated by the crosses. Figures 4 show the response of the system to a sinusoidal signal for various window lengths. Figure 5 gives the cross correlation function for a pulse train having a mark-to-space ratio of 1:2 and a sinusoidal signal. Figures 6-8 show the oscillograms of certain processes and their correlation and spectrum functions over a certain frequency bandwidth. Figure 9 shows the acceleration processes in a seat of the car, type M-21 "Volga", produced at the Gor'kiy Car Factory and the correlation function of the acceleration curve. Figures 10-11 give the recordings of human heart signals and their autocorrelation functions. There are 11 figures and 4 references, 3 of which are English and 1 Soviet.

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Equipment for the Measurement of the Spectra and Correlation Functions of Low-frequency Processes

ASSOCIATIONS: Nauchno-issledovatel'skiy radiofizicheskiy institut (Scientific-research Radiophysics Institute) of Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: December 26, 1958

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AUTHORS: Zverev, V.A. and Orlov, Ye.F.

TITLE: Information transmission Rate in a Channel With Multipath Propagation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol. 4, No. 2, pp. 282 - 292

TEXT: The problem of channel capacity of multipath communications channels with constant or variable parameters has been considered by various authors - R.L. Dobrushin (Ref. 4 - Teoriya veroyatnostey i eye primeneniye, 3, 395, 1958), B.S. Tsybakov (Radiotekhnika i elektronika, 1958, 4, 1427 - Ref. 5) and J. Feinstein (J. Appl. Phys., 26, 219, 1955 - Ref. 6). The problem is investigated further in this paper. It is assumed that the investigated channel is in the form shown in Fig. 1. The signal x(t) propagates through a multipath medium by various routes and at the receiver it is in the form :