1/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EXPERIMENTAL INVESTIGATIONS OF ATMOSPHERIC TRANSPARENCY USING LASERS -U-

AUTHOR-(03)-ZUYEV, V.YE., SOSNIN, A.V., KHMELEVTSOV, S.S.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, AKTINOMETRIYA I OPTIKA ATMOSFERY, 1969, P 333

REFERENCE--REFERATIVNYY ZHURNAL, GEOFIZIKA, SVODNYY TOM, NO 4, 1970 4B300

DATE PUBLISHED-------69

SUBJECT AREAS--ATMOSPHERIC SCIENCES, PHYSICS

TOPIC TAGS--ATMOSPHERIC TRANSPARENCY, LASER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0303 STEP NO--UR/0000/69/000/000/0333/0333

CIRC ACCESSION NO--AR0126062

UNCLASSIFIED

2/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AR0126062

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ATMOSPHERIC TRANSPARENCY MEASUREMENTS WERE MADE USING LASERS BASED ON HELIUM NEON (0.63, 1.15 AND 3.39 MU), HELIUM XENON (3.51 MU), CARBON DIOXIDE NITROGEN (10.6 MU), RUBY (0.69 MU), GLASS NEODYMIUM (1.06 MU) AND HELIUM ARSENIDE (0.84 MU) LASERS.

UNCLASSIFIED

...the attenuation coefficients practically coincide when coherent and incoherent radiation is scattered. The applicability limits of Bouguer-Beer's law for describing the attenuation of radiation in scattering media are investigated, and the intensity of multiple forward-scattered light is measured for different geometrical parameters of the source and radiation receiver. The applicability of single scattering theory formulas for describing forward-scattered light intensity are discussed.

(Author)

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AP9009021 UR 0362

AUTHOR: Zuyev, V. Ye., A. V. Sosnin, and S. S. Khmelevtsov

ORG: none

TITLE: Transparency of the ground layer of the atmosphere to radiation from some lasers in the IR spectral region

SOURCE: Fizika atmosfery i okeana, v. 5, no. 2, 1969, 201-203

ABSTRACT: The results of an experimental investigation of the attenuation of laser radiation at wavelengths of 3.39 to 3.51, and 10.6 μ over distances of 200, 500, and 1200 m conducted from Dec 1965 to Dec 1967 are reported. Results of a similar experiment involving laser operation at 0.63, 0.69, 0.84, 1.06, and 1.15 μ were reported earlier [Izv. AN SSSR, Fizika atmosfery i okeana 4, no. 1, 1968]. The laser beam was directed

1/5 1964 1767

AP9019898 IAA 4/69 0000

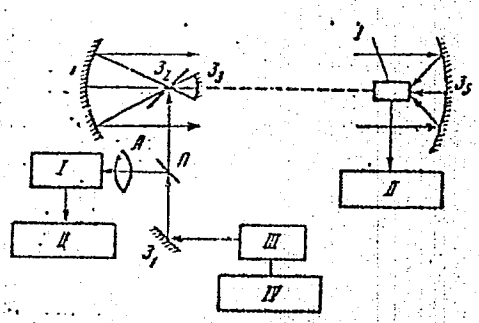

Fig. 1. Diagram of apparatus to measure the transparency of the atmosphere to IR for emissions of certain laser radiation.
I - Emission receiver; II - recording block;
III - laser; IV - pumping block.

by plane mirror M_1 into the telescopic system consisting of parabolic mirror M_4 having a diameter of 110 mm, small spherical mirror M_3, and plane mirror M_2 with aperture. The foci of mirrors M_3 and M_4 coincide in the center of the aperture of mirror M_2. The laser beam, after passing through the thickness of the ground layer under study, was recorded by a receiving system consisting of spherical mirrors with a diameter of

1964 1768

250 or 900 mm, a vacuum compensated thermocouple, and a recording block. To control the laser output power, part of it was diverted by plane parallel plate II and focused by lens L on the thermocouple. The LG-55 He-Ne laser output was directed onto the telescopic system and mixed with that of the laser under study in order to effectively guide the laser IR emission onto the receiving mirror. Table 1 lists laser type and emission characteristics. As may be seen in Fig. 2, the transparency of the

Table 1. Laser type and emission characteristics

Laser type	λ,μ	Operating regime	Power, mw	Beam divergence, min of arc
Gas mixture	3.39	CW multimode	5	1.5
Gas mixture	3.51	same	1	2
Gas mixture	10.6	same	50	2.5

Figure 2 shows the results of measurements of atmospheric transparency and Table 2 shows the conditions under which they were made.

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1964 1769

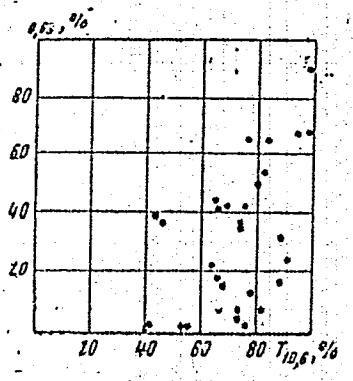

Fig. 2. Results of simultaneous measurement of the transparency of the atmosphere to laser emission at 10.6 μ and thermal source emission at 0.63 μ.

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1964 1770

Table 2. Condition of measurements

λ,μ	Number of series of measurements	Number of single measurements	Temperature T°C	Precipitated water layer W, mm
3.39	52	1000	from -38 to +10	0.2--5
3.51	5	100	from +10 to +20	5--13
10.6	45	1200	from -20 to + 5	0.6--6

atmosphere to laser emission at 10.6 μ is in all cases higher than in the optical region. In some cases the coefficient of attenuation at 10.6 μ equaled several hundredths of km^{-1}, indicating only a slight absorption by water vapor and carbon dioxide in these measurements. It is further noted that for an identical value of atmospheric transparency at 10.6 μ, the transparency in the optical region was substantially different under different experimental conditions. This can be attributed to the corresponding variations of the particle size of atmospheric aerosols.

[DM]

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1964 1771

Acc. Nr: AP0035608 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code: UR 0342

72066f Determination of the components of the water complex refractive index for the visual and infrared spectral regions. Zuev, V. E.; Sonchik, V. K. (Sib. Fiz.-Tekh. Nauch.-Issled. Inst., USSR). *Izv. Akad. Nauk SSSR, Fiz. Atmos. Okeana* 1969, 5(7), 745–8 (Russ). A new significantly more precise detn. of absorption index of water on the basis of the measurement of spectra of transmission in the spectral portions between the absorption bands is cited. Besides this, the values of n and x in the near ir and in visual regions up to 0.54 μ were detd. An anal. of the errors of measurements showed that the relative error for detg. the absorption index x in all the spectral regions studied did not exceed 4%. A detailed comparison of exptl. data of the value of x with the data of the other investigators in the spectral region of 2.5–25 μ is also made. For detg. the n of water in the spectral region 4000–18,300 cm^{-1} the method was used. The relative error in this region did not exceed 1%. The results of the measurement of the value n are in satisfactory agreement with the data of other investigators.
K. S. Kalidass

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REEL/FRAME
19720322

USSR

UDC 551.521.3.593.52

ZUYEV, V. YE., KABANOV, M. V., and PKHALAGOV, YU. A., Institute of Atmospheric Optics, Siberian Department of the Academy of Sciences USSR

"Equipment and Procedure for Measuring Spectral Transmittance of Atmosphere in 0.48-12 Micron Range With Average Resolution"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 5, 1972, pp 42-46

Abstract: The article describes measuring equipment and procedure for a comprehensive study of atmospheric transmittance in the visible and infrared regions of the spectrum on extended ground routes, for the purpose of separating radiation attenuation into individual components. The apparatus for measuring the spectral atmospheric transmittance includes a radiation source and a receiving and recording device, situated at opposite ends of the measuring route, whose length is 3500 m. The receiving and recording system consists of a telescope and a spectrometric and a photoelectric channel mounted on a common rotating device. A special cam is used to open the slits, making it possible to automate the process of recording the spectrum by means of the equipment described and obtain a direct atmospheric transmis-

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ZUYEV, V. YE., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 5, 1972, pp 42-46

sion curve in relative units. Processing of the experimental data is simplified. The equipment described was used in the summer and fall of 1970 for systematic measurements of spectral atmospheric transmittance in haze of varying density. A large number of atmospheric transmission spectra were obtained, with the optimum time for recording the complete spectrum from 0.48 to 12 microns equal to 25 min. or several times less than with the usual procedure. The measurement results will be described in a separate article.

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USSR

UDC 551.508.8

ZUYEV, V. YE., SAMOKHVALOV, I. V., and BALIN, YU. S., Institute of Atmospheric Optics, Siberian Department of the Academy of Sciences USSR

"Study of Atmospheric Ground Layer and Clouds by 'Lidar' Method"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 5, 1972, pp 125-128

Abstract: The article describes equipment for studying the atmospheric ground layer and clouds by the laser radar method. Radiation emitted by the laser is collimated by an optical system and is sent to the atmosphere by means of two flat mirrors. Part of the radiation strikes a photocell, by means of which oscillograph scanning is begun, and is sent through a 120-nsec delay line to the input of a vertical-deflection amplifier (the reference signal is measured). The radiation reflected by the atmosphere is detected by a receiving system and is recorded (photographed) on the oscillograph through a 480-nsec delay line, which provides time division of the reference and reflected signals. A giant-pulse laser with a wavelength of 6943 Å and a radiation pulse duration of 60 nsec is used. An FEU-83 photomultiplier with a cathode follower is

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ZUYEV, V. YE., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 5, 1972, pp 125-128

used as the sensitive element of the receiving system. An S1-11 pulse rapid-record oscillograph is used to record the reference and reflected signals. The use of narrow-band filters ($\Delta\lambda$ = 20 Å) permits a sharp increase in the signal-noise ratio and enables atmospheric studies to be carried on in the daytime (in cloudy weather). Results are given for measurements of the radiation attenuation coefficient in the atmospheric ground layer, in clouds and in fog, at the proving ground of the Siberian Physicotechnical Institute during April-July 1970.

The authors thank V. S. SHAMANAYEV for his active part in the measurements.

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USSR

UDC: 8.74

UYEMOV, A. I., ZUYEV, Yu. I.

"Problem Situations in Systems Studies"

Kiev, Obshch. teoriya sistem--sbornik (General Theory of Systems--collection of works), 1972, pp 115-120 (from RZh-Matematika, No 10, Oct 73, abstract No 10V797 by S. Berkovich)

Translation: A problem situation assumes certain knowledge which is required for filling "unfilled places". Abstracting from psychological aspects, in particular, value orientations which are important for integral understanding of the problem situation, the paper examines the typology of problems in systems analysis studies. Such a typology can be obtained by correlating the logic characteristics of available data with the logic characteristics of the unknown data. As a logical means in development of the typology of problems in systems analysis studies, the authors use categories which define the system: i.e., the categories of things, properties, and relations.

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1/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--SENSATIONAL DISCOVERY OF CANCER VIRUS -U-

AUTHOR--ZUYEVA, L.

COUNTRY OF INFO--USSR

SOURCE--KIEV, RADYAN'SKA UKRAYNA, 15 JAN 70, P 4

DATE PUBLISHED--15JAN70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CANCER, VIRUS DISEASE, DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/1118 STEP NO--UR/9089/70/000/000/0004/0004

CIRC ACCESSION NO--AN0121679

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AN0121679

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. R. YE. KAVET'SKIY, DIRECTOR OF THE KIEV RESEARCH INSTITUTE OF EXPERIMENTAL AND CLINICAL ONCOLOGY, ACADEMY OF SCIENCES UKSSR WAS INTERVIEWED. THE AMERICAN SCIENTISTS MORTON AND ALBERT WERE REPORTED TO HAVE ISOLATED CANCER VIRUS IN HUMAN BEINGS. ASKED BY THE NEWSPAPER CORRESPONDENT TO COMMENT ON THE REPORT, KAVET'SKIY SAIDN THE DISCOVERY WAS NOT "SENSATIONAL", AS DESCRIBED IN THE LOCAL PRESS, BUT MERELY ANOTHER STEP ON THE ROAD TO THE CONQUEST OF CANCER THAN BEGAN WITH ROUS' WORK ON THE CHICKEN SARCOMA IN 1910. THE SIGNIFICANCE OF THE MORTON ALBERT ACHIEVEMENT, ACCORDING TO KAVET'SKIY, IS THE ISOLATION OF VIRUS FROM HUMAN SACROMA AND THE ALTERING OF NORMAL TISSUES IN CANCER PATIENTS. THE KIEV SCIENTIST MENTIONED SOME OF THE CAUSES OF CANCER, COMMENTED ON THE ROLE OF VIRUS AND THE RATIONALE BEHIND THE VIRAL THEORY OF CANCER, DESCRIBED THE FORCES EMPLOYED BY THE BODY TO RESIST MALIGNANT DISEASE, NOTED THE MEANS BY WHICH CANCER IS NOW DIAGNOSED, AND CONCLUDED WITH A GENERALLY OPTIMISTIC PREDICTION THAT RESEARCHERS WOULD FIND WAYS OF PREVENTING AND SUCCESSFULLY TREATING CANCER IN THE NOT TOO DISTANT FUTURE.

UNCLASSIFIED

Oncology

USSR

ZUYEVA, L.

"Sensational Discovery of Cancer Virus?"

Kiev, Radyan'ska Ukrayna, 15 Jan 70, p 4

Abstract: R. Ye. Kavet'skiy, Director of the Kiev Research Institute of Experimental and Clinical Oncology, Academy of Sciences UkSSR was interviewed. The American scientists Morton and Albert were reported to have isolated cancer virus in human beings. Asked by the newspaper correspondent to comment on the report, Kavet'skiy said the discovery was not "sensational", as described in the local press, but merely another step on the road to the conquest of cancer that began with Rous' work on the chicken sarcoma in 1910. The significance of the Morton-Albert achievement, according to Kavet'skiy, is the isolation of virus from human sacroma and the altering of normal tissues in cancer patients. The Kiev scientist mentioned some of the causes of cancer, commented on the role of virus and the rationale behind the viral theory of cancer, described the forces employed by the body to resist malignant disease, noted the means by which cancer is now diagnosed, and concluded with a generally optimistic prediction that researchers would find ways of preventing and successfully treating cancer in the not too distant future.

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1/2 013 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--MASS SPECTRUM OF TITANIUM TETRACHLORIDE -U-

AUTHOR-(03)-AGAFONOV, I.L., ZUYEVA, M.V., RACHKOV, V.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(2) 574-6

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ISOTOPE, CHEMICAL COMPOSITION, TITANIUM CHLORIDE, MASS SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/0299 STEP NO--UR/0078/70/015/002/0574/0576

CIRC ACCESSION NO--AP0053284

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0053284

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MASS SPECTRUM OF TICL SUB4 IS TABULATED. THE ISOTOPIC COMPN. OF TICL SUB4 IS GIVEN.

UNCLASSIFIED

USSR UDC 632.954:634.72.3

ZUYEVA, N. P., Scientific Research Institute of Horticulture of the Central Non-Chernozem Region

"Effectiveness of Kasoron and 2M-4KHM in the Fields of Black Currant"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 7, (105), 1972, pp 54-56

Abstract: Kasoron, when used at a dose of 5 kg/hectare on black currant plants was effective only against the annual weeds; to be effective against perennials a dose of 10 kg/hectare had to be applied. Then it was active against many weeds resistant to simazine, such as dandelion, Canada thistle, sow thistle, horsetail, European bindweed. There was no difference in the effectiveness of the herbicide between autumn and spring applications, except that double application (spring and autumn) was much more effective than single treatment. The use of 2M-KhM was only effective after a double application at the beginning and at the end of summer, using 2.5 and 5 kg/hectare doses. These herbicides had no detrimental effect on the yield and quality of the crop.

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Acc. Nr. AT0101944 Abstracting Service: CHEMICAL ABST. 6-70 Ref. Code UR0442

111994h Thermomechanical and electrical properties of poly(butyl methacrylate) polymer homologs. Nizhnik, V. V.; Solomko, V. P.; Zuava, R. A.; Nizhnik, A. S.; Pochinok, V. Ya. (Kiiv. Derzh. Univ., Kiev, USSR). *Dopov. Akad. Nauk Ukr. RSR, Ser. B* 1970, 32(1), 67–70 (Ukrain). Thermomech. and thermoelec. properties of the title polymer were dependent upon the mol. wt. of the polymer. Considerable changes were observed, esp. for the elec. vol. resistance, during the transition states of the polymer.
O. Elsner

REEL/FRAME
19851900

ZUYEVA, V. A.

JPRS 56030
18 May 72

UDC 615.849.1.015.46

STATE OF NATURAL IMMUNITY OF DOGS DURING CHRONIC GAMMA IRRADIATION UNDER THE INFLUENCE OF AMITETRAVITE

[Article by S. I. Pal'mina, V. A. Zuyeva, N. I. Gvozdeva, M. F. Shitnera, A. A. Akhunov and E. G. Zubenkova, Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 2, March-April 1972, pp 24-29, submitted for publication 11 February 1971]

Abstract: The effect of amitetravite, a biological protectant, on the state of natural immunity was investigated in experiments on dogs exposed to three-year chronic gamma irradiation simulating the dose characteristics of a spaceflight environment. Long-term irradiation of dogs with low Co^{60} gamma ray dosages induced wavelike changes in the natural immunity of the test animals. Regular administration of amitetravite produced a normalizing effect on the state of skin autoflora, favored a relative stability of the indices of blood phagocytic activity, and restrained the development of autoimmune reactions.

It has been established in numerous investigations that body exposure to ionizing radiation in large doses, leading to the development of acute or subacute radiation sickness, is accompanied by an impairment of many body functions. Among these impairments a leading place is occupied by a decrease in natural and artificial immunity (P. N. Kiselev and P. A. Buzini; N. N. Klemparskaya, et al.; V. M. Shilov; R. V. Petrov, and others). However, the problem of the effect of prolonged chronic irradiation in small doses on immunobiological reactivity and the influence exerted on it by protective-therapeutic measures has not been adequately covered.

The objective of this study was an evaluation of the effectiveness of one of the means of biological defense, the drug amitetravite, on the state of natural immunity in dogs subjected to prolonged chronic gamma irradiation. This study is a part of a complex investigation with chronic irradiation which in dose level and intensity simulated the radiation conditions of a prolonged space flight (Yu. G. Grigor'yev and B. A. Markelov, and others).

1/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--PROFLAVIN EFFECT ON THE CHEMOTHERAPEUTIC ACTIVITY OF ISONIAZID AND STREPTOMYCIN IN EXPERIMENTAL TUBERCULOSIS IN WHITE MICE -U-

AUTHOR-(02)-ZUYEVA, V.S., SOLOVYEV, V.N.

COUNTRY OF INFO--USSR

SOURCE--PROBL TUBERK 48(1): 62-66, ILLUS. 1970

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUBERCULOSIS, MOUSE, CHEMOTHERAPY, ISONIAZIDE, SYNERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0439 STEP NO--UR/0000/70/048/001/0062/0066

CIRC ACCESSION NO--AP0134207

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134207

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF PROFLAVIN ON THE DRUGS CHEMOTHERAPEUTIC ACTION WAS STUDIED IN MICE INOCULATED WITH MYCOBACTERIUM TUBERCULOSIS, AND ALSO THE DEVELOPMENT OF RESISTANCE TO ISONIAZID IN VIVO. PROFLAVIN ENHANCED THE EFFECTIVENESS OF THE ISONIAZID TREATMENT OF ANIMALS INFECTED WITH M. TUBERCULOSIS TYP HUM H SUB37 RV. 6. IN THESE CONDITIONS THE MICROBIAL POPULATION ISOLATED IN THE LUNGS SHOWED A CHANGE OF THE ISONIAZID SENSITIVITY DISTRIBUTION WITH DISAPPEARACNE OF RELATIVELY RESISTANT FORMS. INTRODUCTION OF PROFLAVIN TO ANIMALS INFECTED WITH M. TUBERCULOSIS AVIUM INCREASED THE BACTERICIDAL ACTION OF STREPTOMYCIN. FACILITY: DEP. CHEMOTHER., INST. PHARMACOL. CHEMOTHER., ACAD. MED. SCI. USSR, MOSCOW, USSR.

UNCLASSIFIED

USSR UDC 576.851.252.097.22.095.57

ZUYEVA, V. S., PAVLOV, Ye. P., and LINEVICH, Yu. G., Department of General Epidemiology, Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

"A Modified Method of Eliminating Extrachromosomal Resistance Factors From Staphylococci"

Moscow, Antibiotiki, No 11, 1971, pp 990-995

Abstract: Two cultivated strains of Staphylococcus aureus -- the 8321-1 strain with an intrachromosomal resistance to streptomycin and the 8321-P11 strain with an extrachromosomal resistance to erythromycin -- and a number of wild strains were soaked in Hottinger's broth and incubated either once with 12.5 micrograms of proflavine per ml of the culture medium or 20 times with 6 micrograms of proflavine per ml. After any single treatment, on 6% of the cells with extrachromosomal resistance became sensitive to the antibiotic; they lost their resistance completely after the sixth treatment. This change was due to a transfer of the resistance factor from the cell to the culture medium. Strains with intrachromosomal resistance factors retained their resistance after all treatments. The modified method, which is simpler and faster than the original one, is recommended for epidemiological investigations. 1/1

USSR

UDC 576.851.252.097.22.095.57

ZUYEVA, V. S., and LINEVICH, Yu. G., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

"The Mechanism of Disturbed Transmission of Extrachromosomal Determinants of Staphylococcus Resistance"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 11, 1971, pp 18-23

Abstract: The frequency of transmission of extrachromosomal determinants of resistance to erythromycin was studied on combined cultures containing Staphylococcus aureus 8325 as donors, phages P11de, and Staphylococcus aureus 8325-1 as recipients. The transmission frequency was reduced after addition of aminoadamantane and proflavine, and it is believed that the inhibition takes place in the phages. Neomycin also reduced the frequency of transmission. However, since the reduction factor was 10 after 24-hr pretreatment of the donor cells with neomycin, while it was 200 after a similar pretreatment of the recipient cells, it is assumed that neomycin exerts its effect by changing the properties of the cell membrane of the recipient Staphylococci.

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USSR

UDC 595.422 Euryparasitus sp. n.

ZUYEVSKIY, A. P., Department of Especially Dangerous Infections, Tyumenskaya Oblast Sanitary Epidemiological Station

"A New Species of the Genus Euryparasitus (Parasitiformes, Rhodacaridae) from Western Siberia"

Moscow, Zoologicheskiy Zhurnal, Vol 50, No 9, 1971, pp 1,406-1,407

Abstract: A new type of mite living on rodents in Tyumenskaya Oblast, Western Siberia, was discovered. Sixteen deutonymphs were found on northern redbacked voles (Clethrionymus rutilus) and common shrews (Sorex araneus) in Lower Vartovskiy Rayon in 1965; one deutonymph on the red backed vole in Surgutskiy Rayon in 1965; and one deutonymph on the field mouse (Apodemus agrarius) in Ishimskiy Rayon in 1961. This new type received the name Euryparasitus Medius Zuyevsky sp. n., and it is the third species belonging to the genus Euryparasitus: E. emarginatus was identified by Koch in 1839, and E. tori Dav. by Davydova in 1970. The E. medius deutonymph is described in detail, including body size, form of inguinal scales, structure of cheliceral digits, and arrangement of chaeta on hypostomes and legs. A summary of the main properties of each of the three species is also given.

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USSR

UDC: 532.529.5/.6

ZUYKOV, Yu. P., KUZNETSOV, B. G.

"Calculation of Some Unsteady Cavitation Flows"

V sb. Chisl. metody mekh. splosh. sredy. T. 2. No 3 (Numerical Methods in the Mechanics of a Continuous Medium--collection of works, Vol 2, No 3), Novosibirsk, 1971, pp 38-46 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B655)

Translation: The authors consider unsteady potential cavitation flow of an ideal incompressible heavy fluid around a flat body located on the horizontal bottom of a rectangular channel. The rate of the oncoming flow at the channel inlet is a given function of time. The boundary of the body may change with time and is given by some function $y = F(t,x)$. The boundary of the cavity formed behind the body and the value of the velocity potential on this boundary at time zero are assumed to be known. The purpose of the research is to follow the development of the cavity boundary with time. This problem is formulated as a problem of determining the velocity potential $\phi(x,y,t)$ which satisfies the Laplace equation along with the conventional initial and boundary conditions in the region occupied by the fluid.

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USSR

ZUYKOV, Yu. P., KUZNETSOV, B. G., Chisl. metody mekh. splosh. sredy. T. 2. No 3, Novosibirsk, 1971, pp 38-46

The boundary of the cavity should be found during the solution. Construction of an algorithm for numerical solution of the formulated problem is an extremely laborious procedure due to the fact that it is necessary to plot an approximating net for the variable region $\Omega(t)$ in the given problem. The use of Lagrange variables makes the flow region fixed, but demands considerable expenditures of machine time.

The proposed work utilizes a combined method using both Eulerian and Lagrangian coordinates to describe motion: one family of coordinate lines which coincides with the free boundary is Lagrangian, and the other is Eulerian. In this connection, the problem formulated in x, y variables for the function $\phi(t,x,y)$ in the region with unknown boundary section is formulated in the new variables ξ, η ($\xi = x$) as a problem for the two functions $y(t,\xi,\eta)$ and $\phi(t,\xi,\eta)$ in the rectangle $0 \leqslant \xi \leqslant L$, $0 \leqslant \eta \leqslant H$. The problem is solved on a rectangular grid with constant spacing along the ξ- and η-axes. The paper describes an algorithm for constructing a numerical solution. Examples are given of calculations of cavitation flow around bodies of various shapes. A. N. Dobrovol'skaya.

2/2

Organophosphorous Compounds

USSR

UDC 678.664-985.002.612

VALETDINOV, R. K., ZUYKOVA, A. N., KHASANOV, M. KH., and SHARIFULLIN, A. SH., Kazan' Branch of the All Union Scientific Research Institute of Synthetic Rubber Imeni S. V. Lebedev

"Properties of the Phosphorus Containing Urethane Elastomers Based on Simple Polyesters"

Moscow, Kauchuk i Rezina, No 11, 1972, pp 15-17

Abstract: A method has been proposed for the modification of industrial rubber SKU-PF based on polyfurite by a partial or complete replacement of the trimethylolpropane and monoallyl ether of the glycerine with tri-(hydroxymethyl)-phosphine or its oxide. Thus modified rubbers show higher thermal stability and lesser flammability in comparison to the SKU-PF rubber. When the tri-(hydroxymethyl)-phosphine is used, the physical-mechanical properties of the vulcanized rubber remain practically unchanged.

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USSR

UDC 669.295'3:539.34

ZUYKOVA, N. A., KORNILOV, I. I., and MARTOVA, T. T., Institute of Metallurgy imeni A. A. Baykov

"Heat Resistance of Ti-Cu Alloys"

Moscow, Metallovedeniye, No 5, May 70, pp 53-54

Abstract: A study was made of heat resistance of Ti-Cu alloys in the forged, cast, and annealed states is a function of composition and of the mechanical properties of the forged metal as a function of composition at room temperature and at 400°C.

Experimental ingots weighing 500 g were produced using TG-110 sponge titanium and electrolytic copper. Each batch was remelted four times in a vacuum-arc furnace using a nonconsumable electrode in an argon atmosphere. The purified ingots were cut into three sections and forged at 950°C into 7- and 12-mm rods.

Heat resistance was studied by heating the samples at 400°C under a 20-kg/mm^2 load and noting the time it took to reach a specific degree of bending. The heat resistance-composition curve passes through a threshold maximum at 1.6-2.0% Cu, which corresponds to alloys whose composition is near the boundary of maximum solubility of copper in alpha-Ti at the eutectoid temperature with a small excess of the Ti_3Cu phase. Cast alloys subjected to the same processing did not achieve equilibrium. Ti-Cu alloys with 2.25 at % Cu have minimum heat resistance, which

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203820015-8"

USSR

ZUYKOVA, N. A., et al., Metallovedeniye, No 5, May 70, pp 53-54

is explained by the dissolving-precipitating mechanism of recrystallization. At 2.5 at % Cu, heat resistance gradually increases as Cu content is increased to 5.5 at % Cu, as the result of the influence of the formed Ti_2Cu phase. Maximum heat resistance was observed in those alloys containing 0.8-1.4 at % Cu. In this composition range, at 400°C, tensile strength ranges from 38-45 kg/mm^2, while elongation ranges from 13.5 to 15.0%.

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ZUYKOVA, YE.

Science

JPRS 55619

4 April 1972

ARCHITECTURE AND SOCIOLOGY OF LIFE

[Article by Ya. Zuchok, candidate of historical sciences, and Ye. Zuykova, candidate of philosophical sciences; "The Architecture and Sociology of Life", Moscow, Stroitel'stvo i Arkhitektura Moskvy, Russian, No 4, April 1967, pp 22-23]

A discussion concerning the apartment house complex in relation to existing forms of public services.

The task decreed by the Communist Party of designing comfortable, well-built dwellings that can be economically built and maintained has significantly stimulated the creativity of architects. There is presently a search for types of dwellings that can restructure the lives of Soviet citizens. The architects are governed in their searches by V. I. Lenin's famous order concerning the need to transform individual homemaking into a large-scale social activity that takes advantage of socialist production's high level of development.

The architecture and construction of housing complexes presupposes the comprehensive resolution of social, economic, cultural, educational, architectural, technical, and other problems. Such a resolution must be based on the consideration of all existing possibilities resulting from the contemporary level of our development and future realities. The determining factor in this series of events is the social expression of those factors required by a society engaged in building communism. Its social significance depends on the degree to which a completed project allows the formation of communistic relations among people and a harmonious combination of social and individual interests in private life.

The shop collectives of the Moscow Institute of Standard and Experimental Planning (MITEP), headed by candidate in Architecture N. Osterman, has developed a project entitled "The Apartment House Complex in Relation

[II - USSR]

USSR

UDC 632.954:633.17

ZUZA, V. S., Ukrainian Scientific Research Institute of Plant Growing, Selection and Genetics imeni V. YA. YUR'YEV

"Experiment With sym-Triazine Derivatives on Millet Plantings"

Moscow, Khimiya v sel'skom khozyaystve, No 11, 1971, pp 45-46

Abstract: A study of the effect of some sym.-triazine derivatives on the weeds and the crop is described. The soil of the experimental lot was weakly leached deep chernozem with a humus content of 6.2 percent. The predecessors to millet in the area were corn for silage (1967) and summer barley (1968-1969). The millet was sown in wide rows to facilitate weed elimination. The herbicides were applied during presowing cultivation. The estimates have shown Antrazin and Propazin to be most effective when applied in doses of 2-3 kg.ha and 2 kg/ha, respectively. Simazin applied at 1 and 2 kg/ha appears to be fairly effective only with a predominance of young dicotyledonous weed plants. The sodium salt of 2,4-D was effective on dicotyledonous weed only.

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SECTION III

Name: Institute of Biophysics, Pushchino

Description:

(U) During this quarterly reporting period, 13 new articles were located from the Institute of Biophysics at Pushchino. On the basis of these articles, it was possible to associate 19 new persons with the Institute. These persons are listed below together with the subjects and dates of the articles:

Nasurmanov, O. K.	Air biophysics	1970 (17)
Beregovskiy, G. N.	endocrine system phospholipids	1970 (18)
Gasiyev, A. I.	DNA	1970 (19)
Ivannikova, A. G.	plant physiology	1969 (20)
Kiselev, Ye. Ye.	muscle physiology	1970 (21)
Kravchenko, N. A.	EPR spectra	1970 (22)
Narimanov, A. A.	radiation effects	1970 (23)
Panov, A. A.	endocrine system	1970 (?)
Pasgyan, V. G.	EPR spectra	1970 (22)
Porotikov, V. I.	muscle physiology	1970 (21)
Postnikova, G. B.	chromatography	1970 (24)
Razhin, V. D.	phospholipids	1970 (18)
Revin, A. F.	radiation effects	1970 (23)
Sukhoruchkina, L. V.	chromatography	1970 (24)
Trincher, K. S.	plant physiology	1969 (20)
Vasilov, Yu. V.	radiation effects	1970 (23)
Zaikin, A. N.	hydrogen peroxide	1970 (25)
Zakharevskaya, D. T.	DNA	1970 (19)
Zuzin, A. M.	DNA	1970 (19)

ZUZIN, A.M.

1/3 030 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--FORMATION OF THE STRUCTURE OF LEAD CHALCOGENIDE EPITAXIAL FILMS IN MICA -U-

AUTHOR-(05)-KOSEVICH, V.M., PALATNIK, L.S., ZOZULYA, L.P., ZUZULYA, L.V., SORCKIN, V.K.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1363-73

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--MICA, EPITAXIAL GROWTH, CRYSTALLIZATION, CRYSTAL ORIENTATION, ELECTRON MICROSCOPY, LEAD COMPOUND, TELLURIDE, SELENIDE, NUCLEATION, POLYCRYSTALLINE FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0856 STEP NO--UR/0181/70/012/005/1363/1373

CIRC ACCESSION NO--AP0131445

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--20NOV70

2/3 030

CIRC ACCESSION NO--AP0131445

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY THE TRANSMISSION ELECTRON MICROSCOPY METHOD ORIENTATION, TYPE OF GROWTH, AND AGGREGATION OF ISOLATED PARTICLES AS WELL AS THE DEFFECT STRUCTURE WERE STUDIED OF CONTINUOUS EPITAXIAL FILMS OF PBTE AND PBSE ON MICA. WHEN THE SUBSTRATE IS AT 150-400DEGREES THE PBSE FILMS NUCLEATE ON MICA CRYSTALS IN 2 ORIENTATIONS: (111) (110) AND (001) (110) (001) (010) OF MICA. IN PBTE FILMS ORIENTATION (001) (110) APPEARS ONLY AT THE TEMP. OF T SUBP GREATER THAN 280DEGREES. PARTICLES WITH ORIENTATION (111) ACQUIRE GOOD FACES STARTING WITH THE EARLIEST STAGES OF CONDENSATION AND INCREASE PRIMARILY UPWARD. PARTICLES WITH THE ORIENTATION (001) ARE PLANE, THIN, AND POSSESS AT THE INITIAL STAGES OF CONDENSATION ROUGH CONTOURS AND A LARGE NO. OF INTERNAL VOIDS. JOINING OF THESE PARTICLES WITH THE PLANES (001) WITH THE PLANE OF CLEAVAGE OF MICA (001) TAKES PLACE BY MEANS OF DISCONFORMITY DISLOCATIONS. IN PBSE AND PBTE ON MICA VARIOUS CASES ARE POSSIBLE OF AGGREGATION OF ISOLATED PARTICLES DEPENDING ON THEIR SHAPE AND LOCATION RELATIVE TO THE DIRECTION (010) OF MICA. AGGREGATION TAKES PLACE WITH THE FORMATION OF PORES ON THE CONTACT BOUNDARY. PORES ARE LOCATED AT THOSE POINTS OF THE DISTORTED LATTICE AT WHICH, ON FURTHER CONDENSATION, DISLOCATIONS APPEAR. THE SLOWING DOWN OF AGGREGATION WAS OBSERVED BY THE BOUNDARIES FORMED WHEN DISORIENTED EPITAXIAL PARTICLES JOIN. THE MAIN FORM OF THE DEFECTS IN THE STRUCTURE OF CONTINOUS FILMS OF PBSE AND PBTE ON MICA ARE 2 DIMENSIONAL DEFECTS OF THE TYPE OF TWINNING BOUNDARIES (112) NORMAL TO THE PLANE OF THE FILM.

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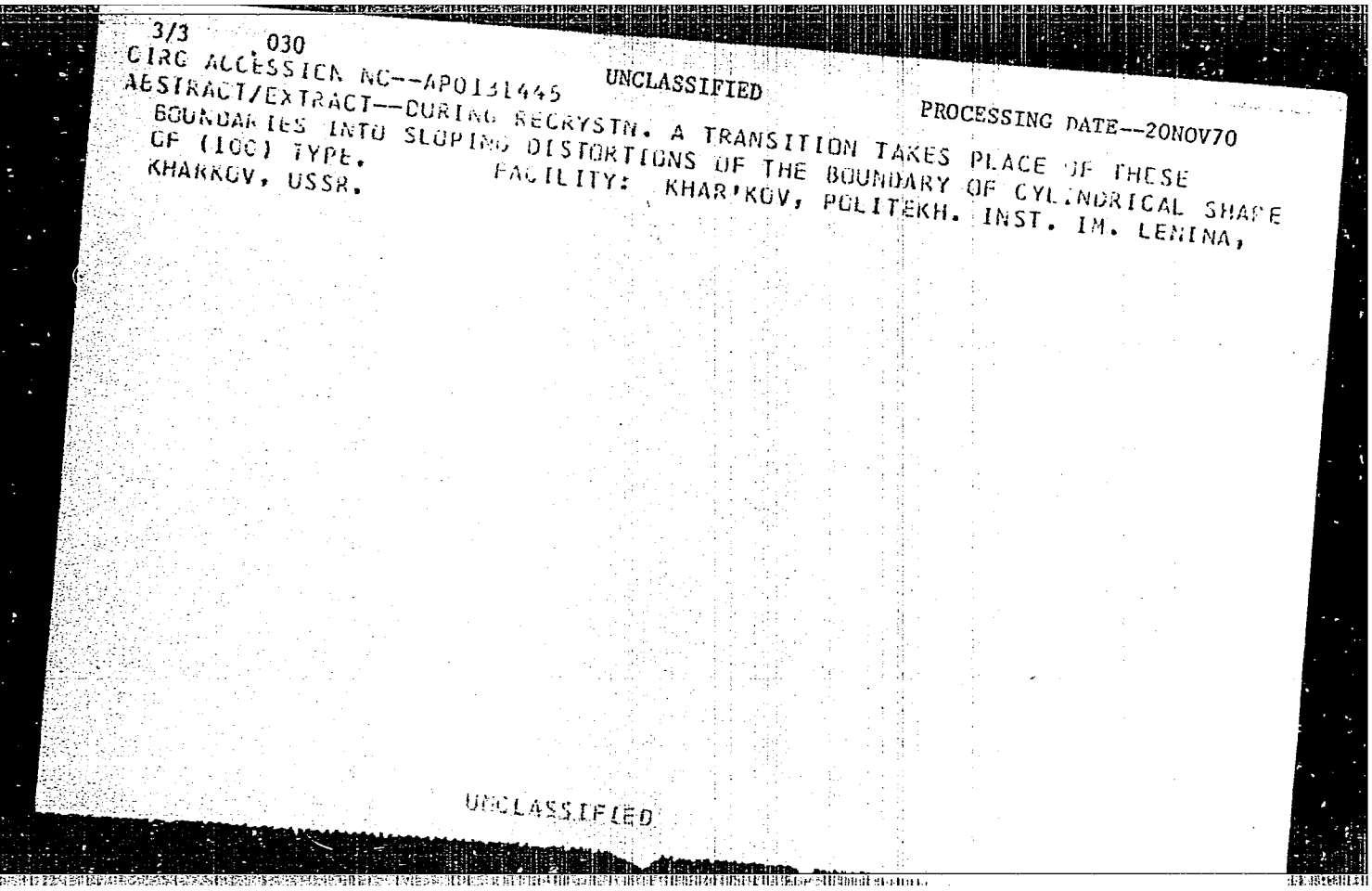

3/3 030 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0131445

ABSTRACT/EXTRACT--DURING RECRYSTN. A TRANSITION TAKES PLACE OF THESE BOUNDARIES INTO SLOPING DISTORTIONS OF THE BOUNDARY OF CYLINDRICAL SHAPE OF (100) TYPE.

KHARKOV, USSR. FACILITY: KHAR'KOV, POLITEKH. INST. IM. LENINA,

UNCLASSIFIED

USSR

UDC 612.8.006.3+154.2.006.3

ZVARTAU, E. E.

"All-Union Symposium on 'Structural, Functional, and Neurochemical Organization of Emotions'"

Leningrad, Fiziologicheskiy Zhurnal SSSR, No 10, 1971, pp 1,566-1,568

Translation: The central mechanisms regulating emotional behavior became a matter of urgent concern in recent years. This made it necessary for scientific groups working in the field to exchange views. Accordingly, the Scientific Council on Neurophysiology and Higher Nervous Activity of the Academy of Sciences USSR and First Leningrad Medical Institute imeni I. P. Pavlov (Pharmacology Department) sponsored an All-Union Symposium on "Structural, Functional, and Neurochemical Organization of Emotions" in the city of Zelenogorsk near Leningrad from 19 to 24 April. Fifty-three persons representing groups in Moscow, Leningrad, Tbilisi, Kiev, Kharkov, Gorky, Tartu, and other cities participated in the symposium.

Thirty papers were read on different aspects of the experimental study of emotions. There were nine sessions, each dealing with a specific aspect of the problem. The papers were discussed in accordance with previously formulated questions.

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ZVARTAU, E. E., Fiziologicheskiy Zhurnal SSSR, No 10, 1971, pp 1,566-1,568

In his introductory remarks, A. V. Val'dman, chairman of the organizing committee, described the current status of the problem and outlined the main directions of research on emotional behavior.

P. K. Anokhin discussed the biological role of emotions and the place occupied by emotional reactions in behavioral manifestations. He regards emotions as a component of the functional system of a behavioral act.

A. V. Val'dman emphasized the differentiation of "emotional states" from "emotional reactions." He spoke about the substrate of emotions, the concept of fragmentary organization of emotional behavior, the interrelationship of emotions and motivations, the "trigger" mechanisms and autonomic correlates of emotions.

The role of the paleo- and neocortical structures in regulating emotional behavior was discussed at the first meeting of the symposium. N. Yu. Belenkov (Gorky) presented data on the role of the neocortex in regulating emotional behavior that he obtained by the method of reversible functional exclusion of the neocortex. M. M. Khananashvili and I. A. Lapina

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ZVARTAU, E. E., Fiziologicheskiy Zhurnal SSSR, No 10, 1971, pp 1,566-1,568

(Leningrad) examined the structural basis of emotional behavior in dogs in their food and sexual activity. N. N. Dzidzishvili (Tbilisi) commented on conditioned reflexes formed after stimulation of the rabbit limbic structures and structural and functional aspects of the formation of conditioned connections upon activation of the "emotional" structures.

The role of the structures of the limbic system (hippocampus and amygdalod body) was the subject of a special session. T. A. Mering's (Moscow) paper with facts on changes in the emotional and motivational aspects of behavior after destruction of the hippocampus provoked a lively discussion. The results of M. L. Pigareva's (Moscow) experiments on conditioned switching after injury to the hippocampus and amygdala were examined from the standpoint of the information theory of emotions. The hippocampus is included by the author in the system for evaluating pragmatic indefiniteness which permits the individual to react adequately in situations differing in probability of reinforcement.

V. A. Cherkes (Kiev) presented data on the role of the basal ganglia in executing the conditioned and emotional-motivational components of behavior

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and globus pallidus function, injury to which causes various kinds of disruptions of reactions to sensory stimuli. However, the specificity of these disruptions and their relation to change in the structure of emotional-motivation reactions is problematical. The nature of hypothalamic-telencephalic interrelationships in their evolutionary aspect was examined by A. I. Karamyan and T. N. Sollertinskaya (Leningrad). Ye. N. Sokolov and N. N. Danilova (Moscow) discussed the correlation of brain function with neuronal activity. Yu. S. Borodkin (Leningrad) set forth the results of experiments on analysis of intracentral relations between several structures of the mid-, between-, and forebrains using the electroencephalographic method.

L. P. Laptash, V. M. Koval'zon, and E. A. Kuman (Moscow) discussed the effect of stimulating zones of positive reinforcement on various functional parameters of brain activity (EEG, brain temperature, evoked activity of cortical neurons). The authors revealed the qualitatively different nature of the ascending influences after stimulation of the hypothalamic zones of positive reinforcement and of the reticular activating system. Yu. A. Makarenko (Moscow) described the differences between the effects produced by stimulation of the "positive" and "negative" zones from such indexes as evoked

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ZVARTAU, E. E., Fiziologicheskiy Zhurnal SSSR, No 10, 1971, pp 1,566-1,568

potentials and neurochemical changes in the blood. He also touched on the complex and interesting question of the relationship between the system of positive reinforcement and the principal biological motivations.

A great deal of interest was aroused by V. M. Smirnov (Leningrad), who described the emotional reactions of human beings to stereotaxis actions on the subcortical structures. The detection of motivational and nonmotivational forms of behavior under these conditions is especially significant when comparing these findings with the results of animal experiments. M. M. Kozlovskaya (Leningrad) attempted to differentiate between emotional states and emotional reactions and proposed a set of tests to evaluate the emotional state. The dissociation of motivational and expressive components was discussed by E. E. Avartau and N. A. Patkina (Leningrad). The speakers showed that electrical stimulation of the hypothalamus may induce ambivalent motivational shifts and that stimulation of the same spot may serve as the basis for the formation of approaching and avoidance habits.

The session on "Neurochemical Bases of Emotions" discussed pharmacological influences on emotional responses both to systemic and local intracerebral

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microinjections of drugs. L. Kh. Allikmets (Tartu) and Yu. V. Burov (Moscow) cited data on the cholinergic nature of the mechanisms that trigger defensive reactions based on a comparison of the effects of systemic and local injections of mediators and agents that modulate the mediator processes. S. S. Krylov, L. G. Moshkalova, and A. M. Sprints (Leningrad) take different view of the chemical nature of aggressive-defensive reactions. In their experiments, adrenergic preparations exerted the greatest influence on the emotional reactions of fear and anxiety. The comparative effect of tranquilizers of the benzodiazepine series on different models of emotional reactions (conflict situations, external inhibition, formation of habits) was the subject of the paper of Yu. I. Vikhlyayev and T. A. Klygul' (Moscow). I. P. Lapin (Leningrad) discussed the neurochemical aspects of a model of aggressiveness evoked in groups of mice by phenamine (amphetamine sulfate).

Some reports dealt with the bioelectrical and autonomic correlates of emotions. According to the data of T. N. Ониани, M. G. Koridze, and Ye. V. Abzianidze (Tbilisi), the main electrographic correlate of emotional behavior that reflects the degree of motivation is the hippocampal theta rhythm. L. A.

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Preobrazhenskaya (Moscow) also recorded the theta rhythm in the hippocampus during emotional stress, but she does not think this manifestation can be differentiated from the hippocampal bioelectrical changes associated with the orienting reaction and execution of nonautomatic movements. The paper of I. I. Vaynshteyn (Moscow) reported peculiarities of autonomic and EEG responses to stimulation of the hypothalamus. The results of his study showed that there is no reciprocity between the sympathetic and parasympathetic, synchronizing and desynchronizing effects that accompany emotional stress. F. P. (Vedyayev (Kharkov) cited the results of experiments with autonomic (cardiac and respiratory) responses to stimulation of the amygdaloid body, their relation to motor manifestations, and the neurochemical characteristics of the limbic structures. Ts. A. Ordzhonikidze and L. D. Pkhakadze (Tbilisi) compared the autonomic responses to conditioned and unconditioned stimuli in intact cats and in animals with ablated neocortex. They showed that ablation of the neocortex has no effect under these conditions on the heart rate, whereas the motor reaction is significantly affected.

A special session was devoted to the mechanisms of food motivation and their relation to the mechanisms of emotions.

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ZVARTAU, E. E., Fiziologicheskiy Zhurnal SSSR, No 10, 1971, pp 1,566-1,568

K. V. Sudakov (Moscow) advanced the view that there is a packmaker mechanism of food motivation in the lateral hypothalamic region. The structural division between the emotional state during fasting and the motivational component of food behavior was discussed by K. V. Shuleykina (Moscow). A. M. Marits, G. N. Toraru, N. A. Andronatiy, and D. P. Postolake (Kishinev) analyzed the neural mechanisms of emotions relating to hunger and satiety and compared the functional role of the hypothalamus and other structures. The interaction of motivational and sensory excitation in the same neurons of the visual projection region of the cortex was discussed by S. N. Khayutin (Moscow). Important and interesting points were brought up in the discussion of the papers by Prof. P. B. Simonov, T. Ya. Khvilitskiy, I. M. Anter, and others.

The proceedings revealed that there are substantial terminological and methodological difficulties in experimental study of the problem.

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AP 0100304 Abstracting Service: CHEMICAL ABST. 6-70 Ref. Code UR0181

2

116119m Temperature-indepeudent paramagnetism in nickelocene. Zvarykina, A. V.; Karimov, Yu. S.; Leonova, E. V.; Lyubovskii, R. B. (Inst. Khim. Fiz., Moscow, USSR). *Fiz. Tverd. Tela* 1970, 12(2), 499–502 (Russ). The magnetic susceptibilities of nickelocene and 2 of its derivs. are independent of temp. at 0.1–10°K and at higher temps. obeys the Curie law. At low temps., anisotropy of susceptibility was obsd. Magnetic properties of nickelocene are explained by intramol. interaction of 2 unpaired electrons, the spin Hamiltonian of which is $DS_z^2 + g\beta(H_xS_x + H_yS_y + H_zS_z)$. The effective spin, $S = 1$ and $D/k = 43$°K.
A. Libackyj

C. K.

REEL/FRAME 19841707

7

1/2 025 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--THE ROLE OF THE ROENTGENOLOGICAL TECHNIQUE IN THE PLANNING OF RADIATION TREATMENT OF TUMORS OF PALATINE TONSILS -U-

AUTHOR-(02)-ZVEKOTKINA, L.S., MURAVSKAYA, G.V.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 6, PP 19-22

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUMOR, IRRADIATION, X RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1517

STEP NO--UR/0241/70/015/006/0019/0022

CIRC ACCESSION NO--AP0128912

UNCLASSIFIED

USSR UDC 621.762.8

ZVEREV, A. I., and MIROSHNICHENKO, I. Yu., Institute of Problems of Material Science, Academy of Sciences UkrSSR

"Utilization of Detonation Phenomenon for Applying Coatings"

Kiev, Poroshkovaya Metallurgiya, No 11 (119), Nov 72, pp 36-47

Abstract: The state of the art of the detonation method for applying coatings is reviewed. The nature of the detonation phenomenon is discussed on the basis of diagrams showing the structure of a detonation wave and its excitation in a cylindrical tube and the formation of the coating, the structure of spin detonation, and the change-over from slow burning to detonation in a $2H_2+O_2$ mix. In the change-over the flame propagating rate in long tubes of small diameter increases gradually and at a certain distance from the ignition point the detonation wave develops. This distance decreases with increasing initial pressure and it increases with increasing tube diameter and augmentation of the initial temperature of the mix. The transition phenomenon from slow burning to detonation and the detonation effect by itself in mixes capable of chemical conversions are used for applying coatings to high-melting and other materials. Detonation coatings are widely used for protecting machine parts, tools, and equipment. Characteristics of mixtures

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ZVEREV, A. I., and MIROSHNICHENKO, I. Yu., Poroshkovaya Metallurgiya, No 11 (119), Nov 72, pp 36-47

and of materials used in the detonation method for applying coatings are presented, and properties of coatings and ranges of their application are indicated. Seven figures, eight tables, one formula, thirty-four bibliographic references.

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USSR UDC 621.396.67.001.5

GOLOVANOV, N. V., KUDRYAVITSKIY, L. S., ZVERPV, A. M.

"Device for Automatic Recording of the Directivity Characteristics of Antennas"

Obmen opytom v radiopromyshlennosti--V sb.(Exchange of Experience in the Radio Industry -- collection of works), vyp. 12, Moscow, 1970, pp 41-42 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B97)

Translation: The operating principle and design of the basic elements of a device for automatic recording of the directional diagram and polarization characteristics of antennas are investigated.

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USSR

ZVEREV, B. V., et al, Uskoriteli, Atomizdat, 1969, Vol 11, pp 165-172

A relationship is presented for the proper quality value waveguides as a function of iris thickness. This can be used for calculating the attenuation factor. The error associated with computing the factor of attenuation of waveguides with a processing purity of the eighth class does not exceed 13 percent. Methodology is given for considering the effect of the magnitude of the microinequalities on the attenuation factor. A formula is derived for calculating the longitudinal shunt resistance and coupling impedance of an iris waveguid. Original article: 4 illustrations, 3 tables, and 6 bibliographic entries.

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USSR UDC 621.372.851

ZVEREV, B. V., NECHAYEV, N. N.

"The Effect of Iris Thickness on the High Quality Characteristics of a Circular Iris Type Waveguide (E_{01} Wave)"

Moscow, V sb. Uskoriteli (Accelerators -- collection of works), Atomizdat, 1969, Vol 11, pp 165-172 (from RZh-Radiotekhnika, No 4, 1970, Abstract No 4B164)

Translation: Results are studied from an experimental determination of the characteristics of iris type waveguides within the range of variation of the ratio iris thickness, t, to wavelength within 0.01-0.1 limits. Iris thickness should be selected with concern for several competing factors. Thermal conductivity of the design and its mechanical rigidity are improved as t is increased. However under these conditions, power losses increase and shunt resistance decreases. The real value of t also depends on the technological characteristics of production. Correction graphs are given for the value of the iris aperture radius to wavelength ratio as a function of iris thickness. Correction graphs are also given for the value of the relative group speed.

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USSR

UDC 621.372.82

VALDNER, O. A., ZVEREV, B. V., PAVLOVSKIY, V. A., SOBENIN, N. P.

"Calculating the Wave Guide Accelerating Section with Constant Gradient"

Tr. Vses. soveshchaniya po uskoritelyam zaryazhen. chastits, 1968, T 2 (Works of the All-Union Conference on Charged Particle Accelerators, 1968, Vol 2), Moscow, VINITI Press, 1970, pp 173-178 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8B133)

Translation: This article contains a discussion of two methods of approximate calculation of an accelerating section with the help of experimental graphs. The first of them is based on the assumption that the group velocity decreases linearly along the length of the wave guide; in this case the experimental relation $E_0\lambda/\sqrt{P} = A/(\beta_{gr})^{\chi}$ where E_0 is the intensity of the accelerating field, P is the superhigh-frequency power in the wave guide; β_{gr} is the group velocity; A and χ are defined by the geometry of the wave guide and selection of the type of oscillations. The second method begins with the relation $E_0\lambda/\sqrt{P} = k_1/(a/\lambda)^2$ where a is the radius of the hole in the diaphragm and k_1 depends on the type of oscillations. This method is used for increased values of the length of the sections and accelerated current when the linearity of variation of the group velocity is violated. There are five illustrations and a three-entry bibliography.

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USSR UDC 621.372.851

VALDNER, O. A., SOBENIN, N. P., ZVEREV, B. V., SHEDRIN, I. S.

"Experimental Graph for Calculating Iris Wave Guides"

Tr. Vses. soveshchaniya po uskoritelyam zaryazhen. chastits, 1968, T 2 (Works of the All-Union Conference on Charged Particle Accelerators, 1968, Vol 2), Moscow, VINITI Press, 1970, 179-183 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8B136)

Translation: In connection with difficulties of exact calculation of the characteristics of circular iris wave guides — phase and group velocities, damping coefficients, and so on -- work has been done to construct experimental graphs for calculating them as applied to real operating conditions in linear electron accelerators and in other analogous devices. Experimental data have been obtained for the 10-cm wave range, but representation of them in dimensionless form permits their use in any range. A procedure for using the graphs is demonstrated, and possible errors are estimated. There are five illustrations and a one-entry bibliography.

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USSR UDC 621.311.6

ZVEREV, P. P., SIPAYLOV, G. A., TSUKUBLIN, A. B.

"Autonomous Source of Pulse Power with Inductive--Capacitance Converter"

V sb. Vses. soveshchaniye po probl. "Silovyye impul'sn.sistemy," 1969 (All-Union Conference on Problems of "Pulse Power Systems," 1969), Part 1, Novosibirsk, 1969, pp 201-202 (from RZh--Elektronika i yeye primeneniye, No 4, Apr 70, Abstract No 4B545)

Translation: The calculations for a source with an inductive-capacitance converter can be made by the reduction of all the system to an a-c circuit with the use of a series of coefficients, making it possible to convert the rectifying load to an equivalent. The linear currents and voltages of the generator in the charge time are distorted. The most distorted is the linear current, the fifth harmonic of which amounts to 20-30 percent of the first. This fact must be taken into consideration during design of the equipment. Summary.

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USSR UDC 621.317.373.538.632

KOTOSONOV, N. V., KHLYAVICH, YA. L., ZVEREV, G. F., RADZEVUDZE, V. G., GLAUBERMAN, A. S.

"Phase-Sensitive Detector with a Superhigh-Frequency Hall Data Unit"

Kiev, Izvestiya vysshikh uchebnykh zavedeniy--Radioelektronika, Vol XIV, No 8, 1971, pp 946-947

Abstract: A study is made of the operation of phase sensitive detectors based on superhigh-frequency Hall data transmitters. Measurements were taken at a frequency of 600 megaHertz and the basic part of the measurement unit was a coaxial magnetic field resonator-concentrator. The dependence of the constant component of the Hall voltage on the phase shift angle and also the estimation of the linearity of the characteristic with respect to both components were studied. When measuring the linearity of the characteristic and its dynamic range, fixed attenuators were included in the measured or reference channel, and the results of these measurements are presented in graphical form. The linearity of the Hall data unit characteristic as a function of the magnetic field intensity and current in the dynamic range of no less than 30 decibels was experimentally confirmed. The experimental range was limited by the sensitivity of the indicator and the power of the generator considering attenuation in the decoupling elements and it is not limiting.

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USSR UDC: 621.317.77:538.632

KOTOSONOV, N. V., KHLYAVICH, Ya. L., ZVEREV, G. F., RADZEVUDZE, V. G., GLAUBERMAN, A. S.

"On the Possibility of Constructing a Phase Meter With Direct Readout Based on a Hall Pickup for the SHF Range"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 95-96 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A328)

Translation: It is pointed out that when a Hall pickup is subjected to a harmonically varying current and a magnetic field, a constant EMF is developed across the Hall leads which is proportional to the cosine of the angle of phase displacement between the vectors of current and magnetic field strength. This emf may serve as a measure of the phase displacement, and is convenient for purposes of indication. The feasibility of building a phase meter based on this principle is checked out on a frequency of 600 MHz. A schematic diagram of the installation is presented. The difference between theoretical and experimental data is no more than 5 percent. Ambiguity in the phase angle reading may be eliminated by including a small

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USSR

KOTOSONOV, N. V. et al., Dokl. Vses. nauchno-tekhn. konferentsii po radio-tekhn. izmereniyam. T. 2, Novosibirsk, 1970, pp 95-96

elongating insert in the measurement channel. Possible systematic errors (thermo-emf etc.) can be completely compensated. E. L.

2/2

USSR

UDC 621.391.2

SAVCHENKO, I. S., KHORUNZHIY, V. A., TSIS'MENETSKIY, V. A., ZVEREV, G. I.

"Single Radio Pulse Frequency Spectral Analyzer"

Moscow, Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 103-105

Abstract: A 48-channel analyzer is described which permits the frequency spectrum of single radio pulses to be obtained. The operating range of the analyzer is 0.5-30 megahertz, its frequency resolution is 40 kilohertz in the two megahertz band, and its time resolution is 48 microseconds.

The schematic diagram, the theoretical basis and operating characteristics of the analyzer are presented.

In the analyzer, from the sinchro pulse received from an experimental device, signals are generated for triple triggering of the drive sweep of the indicator, and a step voltage (3 steps) is shaped to create vertically displaced scans on the display screen. The time intervals between readings can be regulated from 50 microseconds to 2 milliseconds. As a result of triple interrogation of the frequency selection channels during the pulse, it is possible to investigate the dynamics of the process. The cathode ray tube of the memory oscillograph is used to display the results of the analysis. A typical oscillogram is presented. The analyzer can be used to measure the frequency in a single radio pulse, the frequency deviation and its harmonics, the instantaneous frequency spectrum, and several instantaneous spectra during the investigated pulse.

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ZVEREV, G. I.

JPRS 56371

28 June 1972

MULTITUBE GENERATOR BANK

[Article by G.I. Zverev, V.L. Lyul'yev, V.B. Mayburov, I.S. Savchenko, and I.R. Yampol'skiy, Preprint-6, Russian, 24 November 1970, pp 1-13]

The experimental work in the study of the interaction of high-frequency fields with a plasma have required the creation of exceptionally powerful pulse generator systems in the 1-5 megahertz frequency range. Reference [1] contains a description of a setup and a high frequency 3-phase self-excited oscillator for studying the interaction of a traveling field with a plasma. This setup is characterized by the conditions of a strong connection of the circuit to the plasma. The installed power of the tubes of the self-excited oscillator is 60 megawatts.

In references [2, 3] on experimental studies of dynamic stabilization and confinement of a plasma, high frequency electromagnetic fields of quadrupolar configuration rotating around the plasma column are used. The performance of this research required the creation of a generator bank with an installed tube capacity of about 80 megawatts. The primary difficulties in creating generators of this type are connected with the necessity for summing the power of a large number of tubes and insuring phasing such as to obtain rotating electromagnetic fields during operation of the generator on a variable load which depends on the plasma properties and the connection with the plasma.

In contrast to [1], the described generators are characterized by operating conditions determined by the low coupling of the high frequency field to the plasma (the level of the high frequency fields in the plasma region is relatively small). The losses in the plasma, as a rule, do not exceed 10-40 percent of the losses in the circuit. This permitted application of direct connection of the circuit to the tube anodes without any matching devices. In the mode without a plasma, the generator operates in a strongly overloaded mode. Additional loading of the circuit by the plasma does not lead to a significant reduction in voltage on the circuit, and the tube conditions approach critical.

In a number of cases more significant loading of the circuit by the plasma was observed. In order to eliminate the strong voltage reductions in the circuit, independent excitation was used in these cases.

USSR

ZVEREV, G. M., NAUMOV, V. S., PASHKOV, V. A.

"Self-Focusing of Ultrashort Laser Pulses in Solid Dielectrics"

Leningrad, Fizika Tverdogo Tela, Vol 15, No 2, Feb 73, pp 575-576

Abstract: The authors observed the formation of fine threadlike flaws in k-8 glass, leucosapphire, and fused and crystalline quartz under the effect of an isolated ultrashort laser pulse. The master oscillator was a neodymium glass laser with self-synchronization of axial modes which emits ultrashort pulses with a recurrence period of 17 ns. A single pulse was isolated from the emitted train by a Pockels electro-optical shutter and a nitrogen-filled gas discharger with laser ignition. The pulse was boosted by a two-stage amplifier to an energy of 0.03 J in a single transverse mode. The pulse length was estimated at 4.5 ns. Self-luminescence of the "threads" was photographed during pulse passage. Isolated bright spots on the fluorescing "threads" increase in number with pulse power. An increase in the length of the flaws in the direction toward the beam was also observed with increasing incident pulse power. Differences between damage by isolated pulses and pulse trains are discussed.

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USSR UDC: 621.378.325

ZVEREV, G. M., LEVCHUK, Ye. A., PASHKOV, V. A., PORYADIN, Yu. D.

"Laser Destruction of the Surface of Lithium Niobate and Lithium Tantalate Single Crystals"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 94-96

Abstract: The research was done in the mode of free emission ($\lambda = 1.06$ μm) and in the monopulse emission mode on $\lambda = 1.06$ and 0.53 μm from a single-mode neodymium glass laser. Threshold of destruction is the same on both wavelengths -- 120 MW/cm^2 for lithium niobate, and 240 MW/cm^2 for lithium tantalate. It is found that the destruction threshold in the free emission mode increases with a reduction in the diameter of the light spot, and remains constant in the monopulse mode. Mechanisms of surface destruction are discussed. It is suggested that the reduction process $Nb^{5+} \rightarrow Nb^{4+}$ is responsible for destruction of the surface of lithium niobate. Three illustrations, bibliography of five titles.

1/1

USSR

UDC 621.373:535

GONCHAROV, V. A., ZVEREV, G. M., MARTYNOV, A. D.

"Effect of Triplet Levels on the Energy Characteristics of Lasers Using Xanthene Dye Solutions Excited by a Laser with Mode Synchronization"

Leningrad, Optika i Spektroskopiya, No 1, 1972, pp 218-219

Abstract: This brief communication deals with the radiation amplitude of lasers using xanthene dye solutions and the pumping of a pulse laser with synchronization of modes, as a function of time. As with pumping by light pulses, the accumulation of molecules in triplet state, especially for solutions with low fluorescence quantum output, leads to losses in transformation efficiency in the pumping process and to premature breaks in the radiation. The laser used in the experiments described in the communication consisted of a solution-filled chamber with plane-parallel walls and a mirror with a reflection coefficient of about 100% at the wavelength generated by the dye; the duration of the pumping was less than the lifetime of the molecules in the first excited singlet state, the interval between pumping dosages being much

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USSR

GONCHAROV, V. A. et al, Optika i Spektroskopiya, No 1, 1972, pp 218-219

larger than the lifetime of phonons in the resonator, which was 1.5 cm long. The authors find that the transition of the excited molecules in the triplet state is a fundamental process affecting the efficiency of the dye laser. A diagram of the experimental equipment is given.

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UDC 621.378.3

USSR

BOBROVNIKOV, Yu. A., VERNIGOR, Ye. M., ZVEREV, G. M., LUK'YANTETS, Ye. A., MARTYNOV, A. D., and KHROLOVA, O. P.

"Effective Conversion of the Second Harmonic of a Ruby Laser into Induced Radiation in the 400-470 Millimicron Range in Stilbenyloxazole Solutions"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 13, No 2, Aug 70, pp 216-219

Abstract: Results are presented for an experiment conducted to study the laser-induced radiation in alcohol solutions of stilbenyloxazoles. In the experiment a 2.5 Mw ruby-laser beam was focused on the vessel containing the solution. The induced radiation was recorded by means of the ISP-51 spectrograph. The wave length of the induced radiation ranged from 400 to 470 millimicrons. The spectrum width for alcohol is 2.5-3 times that produced in benzene. For all solutions studied the radiation conversion factor is about 20%.

USSR

ZVEREV, G. M.; KOLODNYY, G. Ya.; ONISHCHENKO, A. M.

"Nonradiative Transitions between Levels of Trivalent Rare Earth Ions in Yttrium-Aluminum Garnet Crystals"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; March, 1971; pp 920-7

ABSTRACT: Nonradiative transitions between levels in Nd^{3+}, Er^{3+}, Ho^{3+}, and Tu^{3+} ions in yttrium-aluminum garnet crystals are studied. The variation with temperature of the probabilities for nonradiative transitions are studied, and it is shown that in the single-frequency model approximation optical phonons with an energy ~ 700 cm^{-1} play the predominant role in nonradiative relaxation. The spontaneous nonradiative transition probabilities for various energy gaps between the levels and the dependence of the nonradiative transition probability on the energy gap are determined by measuring the quantum yield, lifetime, and kinetics of luminescence at 77°K. For gaps lying between 1200-5000 cm^{-1} the dependence can be satisfactorily approximated by an exponential law. The relaxation times from the major excitation levels to the $^4F_{3/2}$ level are mea-

USSR

ZVEREV, G. M., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Mar 71, pp 920-927

sured for Nd^{3+} ions excited by radiation from a ruby or rhodamine 6G laser or by the second harmonic from a neodymium laser; the measurements are based on the kinetics of luminescence emitted by Nd^{3+} ions from the $^4F_{3/2}$ level. The relaxation time from levels with an energy ~ 18800 cm^{-1} is $5 \cdot 10^{-7}$ sec. For levels lower than 18800 cm^{-1} the time does not exceed $5 \cdot 10^{-8}$ sec. On the basis of the dependence of the nonradiative transition probabilities on the energy gap between the levels, the relaxation time between the $^4I_{13/2}$ and $^4I_{15/2}$ levels of Nd^{3+} ions is evaluated at ~ $5 \cdot 10^{-7}$ sec.

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1/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--THERMAL SELF FOCUSSING OF LASER RADIATION IN SUBSTANCES WITH NEGATIVE DN,DT -U-
AUTHOR-(04)-ZVEREV, G.M., LEVCHUK, YE.A., MALDUTIS, E.K., PASHKOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA, ZH. EKSP. TEOR, FIZ, 1970, 11(3), 117-81

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER PULSE, LASER SELF FOCUSING EFFECT, THERMAL EFFECT, DIELECTRIC MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0150 STEP NO--UR/0386/70/011/003/0177/0181

CIRC ACCESSION NO--AP0103829

UNCLASSIFIED

2/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0103829

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT WAS SHOWN THEORETICALLY THAT IN SOLID BODIES WITH DN,DT SMALLER THAN 0 THERMAL SELF FOCUSSING IS POSSIBLE FOR LASER PULSES OF ANY DURATION. THIS WAS CONFIRMED EXPTL. WITH DIELECS., 20 TIMES 20 CM, HEATED WITH AN ND LASER, BEAM DIAM 1.5 MM.

UNCLASSIFIED

USSR

UDC 621.375.82

ZVEREV, G. M., LEVCHUK, Ye. A., PASHKOV, V. A., PORYADIN, Yu. D.

"Breakdown of the Surface of Lithium Niobate and Lithium Tantalate Single Crystals Under Laser Radiation"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No. 2, Moscow, "Sov. radio", 1972, pp 94-96 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D1011)

Translation: The radiation of a single-mode neodymium glass laser was investigated in a free oscillation mode (λ = 1.06 μ) and a single-pulse mode (λ = 1.06 and 0.53 μ). The breakdown threshold for the 1.06 and 0.53 μ waves coincide and are 120 Mw/cm^2 for $LiNbO_3$ and 240 Mw/cm^2 for $LiTaO_3$. Surface breakdown occurs after several bursts. It was established that in a free oscillation mode the breakdown threshold rises with a decrease in the diameter of the light spot and remains constant in a single-pulse mode. Surface breakdown mechanisms are discussed. It is hypothesized that the reduction process $Nb^{5+} \rightarrow Nb^{4+}$ is responsible for the breakdown of the $LiNbO_3$ surface. Authors abstract.

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USSR

UDC: 621.652:669.018.95(088.8)

ARABEY, B. G., BAULIN, Yu. N., ZVEREV, I. I., ZUKHER, M. S., KOKONIN, S. S., MARKOV, Yu. M., PORTNOY, K. I., SKLYAROV, N. M., TYURIN, V. A.

"Metal Ceramic Friction Material"

USSR Author's Certificate Number 346373, Filed 15/12/69, Published 18/08/72 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G422P, by S. Krivonosova).

Translation: A metal ceramic friction material, for example for braking devices, is suggested, containing ZrC and B carbide. In order to increase the stability of the coefficient of friction, B nitride and metals of the Fe group are introduced to the composition, taken in any combination with the following ratio of components (in wt. %): B carbide -- 10-50, Fe-group metals, taken in any combination, 3-35, B nitride 1-5, ZrC -- remainder. The material suggested has the following properties: s. g. 5.52 g/cm^3; coefficient of friction at braking temperature 600° 0.50-0.55, at 800° 0.45-0.50; stability of coefficient of friction with specific braking energies 450 kgm/cm^2 0.75-0.88; at 923 kgm/cm^2 0.80-0.95; wear with specific braking energies of 450 and 923 kgm/cm^2, in μ/tori 2-6 and 6-11 respectively; permissible volumetric

1/2

USSR

Arabey, B. G., Baulin, Yu. N., Zverev, I. I., Zukher, M. S., Kokonin, S. S., Markov, Yu. M., Portnoy, K. I., Sklyarov, N. M., Tyurin, V. A., USSR Author's Certificate Number 346373, Filed 15/12/69, Published 18/08/72.

temperature 800°, heat conductivity factor in t/m.° at 100° 48.1, 200° 44.0, 400° 35.9, 600° 29.5, 800° 27.3, 1000° 26.4; specific heat capacity (in cal/g.°) at 100° 0.134, 200° 0.136, 400° 0.150, 600° 0.161, 800° 0.169, 1000° 0.184; tensile strength at 20° 36 kg/mm^2; bending strength at 20° 62 kg/mm^2; shear strength at 20° 13.8 kg/mm^2; a_H 0.15 kgm/cm^2.

2/2

USSR UDC 534.222.2

GENDUGOV, V. M., ZVEREV, I. N., Department of Gas and Wave Mechanics, Moscow State University

"Surface Temperature of a Heat-Conducting Liquid Behind a Shock Wave in the Presence of Mass Exchange and Chemical Reactions in the Boundary Layer"

Moscow, Vestnik Moskovskogo Universiteta, Seriya I: Matematika, Mekhanika, No 1, Jan/Feb 73, pp 110-113

Abstract: A solution is found for the problem of surface temperature of a thin film of liquid fuel ($d \sim 100$ μm) applied to a wall in the vicinity behind a shock wave moving in a quiescent gaseous oxidant at constant velocity in the presence of mass exchange and chemical reactions in the boundary layer. Since the liquid film is not heated to thicknesses of more than 60 μm within a time $t = 100$ μs, it is assumed that the film fills the half-space to the left of the y-axis, and its motion is disregarded. The systems of equations for the gas and for the heat conductivity of the fuel are simultaneously solved so that the surface temperature of the fuel behind the compression shock is constant. In Reglend's work (K. Reglend, "Laminar Boundary Layer Behind a Shock in the Presence of Vaporization and

USSR

GENDUGOV, V. M., ZVEREV, I. N., Vestn. Mosk. Un-ta: Ser. I, Mat., Mekh., No 1, Jan/Feb 73, pp 110-113

Burning", Raketnaya Tekhnika i Kosmonavtika, 8, No 3, 1970) it is assumed that the fuel temperature throughout the entire thickness of the layer is equal to the equilibrium temperature of the boiling point for any values of the M_s numbers. However, the present paper shows that an M_s number exists which depends on the physical and mechanical properties of the fuel and is such that the fuel temperature can be considered equal to the equilibrium boiling point only for M_s values greater than the given value.

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USSR

UDC: 53.07/.08+53.001.5

ZHURAVLEVA, L. I., TOPTYGINA, N. A., ZVEREV, L. P.

"An Interference Method of Checking the Thickness of Epitaxial Films"

Uch. zap. Ural'sk. un-ta (Scientific Notes of Ural University), 1971, No 118, pp 27-35 (from RZh-Fizika, No 4, Apr 72, Abstract No 4A737)

Translation: A spectrophotometric method is proposed for determining the thickness of epitaxial films on silicon and gallium arsenide. The method is based on measuring bands of equal chromatic order. The investigated specimens were high-resistance epitaxial layers grown on a doped substrate of the same material. If the epitaxial layer is transparent and has a dielectric constant different from that of the substrate, then the radiation incident on the crystal will be reflected not only from the surface of the layer but also from the layer-substrate interface where the dopant concentration changes abruptly. These two beams will interfere. The position of the maxima on the interference pattern is determined not only by the thickness of the film but also by the phase shift at the boundaries which may be determined with regard to the dispersion of optical constants. The layer to be measured should be at least 1.5 μ

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USSR

ZHURAVLEVA, L. I. et al., Uch. zap. Ural'sk. un-ta, 1971, No 118, pp 27-35

thick, and the free carrier concentration ratio at the layer-substrate interface should be at least 0.2. The method requires that the film be plane-parallel. Measurement accuracy is 3-5%. L. Shelyakin.

USSR

UDC 621.378.325

BOGDANKEVICH, O.V., ZVEREV, M.M., PECHENOV, A.N., SIBIRYAK, I.O.

"On The Divergency Of Radiation Of Lasers Of The 'Radiative Mirror' Type With Electron Pumping"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 6(12), 1972, pp 110-111

Abstract: The dependence is studied of the radiation divergence of a semiconductor laser with a "radiative mirror" type resonator and electron beam pumping on the distance L to the external mirror. (Pumping was conducted with a pulsed beam of electrons which have an energy of 170 kev, a current density up to 25 a/cm^2, and a duration of 200 nanosec.) A minimum divergence of 7' was observed at L equals 28 mm and a diameter of the excited region of 300 micron, which corresponds to the diffraction limit of divergence of the fundamental type of oscillations. It is shown that an increase of L leads to a decrease of the width of the longitudinal mode. With L equals 22 mm the measured width of the mode amounted to $\Delta\lambda \leqslant 0.05$ A. 1 fig. 4 ref. Received by editors, 28 March 1972

1/1

USSR

UDC 621.378.35

BOGDANKEVICH, O.V., ZVEREV, M.M., KOLOMIYSKIY, A.N., PECHENOV, A.N., VASIL'YEV, B.I.

"Multielement Semiconductor Laser Of The 'Emitting Mirror' Type"

Kvantovaya elektronika, Moscow, No 5, May 71, pp 95-96

Abstract: The construction and some characteristics are described of a multielement laser of the emitting mirror type. A high-voltage pulse electron gun was used for pumping of the laser, with a beam energy of 108 kev and a current density of 20 a/cm^2. The polished plane-parallel disks 0.2-mm thick used as the working medium were cut out of single crystals of n-type conductivity gallium-arsenide doped with tellurium to a concentration of(1--2) . 10^{18} cm^{-3}. The generation power increases linearly with an increase of the cross section of the multielement target. A power of 28 kw is attained with a crystal with a 1 cm^2 area. The halfwidth of the directivity pattern is 7°, and the generation spectrum consists of several lines corresponding to the modes of the Fabry--Perot resonator. Received by editors, 28 Apr 71. 2 fig. 6 ref.

1/1

USSR

UDC 621.378.35

BOGDANKEVICH, O. V., ZVEREV, M. M., MESTVIRISHVILI, A. K., NASIBOV, A. S., PECHENOV, A. N., SVIRENKOV, A. I., FEDOSEYEV, K. P.

"A High-Power Semiconductor Laser With Electron-Beam Pumping"

Moscow, Kvantovaye Elektronika, No 2, 1971, pp 92-93

Abstract: Multiple-element structures of gallium arsenide and cadmium sulfide are studied for the purpose of increasing the power of a semiconductor laser with electron-beam pumping. An emission power of 1.5 MW is achieved when a gallium arsenide semiconductor laser is stimulated by a beam of 300 keV electrons at 300 A. Two figures, bibliography of five titles.

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USSR

UDC 621.373:530.145.6

BOGDANKEVICH, O. V., ZVEREV, M. M., MESTVIRISHVILI, A. N., NASIBOV, A. S., PECHENOV, A. N., SVINENKOV, A. I., FEDOSEYEV, K. P.

"A High-Power Semiconductor Maser With Electron Beam Pumping"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 2, Moscow, 1971, pp 92-93 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7D113)

Translation: To increase the power of a semiconductor maser with electron beam pumping, the authors study multielement structures of gallium arsenide and cadmium sulfide. An emission power of 1.5 MW is achieved when a semiconductor maser on gallium arsenide is excited by an electron beam with an energy of 300 keV and a current of 300 A. Two illustrations, bibliography of five titles.

1/2 027 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--AXISYMMETRIC DEFORMATION OF A PLATE MADE OF AN ELASTOPLASTIC MATERIAL CAPABLE OF HARDENING -U-

AUTHOR-(02)-ZVEREV, O.A., PALMOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA TVERDOGO TELA, MAR.-APR. 1970. P. 178-181. 7

DATE PUBLISHED-------70

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

TOPIC TAGS--THIN PLATE, BIBLIOGRAPHY, FLAT PLATE, PLASTICITY, ELASTICITY, METAL HARDENING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0350 STEP NO--UR/0484/70/000/000/0178/0181

CIRC ACCESSION NO--AP0124107

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124107

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A PROCEDURE FOR SOLVING THE PLANE AXISYMMETRIC ELASTOPLASTIC PROBLEM OF A PLATE UNDER UNIFORM LOAD. THE PLATE IS MADE OF A COMPRESSIBLE MATERIAL WITH AN ARBITRARY LAW OF HARDENING. THE PROBLEM IS SOLVED IN QUADRATURES BY USING CONVENTIONAL EQUATIONS OF ELASTOPLASTIC DEFORMATION. THE PROCEDURE IS APPLIED TO AN INFINITE PLATE WITH A LINEAR LAW OF HARDENING.

UNCLASSIFIED

USSR

UDC 621.396.67.001.5

BELDOVSKIY, V. A., VINOGRADOV, B. A., VAN'KIN, A. S., ZVEREV, S. B., BUTKEVICH, A. G., MURAV'YEV, Yu. K.

"A Method of Plotting the Radiation Patterns of Antennas"

USSR Author's Certificate No 284070, filed 10 Apr 69, published 4 Jan 71 (from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11B112 P)

Translation: The proposed method enables automatic recording of a radiation pattern in 10-20 s on a CRT with image persistence and photographing in case of necessity. The antenna to be studied is mounted on a rotating platform and used as a receiving antenna. The emf from the antenna is sent to the receiver with linear amplification of the range to be studied. The output voltage of the receiver is sent through a current collector to the input of a discrete conversion module which generates a sequence of pulses which are delayed with respect to the trigger pulse. This pulse train is then sent to the electrode of a CRT with circular scan. Scanning of the CRT is triggered by pulses with a prf which ensures the accuracy required in reproduction of the radiation pattern. When the scan

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USSR

BELDOVSKIY, V. A., et al., USSR Author's Certificate No 284070, filed 10 Apr 69, published 4 Jan 71 (from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11B112 P)

rotation is synchronized with antenna rotation by means of a primary pickup circuit and an amplifier for the signal from the drive tracking system, the radiation pattern is reproduced on the screen of the CRT with a high accuracy determined by the linearity of the image stages. A calibrated mark unit shapes marking pulses for every five degrees of rotation of the antenna, and for controllable intervals with respect to field strength. The method appreciably simplifies the process of taking the radiation patterns of antennas; it can be used in synthesizing an antenna, and also in determining the optimum arrangement of transmitting and reception units for zones with a minimum noise level. Two illustrations. A. K.

ZVEREV, S.M.

geology

STUDY OF THE CENTRAL ICELAND GRABEN

[Article by Candidate of Geological and Mineralogical Sciences
S. M. Zverev, Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol
42, No 6, June 1972, pp 75-81]

The Central Iceland Graben is the largest structure of
Iceland, disposed on a continuation of the Mid-Atlantic Ridge.
Investigation of the interconnections of the graben with the
submarine ridge and the rest of the island is one of the main
tasks of the Soviet expedition in Iceland.

An overwhelming majority of the rocks which form Iceland
are of volcanic origin. In its eastern and western parts lie
Tertiary plateau-basalts which cover about half the area of the
island. There are similar plateau-basalts also in Greenland,
the Faeroe Islands and the British Isles, and on the whole they
make up the so-called North Atlantic plateau-basalt province, or
the Thule province (Figures 1 and 2). The central zone of Ice-
land, which morphologically extends the Mid-Atlantic Ridge, re-
presents a shallow graben filled for the most part by products
of young volcanism (of post-Pleistocene age). Confined to the
Central Iceland Graben is very great seismic and hydrothermal
activity, and the intensity of current volcanic activity is
very high there. It has been established that about one-third
of the lava erupted on earth in the last 500 years fell to the
share of the Central Iceland Graben. Almost all types of vol-
canos known on earth can be encountered there. Fissures are
widely developed. The volcanic products of Iceland are repre-
sented in an overwhelming majority by tholeiitic and olivenic
basalts, that is, basic rocks, and only a few percents consist
of acidic rocks (S. Thorarinsson, 1970).

In 1971 the land group of the Soviet expedition made a
comparative study of the Central Iceland Graben and certain
other structures of Iceland, using a complex of various methods
of geology, geophysics, and geochemistry. After becoming gen-
erally acquainted with the graben the detachments made recon-
naissance and more detailed observations of various objects

Acc. Nr.: AP0044050 Ref. Code: UR0387

JPRS 58652

Review of Work on Seismic Sounding at Sea

(Abstract: "Work on Deep Seismic Sounding at Sea," by S. M. Zverev, Institute of Physics of the Sea; Moscow, Izvestiya Akademii Nauk SSSR, Fizika Zemli, No. 1, 1970, pp. 74-83)

Studies of the earth's crust in the sea by the deep seismic sounding method began in the USSR about 15 years ago. The work was initiated by the Institute of Oceanology and then was undertaken by the Institute of Physics of the Earth. This type of work is now also being done by the All-Union Scientific Research Institute of Marine Geology and Geophysics (VNIIMORGEO) of the Ministry of Geology, the Ukrainian Geophysical Trust, and to a lesser degree by the Sakhalin Multi-Discipline Scientific Research Institute and Institute of Arctic Geology. In all these organizations specialists on deep seismic sounding at sea number no more than twenty or thirty persons. The organizations and specialists exchange work experience and equipment. They frequently conduct joint expeditions for studying different regions. Each organization is gradually developing its own field of specialization. For example, the VNIIMORGEO is doing most of its work in shelf zones in different seas by the reflected waves method and determining the thickness and structure of the sedimentary layer for study of tectonics and the

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search for petroleum. The VNIIMORGEO does not have its own equipment for deep seismic sounding and is not particularly concerned with developing deep seismic sounding methods. The Ukrainian Geophysical Trust is in the same position but its interests are limited only to one region, the Black Sea. The Sakhalin Multi-Discipline Scientific Research Institute has long conducted research jointly with the Institute of Physics of the Earth and only recently began to do deep seismic sounding work independently, using the method and apparatus of the Institute of Physics of the Earth. This agency is concerned with studying the deep structure of Far Eastern seas. The Institute of Arctic Geology does deep seismic sounding on an extremely limited scale and only in Arctic seas. The Institute of Oceanology is doing deep seismic sounding work on a broad front and is concerned with important methodological work but the principal direction in study of the earth's crust at this institute is study of the geological structure of the Indian and Pacific Oceans, the Black Sea and the Sea of Japan. Thus, for all these organizations the principal objectives in deep seismic sounding are regional: study of the deep structure of individual regions for solving tectonic problems. At the Institute of Physics of the Earth emphasis is on developing the deep seismic sounding method for studying not only the structure, but also the physical characteristics of the crust and upper mantle for different types of structure. This article emphasizes deep seismic sounding work at the Institute of Physics of the Earth, summarizing the work done by that agency since 1956. The article is accompanied by a bibliography of pertinent articles and books.

19770511

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UDC 669.71.48(088.8)

BELETSKIY, G. V., GRAFAS, N. I., KHORYAK, A. K., SHAGALOVA, B. Yu., SHAFARENKO, A.I., and ZVEREV, S. N.

"Device for Extraction of Non-Oxidized Metal From Hot Furnace Skim"

USSR Author's Certificate No 266213, Filed 17/06/68, Published 24/07/70, (Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract No 2 G172 P)

Translation: A device for the extraction of non-oxidized metals from hot furnace skim formed during melting of secondary aluminum alloys is presented. It consists of a cylindrical container with a perforated floor equipped with a mixer located inside the container and rigidly fastened to a vertical shaft. To allow rotation of the floor, it is freely supported on a horizontal, eccentric axis fastened to the walls of the cylindrical container and connected to a vertical member passing through the vertical shaft, which is made hollow, so that it can move.

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USSR UDC 534.6

BOBKOV, Yu. A., ZVEREV, V. A., PAVLENKO, A. M., and SHARONOV, G. A., Gor'kiy State University

"Method of Amplitude and Phase Registration of Ultrasonic Waves Based on Double Interaction of Light With Sound"

Moscow, Akusticheskiy Zhurnal, Vol 17, No 4, 1971, pp 529 -532

Abstract : A method of visualization of sound fields in a liquid based on consecutive interaction of light with two travelling acoustic waves is discussed. By this method, both, amplitude and field phase are recorded and, in contrast to other methods, sound field visualizations not requiring high voltages and distinguished by simplicity of the used equipment can be realized. Visualization experiments of sound fields were carried out by translucence of ultrasonic waves by coherent light according to an illustrated schema. Examples of photographed visualized sound fields show that the discussed method makes possible to register the ultrasonic bundle itself and also the fine structure of the wave field. The method can be applied not only for acoustic holography purposes but also for solving other problems of acoustics, e. g., investigation of characteristics of ultrasound emitters. Three illustr., nine formulas, five biblio. refs.

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USSR

UDC 538.56

ZVEREV, V. A.

"Compression and Expansion of Modulated Signals in Dispersive Media"

Gorkiy, Izvestiya VUZov SSSR Radiofizika, Vol. 13, No. 1, 1970, pp 150-152

Abstract: The compression and expansion of signals in dispersing delay lines are connected with signal deformation leading to a change in the product of the effective signal duration and its effective spectral width. The article demonstrates that the choice of a proper signal modulation principle and the alternate application of two of these dispersing delay lines permits varying the signal time scale. On the assumption that the lines have a quadratic complex frequency characteristic, the conditions for transformation of the signal time scale are derived. Equipment performing the compression and expansion can easily be converted

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ZVEREV, V. A., Izvestiya VUZov SSSR Radiofizika, Vol. 13, No. 1, 1970, pp 150-152

to a spectrum analyzer; it has an optical analog which can be obtained by following the work of Bliokh, as reported in the same journal given above, Vol. 7, No. 3, 460 (1964). The system with two dispersing delay lines and a mixer between the two is analogous to a projecting optical system consisting of two segments of free space with a lens in between.

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1/2 033 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--COMPRESSION AND EXPANSION OF MODULATED SIGNALS IN DISPERSIVE MEDIA -U-

AUTHOR--ZVEREV, V.A.

COUNTRY OF INFO--USSR

SOURCE--GORKIY, IZVESTIYA VUZOV SSSR RADIOFIZIKA, VOL. 13, NO. 1, 1970, PP 150-152

DATE PUBLISHED-------70

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CIRC ACCESSION NO--AP0130731

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPRESSION AND EXPANSION OF SIGNALS IN DISPERSING DELAY LINES ARE CONNECTED WITH SIGNAL DEFORMATION LEADING TO A CHANGE IN THE PRODUCT OF THE EFFECTIVE SIGNAL DURATION AND ITS EFFECTIVE SPECTRAL WIDTH. THE ARTICLE DEMONSTRATES THAT THE CHOICE OF A PROPER SIGNAL MODULATION PRINCIPLE AND THE ALTERNATE APPLICATION OF TWO OF THESE DISPERSING DELAY LINES PERMITS VARYING THE SIGNAL TIME SCALE. ON THE ASSUMPTION THAT THE LINES HAVE A QUADRATIC COMPLEX FREQUENCY CHARACTERISTIC, THE CONDITIONS FOR TRANSFORMATION OF THE SIGNAL TIME SCALE ARE DERIVED. EQUIPMENT PERFORMING THE COMPRESSION AND EXPANSION CAN EASILY BE CONVERTED TO A SPECTRUM ANALYZER; IT HAS AN OPTICAL ANALOG WHICH CAN BE OBTAINED BY FOLLOWING THE WORK OF BLIOKH, AS REPORTED IN THE SAME JOURNAL GIVEN ABOVE, VOL. 7, NO. 3, 460 (1964). THE SYSTEM WITH TWO DISPERSING DELAY LINES AND A MIXER BETWEEN THE TWO IS ANALOGOUS TO A PROJECTING OPTICAL SYSTEM CONSISTING OF TWO SEGMENTS OF FREE SPACE WITH A LENS IN BETWEEN.

UNCLASSIFIED

USSR

UDC: 621.397.3:621.317.3

ZVEREV, V. A., Active Member of the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov

"Correlation and Spectral Analysis of a Radio Signal by Means of Generalized Holograms"

Moscow, Radiotekhnika, Vol 26, No 6, Jun 71, pp 2-6

Abstract: This paper discusses some applications of the ideas and methods of holography in the radio and audio frequency bands. The concept of a hologram as a means of reproducing an optical image is generalized to cover suboptical frequencies, resulting in the following definition: a hologram of some function x(t) is a recording in a plane in the form of a pattern of variable transparency of the Fourier transform of the function x(t). Examples are considered of practical application of this definition of a hologram to problems of radio measurement -- determination of the shape of the spectral line of a high-stability rf oscillator, measuring the space-time correlation of fields in media containing random nonhomogeneities, and spectral analysis of weak high-speed processes. Stereophonic broadcasting is also considered as transmission of a simple hologram of an acoustic image. Holography may point out ways to simplify and cut the cost of broadcasting in this field. Methods are considered for generalizing optical equipment to extent applications to lower frequencies, resulting in electronic equipment for radioholography. The proposed optical-electronic equipment can be used for recording and reproducing holograms down to the lowest subsonic frequencies.

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ZVEREV, V. A.

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A. CR/U
B. FDD/I
C. OSI/P3

ARMY MATERIEL COMMAND

U.S. ARMY
FOREIGN SCIENCE AND TECHNOLOGY CENTER

INTERFERENCE FOURIER SPECTROSCOPY WITH HIGH RESOLVING POWER

by

S. M. Gorskiy, V. A. Zverev, G. K. Ivanova

COUNTRY: USSR

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SUMMARY

RESULTS OF SPECTRAL ANALYSIS OF THE BALLISTOCARDIOGRAM IN HEALTHY PERSONS

K. V. Zvereva, V. A. Zverev and I. K. Spiridonova (Gorky)

Spectral analysis of the BCG was done in 109 healthy persons (age: 20—47 years). Two spectral types were seen: discrete and continous, the latter prevailing in young healthy subjects. Three main spectral forms have been singled out and analysed. The continuous spectrum is most frequently characterized by irregular distribution of spectral components whereas in the discrete they are distributed regularly in the normal ballistocardiogram. The discrete spectrum of changed ballistocardiograms is characterized by a marked level decrease of the first harmonic — average cardiac cycle. The appearance of discrete BCG spectrum in the second half of life or in clinically healthy persons but with pathological BCG evidences development of inverse links in the cardio-vascular system, which is apparantly an adaptive mechanism and reflects complex processes of selfregulation and compensation.

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RAYEVSKIY, O. A., BEL'SKIY, V. YE., ZVEREV, V. V.

"Evaluation of Effective Charges in Phosphoryl Compounds Based on Orbital Electronegativities"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2491-2494

Abstract: When discussing the intermolecular effects in complex organic molecules the concept of effective charges (δ) and the concept of the orbital electronegativity (χ) which is considered as the linear function of the charges on the atoms are used. The basis for the method of finding the charges in the molecule in the given paper is the principle of incomplete equilization of the electronegativities [J. F. Huheey, J. Organ. Chem., No 31, 2365, 1966]. The effective charges are found on P and O atoms of a number of symmetric phosphoryl compounds with the general formula R_3PO. In considering the nature of the phosphoryl bond, a formal path is selected with the assumption that the double bonded nature of the phosphoryl group is the result of overlap of the 3d-orbital of phosphorus and the 2p-orbital of oxygen. The charge distribution on phosphoryl group atoms in the R_3PO type compounds is tabulated. A linear relation was found between the charges on the phosphorus and oxygen atoms of 1/2

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RAYEVSKIY, O. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2491-2494

the phosphoryl group calculated on the basis of the orbital electronegativity and the sum of the induction constants of the substitutions on the phosphorus atom.

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ZVEREV, V. Yu., FLOTNIKOV, V. N.

"Method of Dynamic Programming in Problem of Control of One Class of Multi-dimensional Production Processes"

Izbr. Tr. Vses. Mezhvuz. Simpoz. po Prikl. Mat. i Kibernet., Gor'kiy, 1967 [Selected Works of All-Union Interuniversity Symposium on Applied Mathematics and Cybernetics, Gor'kiy, 1967], Moscow, Nauka Press, 1973, pp 298-301 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V548, by the authors).

Translation: The possibility is studied of using the method of dynamic programming for optimal operational and organizational control of an object consisting of several parallel units. The technological process in each unit is a cyclical process, consisting of a number of successive stages. The problem of optimization consists in minimization of a certain goal function of down time. Functional equations are produced and the number of possible control strategies is estimated. The problem is studied as applicable to the organization of operational and organizational control of an open hearth furnace section.

USSR

UDC 8.74

DUVALYAN, A. V., ZVEREV, V. Yu.

"On a Sequential Algorithm for Pattern Recognition"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Technology -- Collection of Works), No. 10, Moscow, "Mashinostroyeniye", 1972, pp 206-220 (from RZh-Matematika, No 9, Sep 72, Abstract No 9V674)

Translation: In the statistical theory of pattern recognition sequential analysis methods make it possible to produce effective recognition algorithms. A pattern recognition algorithm is proposed in this paper, the indicators of which satisfy a multidimensional normal probability distribution. The algorithm is based on the use of a generalized sequential criterion for the probability ratios. Learning of the algorithm is achieved with the aid of a recurrent procedure of the stochastic approximation method. The effectiveness of the proposed algorithm is supported by computer experiments on the recognition of three types of heart diseases from electrocardiograms. Authors abstract.

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