

REEL # 22
NAUMENKO, V.G.

UDC 621.382.016.35

USSR

ZARUDSKIY, V. F., LEVITSKIY, K. E., ~~NAUMENKO, V. G.~~, UKHIN, N. A.

"Comparative Results of Neutron Irradiation of Medium-Power High-Frequency Diffusion and Diffusion-Ion NPN Silicon Transistors"

Moscow, Poluprovodnikovyye Pribory i ikh Primeneniye, No 24, Izd-vo "Sovetskoye Radio", 1970, pp 27-30

Abstract: The authors study neutron irradiation of NPN silicon transistors made by double diffusion of dopants into an epitaxial layer, and by single diffusion of boron with subsequent ion injection of phosphorus to produce the emitter junction. It is shown that the radiation resistance of both types of transistors is determined by the radiation properties of the material of the base layer and is independent of the technological procedure used to make the emitter junction. The results also show that ion doping has considerable promise as a technological procedure for making transistors with optimum radiation resistance. One figure, one table, bibliography of four titles.

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USSR

UDO 621.382.3

GUSEV, V.M., SHCHIGOL', F.A., NAUMENKO, V.G., LEVITSKIY, K.B., SHCHELOMKOV, B.I.,
KOZLOV, YU. G., ZAKHAROV, V.I.

"Silicon Planar n-p-nn⁺ Microwave Transistor Obtained By The Method Of Ion
Implantation"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals--
Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 155-158 (from
RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B221)

Translation: The method of ion implantation in conjunction with planar technology
makes it possible to obtain n-p-nn⁺ microwave transistors with a critical freq-
uency of amplification with respect to the current of $f_T = 2$ GHz. Specimens were
obtained and investigated with a diffusion base and an ion-implantation emitter,
and devices in which both the collector and emitter junctions were produced by
the method of ion implantation. Basic static and frequency parameters of the
devices are presented and also the dependences $V_{ct} = f(I_e)$, $\beta_1 = f(I_e)$. 3 ill.
6 ref. Summary.

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- 100 -

Forensic Medicine

USSR

UDC 340.624+340.624.6

NAUMENKO, V. G., Scientific Research Institute of Forensic Medicine, Ministry of Health USSR, Moscow

"The Present Status of and Research Trends in Traumatology and Thanatology"

Moscow, Sudbno-Meditsinskaya Ekspertiza, Vol 15, No 4, Oct/Nov/Dec 72, pp 16-22

Abstract: Advances and problems in several fields of forensic medicine are reviewed. Mechanical injuries of various types have been studied in detail, but information needs to be centralized and processed statistically. While analysis of traces on weapons by which individuals are injured has improved, further research is needed on histological analysis of such traces. Determination of time of death has been a subject of extensive biochemical research. Some research results are inadequate because of the absence of standardization in research and in the format for publishing results. Standardization is also needed in methods for determining alcoholic intoxication. Little research has been carried out on personal differences in response to particular levels of intoxicants. Thus far, emphasis on research that would improve establishment of live vs. still birth has been low. Great advances have been made in establishing causes of an preventing sudden death, chiefly due

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NAUMENKO, V. G., Sudebno-Meditsinskaya Ekspertiza, Vol 15, No 4, Oct/Nov/Dec 72, pp 16-22

to cardiovascular failures. More emphasis must be placed, however, on standardization of research methods, hemodynamic problems, and sudden death among children. New methods such as diatom tests are beginning to be developed for investigation of drowning cases and must be introduced at a faster rate. Finally, much research has been conducted on feigned and artificial illnesses, and the problems of thanatology involved in organ and tissue transplants. It is concluded that special experts' commissions should be established at USSR and republic ministry levels to evaluate new advances in legal medicine and make recommendations on their application. Research carried out in this field must reflect the requirements of the plan for scientific research in the Ninth Five-Year Plan. Standardization of research procedures is the most important factor in improvement of information in this field.

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Soviet Inventions Illustrated, Section I Chemical, Derwent,

2470

243772 SYNTHETIC YARN MANUFACTURE is carried out in a device comprising hopper 1, container 2 for dye, tube 3 with screw 4, and melting element 5. The dyed polyamide is delivered to the element by port 9 of tube 3, the dye is metered out by pump 10. Brushes 8 at the top of the screw promote uniform spread of the dye, channels 12 ensure the evacuation of readily volatile fractions towards the hydraulic seal 13. The melt and the dye are fed to the spinneret 14 for yarn formation 17.11.67. as 1198120/28-12; KOVTUNENKO, V.T. et al. (3.10.69) Bul. 17/14.5.69. Class 29a, Int. Cl. D Old.

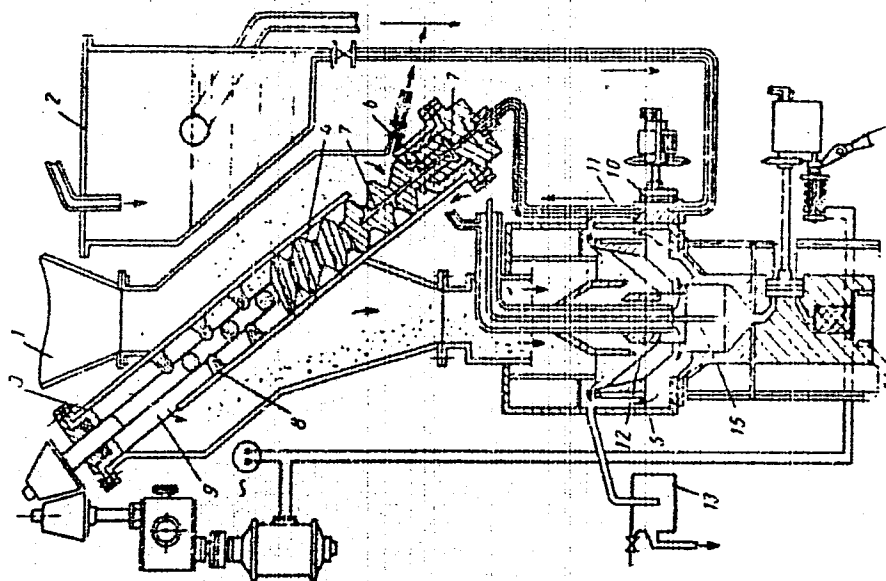
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Kovtunenکو, V. T.; Naumenکو, V. I.; Zvenyatskaya, M. L.

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USSR

UDC: 537.533.2:669.01

SAMSONOV, G. V., OKHREMCHUK, L. N., UPADKHAYA, G. Sh., and NAUMENKO, V. Ya.

"Work Function of Titanium and Niobium Carbides in the Homogeneity Region"

Moscow, Teplofizika Vysokikh Temperatur, Vol. 8, No. 4, 1970, pp 921-922

Abstract: This brief paper describes experiments performed on titanium and niobium monocarbides and undertakes to explain the basic expressions of the variations in their work function, along with the variations in their other physical characteristics such as electrical resistance, thermal conductivity, and the like. In this work the characteristics of the carbide phase electron structure were taken into account. The original specimens were in the form of cylinders 8 mm in diameter and 10 mm high. The work function was measured by using full current flow in a temperature interval of 1400-2100° K. The authors find that their results agree with those obtained in research on the thermoemission of Nb₂C.

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NAUMENKO, V. Ya.

TECHNOLOGY OF PRODUCING NEW MATERIALS

Translation of Russian-language collection: Tekhnologiya
Polucheniya Novykh Materialov, 1972, Kiev.

JPRS 53 875
23 August 1973

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[1 - USSR - 1]

USSR

UDC 669.046.558.28

NAUMENKO, V. YA., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"Preparation of Carbides of Transition Metals of the IV-V Groups Within the Regions of Their Homogeneity"

Kiev, Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 20-22

Abstract: The carbides of transition metals of the IV-V groups have wide homogeneity regions within which the carbon content controls all physical and chemical properties. This study concerns specifications for obtaining carbides of transition metals of the IV-V groups TiC_x , ZrC_x , HfC_x , NbC_x and TaC_x within the regions of their homogeneity by synthesis from their respective powders and acetylene black in vacuum. Use was made of Ti, Zr, Hf, Nb, Ta powders and acetylene black which was pre-fired at 800°C for two hours in an argon atmosphere to remove moisture and adsorbed gases. The

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NAUMENKO, V. YA., Poroshkovaya Metallurgiya, No. 10, Oct 70, pp 20-22

formulation of a given composition was computed from the reaction equation: $Me + xC \rightarrow MeC_x$, where x is the C/Me atomic ratio. The synthesis was performed at a residual pressure of $1.2 \cdot 10^{-4}$ mm Hg. At 900--1000°C there appeared to be an increase in residual pressure due to the liberation of moisture and gases. The material was therefore held isothermally for one hour. A further rise in temperature did not impair the vacuum. The material was cooled at a rate of 5 deg/min to 600°C and then cooled in the furnace to room temperature. The optimum conditions for obtaining carbide phases of TiC_x , ZrC_x , HfC_x , NbC_x , and TaC_x are cited in a table in the original article.

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USSR

UDC 621.3.032.266.3

LEVIN, M. L., MINTS, A. L. - Academician, NAUMENKO, Ye. D., and FILIMONOVA, T. N.,
Council for Charged Particle Accelerators, Academy of Sciences of the USSR, Moscow

"Cyromagnetic Compression of Powerful, Relativistic, Dense Electron Beams of Tubular
Form"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 5, 1973, pp 1085 - 1088

Abstract: Electron beams are used to transfer large amounts of energy to small objects in brief intervals of time. This makes it advantageous to compress them to maximum density, but the high charge of the electron in relation to its mass makes this difficult. The method described in this article for compressing segments of a tubular electron beam involves three steps: a) electron tubes are rearranged into rotating electron rings moving along an axis; b) the rings are subjected to radial compression in a spatially increasing, static magnetic field; c) the compressed rings are again reformed into sections of a tubular electron beam moving parallel to the axis, differing from the initial segments by their smaller dimensions and higher density. Step a) uses an apparatus described by Levin, Mints, and Naumenko in Volume 204, No 4 of this journal. The same magnetic system can be used for operation c. The apparatus for step b is schematically diagrammed in the article.

As the rings are compressed, the energy of longitudinal motion is converted to rotary motion, which can bring the ring to a complete stop or even reflect it in the
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USSR

LEVIN, M. L., et al., Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 5, 1973,
pp 1085 - 1088

opposite longitudinal direction; additional energy must be supplied to overcome this. The electron rings also tend to elongate in the longitudinal direction, requiring further inputs to prevent this. Techniques for achieving these manipulations are described in the article. Typical values to be achieved by this installation include a compression of the ring from a radius of 20 cm to 4 cm, a longitudinal compression from 10 cm to 1 cm, an increase in the relativistic rotation factor from 6 to 30, etc. Calculation of these factors is based on an analysis given by Levin at the Symposium on Collective Acceleration Methods, Dubna, 27 - 30 September, 1972, Document OIYaI,D9-6707,49 (1972).

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USSR

UDC 535.36

IVANOV, A. P., PRISHIVALKO, A. P., and NAUMENKO, YE. K.

"Scattering of Light by a Layer with a Different Degree of Dispersion"

Leningrad, Optika i Spektroskopiya, Vol 35, No 5, Nov 73, pp 902 - 905

Abstract: The passage of light through a suspension of particles in a medium is determined by the number, size, and nature of the particles. The degree of dispersion of the light-scattering material is characterized by a parameter $\rho = 2\pi a/\lambda$, where a is the radius of the particle and λ is the wavelength of light. Coefficients of reflection and transmission for plane-parallel layers can be calculated from this relationship, using the dual flow approximation of transmission theory. It is found that reflection is maximum and transmission minimum when ρ is in the range of 1 to 5. Within this range, the extremal points are reached at lower values for higher thicknesses.

This calculation is based on adding the radiation flows, since it has been shown that interference effects do not appear in a majority of cases; polarization effects

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USSR

IVANOV, A. P., et al., Optika i Spektroskopiya, Vol 35, No 5, Nov 73, pp 902-905

are ignored. Mie formulas were the basis for computer calculations to determine the coefficients of absorption and scattering, the probability of photon survival, and the scattering index of an elementary volume as a function of ρ .

The maximum reflection does not coincide with the minimum transmission but is shifted somewhat in the direction of larger particles. Since the curves do not have sharp extrema, this is not very significant in solving many practical problems.

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1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--DETERMINING OPTICAL CONSTANTS OF SUBSTANCE OF DISPERSIVE PARTICLES
-U-
AUTHOR--(03)-NAUMENKO, YE.K., PRISHIVALKO, A.P., ASTAFYEVA, L.G.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKLAD. SPEKTROSK. (USSR), VOL. 12, NO. 1, P. 121-5 (JAN. 1970)
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--REFRACTIVE INDEX, ABSORPTION COEFFICIENT, PARTICLE SCATTER
CONTROL MARKING--NO RESTRICTIONS
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CIRC ACCESSION NO--AP0122130
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0122130

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PROPOSES A METHOD OF CALCULATING THE REFRACTIVE INDEX AND THE ABSORPTION COEFFICIENTS OF THE SUBSTANCE OF DISPERSIVE PARTICLES BASED ON MEASURED COEFFICIENTS OF ABSORPTION AND OF SCATTER OF AN INDIVIDUAL PARTICLE. LIMITS OF APPLICABILITY OF THE METHOD ARE DEFINED, AND PROBLEMS CONCERNING THE ACCURACY OF OBTAINED RESULTS ARE ANALYSED IN DETAIL.

UNCLASSIFIED

USSR

UDC 535.36

NAUMENKO, Ye. K., IVANOV, A. P., and PRISHIVALKO, A. P.

"Limits of Applicability of Small Particle Approximations in Calculations of Light Attenuation and Scattering Coefficients"

Minsk, Zhurnal Prikladnoy Spektroskopii, (Journal of Applied Spectroscopy), (Journal of Applied Spectroscopy), Vol. 13, No. 5, Nov. 1976, p 898-903.

Abstract: Comparisons are made of the errors resulting from the use of exact and approximation equations for light attenuation and scattering problems and the conditions under which the approximation equations yield acceptably accurate answers. An approximation equation for absorption gives attenuation coefficients within an error of 5% for all scattering spheres having a characteristic dimension of $\rho < 0.2$. For larger spheres, the equation applies only to limited regions of diffraction index and absorption index values. When the absorption index is < 0.01 , a more exact equation is recommended because the approximation equation yields Rayleigh scattering coefficients with errors exceeding 5%. When the absorption coefficient is between 0.1 and 0.2 and the refraction index is between 1.01 and 1.1, the approximation equation can be used even when $1 < \rho < 3$. An equation is given for calculating the Rayleigh scattering coefficient when $\rho < 0.4$ with an error not exceeding 2 to 5%. Orig. art. has 4 figs. and 2 refs.

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USSR

UDC 615.473.2:615.373.6

BAKHUR, Ye. A., NAUMENKO, Yu. I., and SPOTARENKO, S. S., Central Institute of Epidemiology and Moscow Institute of Roentgenology and Radiology

"Possibility of Using the Krantz Jet Injector for Injecting Gamma Globulin"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1972, pp 92-96

Abstract: Gamma globulin injected intradermally with a Krantz syringe was not efficacious in preventing infectious hepatitis even during the first few months after immunization. In investigating the cause, the authors found that the device does not force the full dose of the preparation into the skin, mainly because of its viscosity. Tests showed that when the injector was filled with distilled water or physiological saline, about 2% of the liquid was not discharged, but when it was filled with 10% gamma globulin, as much as 6 to 7% remained in the reservoir. Moreover, other tests using the radioisotope method (Au^{198}) revealed that only 19% of a 0.1 ml dose of gamma globulin enters the skin when the Krantz injector is used compared to 57% of the same amount of physiological saline.

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USSR

UDC 621.317.337

DVINSKIKH, V. A., NAUMENKO, YU. P.

"Self-Excited Oscillator Method of Measuring the Q-Factor of Microwave Resonators"

V sb. Nekotor. vopr. izmereniy i stat. radiofiz (Some Problems of Measurements and Statistical Radiophysics--collection of works), Saratov, Saratov University, 1971, pp 15-22 (from RZh-Radiotekhnika, No 5, May 72, Abstract No 5A204)

Translation: The investigated self-excited oscillator method of measuring the loaded and natural Q-factor of resonators in the microwave range is based on including the tested resonator in the external feedback circuit of a wide-band traveling-wave tube amplifier and determination of the frequency shift of the autooscillations on variation of the phase shift in the closed system containing in addition to the traveling wave tube and resonator a directional responder, a phase shifter and an alternating attenuator. The device built for experimental checking of the two known measurement procedures -- static and dynamic -- is described. The Q-factor measurement error in the range of values of 200-1,000 is <8-10%.

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USSR

UDC 621.317.737

NAUMENKO, YU. P.

"Calculating the Modulation Characteristic of an Autooscillatory Q-Factor Meter"

Elektron. tekhnika. Nauchno-tekhn. sb. Kontrol'no-izmerit. apparatura (Electronic Engineering. Scientific and Technical Collection. Measuring and Control Equipment), 1970, vyp. 3 (21), pp 28-32 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4A292)

Translation: Results are presented from theoretical calculations and experimental studies of the phase and modulation characteristics of a traveling wave tube autooscillator with an external feedback circuit used to measure the Q-factor of superhigh frequency resonators by the phase modulation method. The requirements on the magnitude of the amplitude and frequency of the modulating voltage are defined.

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USSR

UDC 619:576.858.4:616.076.4

KRASNIKOV, G. A., Doctor of Veterinary Sciences, and NAIMETS, Z. P., Candidate of Veterinary Sciences, Ukrainian Scientific Research Institute of Experimental Veterinary Medicine

"Foot-and-Mouth Disease Virus in Ultrathin Sections"

Moscow, Veterinariya, No 1, Jan 71, pp 34-37

Abstract: Fetal pig kidney cells were inoculated with various dilutions of foot-and-mouth disease virus (A22 strain) and cultured for 20 hours at 25°C, a temperature low enough to prevent lysis of the cell membranes and nuclei. Electron-microscopic study of thin sections made it possible to identify the viral particles from their internal structure, and to differentiate them from polysomes, free ribosomes and ribosomes bound to cisterns of the rough endoplasmic reticulum. The viral particles were mostly irregularly oval or angular. The most characteristic feature was the presence of nucleoids with well-defined contours. The nucleoids were generally angular or amoebiform and frequently formed rather long evaginations. A layer of fine-grained material surrounded the nucleoids. The viral particles were generally larger than in the control preparations made from normal cells.

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Acc. Nr: AP0043678

N

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 2, pp 541-543

SINGLE MODE RUBY P'ING LASER

Korn'yenko, L. S.; Krav_sov, N. V.;
Naumkin, N. I.; Prokhorov, A. M.

Results of investigation of a ruby travelling-wave ring laser are presented. It is shown that such laser operates under regular oscillation conditions. The width of the radiation spectrum is measured. It is demonstrated that during the generation time the temperature drift of the radiation frequency is small (< 7 Mc).

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USSR

UDC: 621.378.325

KOPNIYENKO, L. S., KRAVTSOV, N. V., LARIONTSEV, Ye. G., NAUMKIN, N. J., Scientific Research Institute of Nuclear Physics, Moscow State University imeni M. V. Lomonosov

"Injection of a Short Light Pulse Into a Laser With a Long Cavity"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 4, 1 Apr 73, pp 826-828

Abstract: The authors discuss certain effects which arise when a short pulse of light is injected into a cavity with a transit time much greater than the pulse duration. Two injection modes are considered. If emission has already taken place in the laser before arrival of the external pulse, a mode of competitive interaction between the short pulse and the "inherent" emission of the laser takes place. In the second case, injection takes place before emission has developed. Conditions are discussed which lead to a quasistationary "traveling" pulse mode under the action of an external pulse. It is experimentally shown that the duration of emission in the traveling pulse mode is greater than in the mode of free emission. The envelope of the emission pulse train approximates the shape of the pumping pulse. Other modes of emission are to be treated in future papers.

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USSR

UDC: 621.373.029.7

KORNIYENKO, L. S., KRAVTSOV, N. V., and NAUMKIN, N. I.

"Structure of the Oscillation Pulses of a Laser With Linear Delay Inside the Resonator"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1760-1762

Abstract: Lasers with linear delay inside the resonator may have as much as one hundred simultaneously generating modes when the effective length of the resonator is in the tens of meters. Experiments are described in this paper aimed at determining the characteristics of the "fine" radiation pulses caused by the presence of so many different types of modes. A description of the equipment, including a diagram, is given, and an oscillogram of the radiation pulses clearly indicating their fine structure. Formulas are given for the intensity of the radiation field in multimode radiation and for the distribution probability of the radiation amplitude fluctuations. The length of the resonator used in the experiment was 60 m.

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USSR

KORNIYENKO, L. S., KRAVTSOV, N. V., NAUMKIN, N. I., and PROKHOROV, A. M., Institute of Nuclear Physics, Moscow State University

"Single-Frequency Ruby Ring Laser"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 58, No 2, Feb 70, pp 541-543

Abstract: The authors' purpose was to obtain a single mode for a traveling-wave ruby ring laser from the very start of generation, as well as to measure the width of the radiation spectrum and the radiation frequency shift during generation. It is shown that the radiation of such a laser in a single mode represents a regular sequence of a small number of spikes (usually 3-5 spikes) with a repetition interval of the order of 30 microseconds. The temperature drift of the radiation frequency during generation is small (less than 7 Mc).

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Rare Metals

USSR

UDC 669.793'3'854'292'293'26'1:620.181.41

NAUMKIN, O. P., TEREKHOVA, V. F., SAVITSKIY, YE. M.

"Scandium Alloys and Their Utilization in Engineering"

V sb. Redkozemel'n. met. i splavy (Rare Earth Metals and Alloys -- collection of works), Moscow, Nauka Press, 1971, pp 28-34 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I776)

Translation: Data are presented on the structure of phase diagrams and the investigation of the properties of Sc alloys with Cu, La, V, Nb, Cr, and Fe. A comparison of the physical-chemical interaction of the rare earth metals and Sc with the elements of the periodic table permits the conclusion to be drawn that Sc differs appreciably from the rare earth metals as a result of the difference in electron structure, the electronegativity, and atomic radii. The study of the properties of pure Sc, the construction of the phase diagrams with the elements of the periodic table, and the construction of the composition-property diagrams permitted discovery of the areas of industrial application of Sc and development of a number of Sc alloys. 9 illustrations, 1 table, and a 13-entry bibliography.

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USSR

UDC: 537.312.62

SAVITSKIY, Ye. M., BARON, V. V., NAUMKIN, O. P., YEFIMOV, Yu. V.

"Vanadium-Scandium and Niobium-Scandium Systems and Their Superconducting Properties"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting Materials--collection of works), Moscow, "Nauka", 1970, pp 178-186 (from RZh-Radiotekhnika, No 5, May 71, Abstract No. 5D546)

Translation: Taking characteristic experimental and literature data as a basis, the authors consider the principles which govern the change in T_k of superconducting alloys in simple eutectic systems of transition and non-transition metals, and also in the eutectic segment of phase diagrams of binary systems with the formation of intermediate compounds. " T_k composition" diagrams are presented for binary systems of vanadium and niobium with scandium, as well as the phase diagrams of these systems. In alloys of superconducting systems of the eutectic type, superconductivity is observed both in the case of alloying of two superconductors and in the case of alloying of a superconductor with a "normal" element. The T_k of the superconducting element goes up or down as the second component is dissolved within the limits of the region of homogeneity of the solid solution. In two-phase eutectic mixtures, the T_k of each of the superconducting phases varies along a nearly horizontal straight line as the composition of the alloys changes. Five illustrations, bibliography of twenty-five titles. Authors' abstract.

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USSR

UDC 669.292.5.793.669.293.5.793.669.018.5

SAVITSKIY, Ye. M., BARON, V. V., NAUMKIN, O. P., YEFIMOV, Yu. V.

"Vanadium-Scandium and Niobium-Scandium Systems and Their Superconducting Properties"

Probl. Sverkhprovodyashch. Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp. 178-186. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I752 by the authors).

Translation: Based on their own experiments and the data from the literature, the authors study the regularities of the change of T_c of superconducting alloys in simple eutectic systems of the transition and nontransition metals, as well as in the eutectic sectors of the state diagrams of binary systems with the formation of intermediate compounds. Composition- T_c diagrams of the binary systems of V and Nb with Sc and the state diagrams of these systems are presented. The T_c of the superconducting element is increased or decreased upon dissolution of the second component within the limits of the area of homogeneity of the solid solution. In 2-phase eutectic mixtures, T_c of each of the superconducting phases changes along a near-horizontal straight line when the composition of the alloy is changed. 5 figs; 25 biblio refs.

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USSR

UDC 669.292.5.293:537.321.62

SAVITSKIY, Ye. M., BARON, V. V., NAUMKIN, O. P., and YEFIMOV, Yu. V.

"The Vanadium-Scandium and Niobium-Scandium Systems and Their Superconducting Properties"

Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp 178-186

Translation; Based on their own experiments and data from the literature, the authors study the regularities of the change of T_c of superconducting alloys in simple eutectic systems of the transition and non-transition metals, as well as in the eutectic portions of the state diagrams of binary alloys forming intermediate compounds. "Composition- T_c " diagrams of the binary systems of vanadium and niobium with scandium and diagrams of the states of these systems are presented. In eutectic type superconducting system alloys, superconductivity is observed both in the case of melting of two superconductors, and in the case of melting of a superconductor with a "normal" element. T_c of the superconducting element increases or decreases when the second component is dissolved within

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USSR

SAVITSKIY, Ye. M., et al., Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp 178-186

the area of homogeneity of the solid solution. In two-phased eutectic mixtures, the T_c of each of the superconducting phases changes almost on a horizontal line as the composition of the alloys changes.

5 figures; 25 biblioc. refs.

2/2

1/2 015 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--RESEARCH IN A DESIGN PLANNING INSTITUTE -U-

AUTHOR--(05)-KARATAYEV, G., VNIYZEMAMASH, M., GAYDAYENKO, YU., NAUMOV, A.,
BLOKH, G.

COUNTRY OF INFO--USSR

SOURCE--STROITEL, NAYA GAZETA, MAY 6, 1970, P 2, COLS 5-7

DATE PUBLISHED--06MAY70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BEHAVIORAL AND SOCIAL
SCIENCES

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FACILITY PLANNING, INDUSTRIAL INSTITUTE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0183

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PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AN0102254

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THREE ARTICLES BY THE
AFOREMENTIONED AUTHORS DISCUSS CERTAIN DRAWBACKS OF THE SOVIET RESEARCH
AND DEVELOPMENT SYSTEM. ACCORDING TO KARATAYEV, THE VNIIZEMMASH
COMPRISES RESEARCH DEPARTMENTS NAUCHND ISSLEDOVATEL, SKIYE OTDELY, A
LEADING DESIGN BUREAU GOLOVNOYE KONSTRUKTORSKOYE BYURO, AND A PILOT
PLANT, OPYTNYY ZAVOD-. ITS PRINCIPAL PROBLEM IS LACK OF TESTING AND
FIELD TESTING FACILITIES FOR THE EARTH MOVING MACHINERY IT DEVELOPS.
GEMMERLING COMPLAINS ABOUT THE "DOUBLE LIFE" STANDARD FORCED UPON HIS
INSTITUTE BY THE MINISTRY OF BUILDING MATERIALS, U.S.S.R. THE
RESEARCH, NAUCHNAY, AND THE DEVELOPMENT, PROYEKTNAY, SECTIONS OF THE
INSTITUTE ARE SUBORDINATE TO DIFFERENT MAIN ADMINISTRATIONS OF THE
MINISTRY AND HAVE DIFFERENT BUDGETS.. IN GEMMERLING, \$ OPINION, BUDGET
MONEYS SHOULD BE ALLOCATED TO THE ADMINISTRATION OF THE INSTITUTE TO
FUND THE DEVELOPMENT OF PILOT PROJECTS ON THE BASIS OF COMPLETED
RESEARCH PROGRAMS.

UNCLASSIFIED

USSR

N 24

ADO, YU. M., ZHURAVLEV, A. A., LOGUNOV, A. A., MYAE, E. A., NAUKOV,
A. A., PISAREVSKIY, V. YE., ROGOZINSKIY, V. G., TUSHABRAMISHVILI, K.
Z., SHUKLYLO, I. A., BOYKO, S. N., KOMAR, YE. G., MALYSHEV, I. F.,
MOZIN, I. V., MONOSZON, N. A., MOZALEVSKIY, I. A., SPEVAKOVA, F. M.,
STOLOV, A. M., TITOV, V. A., VODOP'YANOV, F. A., KUZ'MIN, A. A., KUZ'-
MIN, V. F., MINTS, A. L., RUBCHINSKIY, S. M., UVAROV, V. A., GUTNER,
B. M., ZALMANZON, V. B., PROKOP'YEV, A. I., and TEMKIN, A. S.

"Some Results of the Overall Adjustment and Start-up of the 70-GeV
Proton Synchrotron of the Institute of High-energy Physics"

Moscow, Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

Abstract: The physical part of the plan for the 70-GeV proton syn-
chrotron was executed by the Institute of Theoretical and Experimental
Physics. The electromagnet with feed system, the vacuum chamber, and
the injection devices were developed at the Scientific Research Insti-
tute of Electrophysical Apparatus imeni D. V. Yefremov. The radio-
electronic systems for acceleration process control and generation of

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USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

the accelerating field, as well as the radiotechnical measurement and beam observation systems, were developed by the Radiotechnical Institute of the Academy of Sciences USSR. "Tyazhpromelektroproyekt" [State Planning Institute for the Planning of Electrical Equipment for Heavy Industry] designed the general-purpose electrotechnical devices and cable connections. The plan for the construction complex of the accelerator was developed by the State All-Union Planning Institute. The construction of the accelerator was under the general supervision of the State Committee for the Use of Atomic Energy USSR. The adjustment of individual systems and the overall adjustment and start-up of the accelerator were carried out by the Institute of High-energy Physics and the developers of the accelerator systems. The basic beam work was done by the Institute of High-energy Physics with the participation of the Radiotechnical Institute. The construction of the accelerator was begun in 1960, and all the basic construction and assembly work was completed at the beginning of

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USSR

ADO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

1967. At the initial stage of construction, before the formation of the Institute of High-energy Physics in 1963, the work was coordinated by the Institute of Theoretical and Experimental Physics. The linear accelerator injector was started on 28 July 1967, the operation of the individual systems was adjusted by September 1967, and the physical start-up of the accelerator was accomplished on 14 October.

A description is given of the work done to adjust the annular electromagnet (including the electromagnet cooling and feed systems), the injection system (consisting of matching channel and injection device), the vacuum system, the radioelectronic system (including the accelerating field generation system, the acceleration process control system, and the radiotechnical measurement system), and the beam observation system (which provides for beam observation in the first revolution and during acceleration). In the physical start-up of the accelerator the main efforts were directed towards obtaining accelerated protons of the planned energy, and the problem of obtaining high

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USSR

AEO, YU. M., et al., Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-138

intensity of the accelerated proton was not raised.

The article gives a listing of the principal parameters of the proton synchrotron, as well as a schedule of the individual stages of the start-up of the accelerator. Photographs include a view of the part of the ring hall in the beam injection area and a general view of the hall of ignitron rectifiers.

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USSR

UDC: 621.373.4(088.8)

BERCHEMCO, K. H., SERIPEKA, L. M., ANTONOV, Ye. V., KAULIN, Ye. F.,
ROGOV, P. V., and MAUKOV, A. N.

"Test Signal Formation Device for Tuning Electronic Equipment"

Avt. sv. SSSR (Author's Certificate USSR) Class 2la⁴, 8/01, (H 03
b 23/00), No. 270825, Application 27.01.69, Publication 1.09.70
(from RZh-radiotekhnika, No. 3, March 71, Abstract No. 3A406P)

Translation: A device is proposed for forming a test signal for tuning electronic equipment, containing a frequency wobulator, a modulator, a set of five frequency oscillators, an automatic gain control circuit, a marker generator, and a control device. The device is distinguished in that, for the purpose of simplifying the equipment for formation of powerful undistorted signals consisting of pulses of FM oscillations at low resistance loads, the fixed frequency oscillators mentioned above are connected through a summing circuit to the frequency wobulator. E. L.

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USSR

UDC: 621.373.431(088.8)

NAUMOV, A. M.

"A Pulse Shaper"

USSR Author's Certificate No 262163, filed 5 Mar 68, published 30 Jun 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G216 P)

Translation: This Author's Certificate introduces a high-frequency pulse shaper which contains two series-connected slave multivibrators and a binary counter. To obtain a synchronous high repetition frequency from widely spaced input signals, the second slave multivibrator and the binary counter are connected through a coincidence circuit to the first slave multivibrator.

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USSR

UDC 621.43.018

NAUMOV, A. N., and NESTERENKO, V. B., Institute of Nuclear Power Engineering,
Academy of Sciences, Belorussian SSR

"Thermodynamic Possibilities of the Stirling Cycle With a Chemically
Reacting Gas"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Energeticheskikh Nauk
No 1, 1971, pp 48-52

Abstract: A thermodynamic analysis of the Stirling cycle with a chemically reacting working medium is given. It is shown that the use of a chemically reacting working medium makes it possible to decrease the influence of internal losses upon the effective efficiency of the cycle. The domain of expedient application of the cycle is defined -- power installations operating in a comparatively narrow temperature range of the working medium. Five figures, 3 bibliographic entries.

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USSR

UDC 621.371-403:538.596.4

NAUMOV, A. P.

"Absorption of Microwaves by Impurity Gases in the Earth's Atmosphere"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on Radio Wave Propagation, Report Theses--collection of works) 1972, pp 21-25 (from RZh-- Radiotekhnika, No 10, 1972, Abstract No 10A311)

Translation: Results are given of the computations of the absorption coefficient of millimeter and submillimeter radio waves in the earth's atmosphere, with the additives CO, N₂O, and O₃ taken into account, at various heights; also given are the results of estimating the vertical absorption of the radio waves near the most intense resonances of the additive gases in the submillimeter range in cloudy and cloudless weather. Two illustrations, bibliography of 13. N. S.

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USSR

UDC 621.371.325

NAUMOV, A.P. [Scientific-Research Institute Of Radiophysics]

"Concerning Absorption Of Radio Waves By Impurity Gases In The Earth's Atmosphere"

Izv.VUZ:Radiofizika, Vol XV, No 5, May 72, pp 682-694

Abstract: The results are presented of calculations of the absorption coefficient of O_2 , CO, and N_2O in the range of radio wavelengths $\lambda \geq 0.3$ mm at heights of 0 and 20 km, as well as the total absorption coefficient of the atmosphere in the millimeter and centimeter portions of the spectrum for heights of 10, 15, and 20 km. The extent is considered of the "masking" effect of the main absorption components -- water vapor and molecular oxygen-- on the resolution of the rotational lines of the above impurity gaseous components. The results of the calculations made in the paper may be used to specify the characteristics of radio wave propagation in the absorption resonance regions of the given impurities at great heights and may be used for a search of new parts of spectrum in radiotelescopic studies of the atmosphere. From this point of view the submillimeter range of waves may be promising, in which a large number of lines of various gaseous components of the atmosphere are located. The author thanks S.A. Zhevakin for discussion of the work and M.B. Zinichev for computations made on the BESM-4. 10 fig. 41 ref. Received, 17 September 1971.

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USSR

UDC 621.317.444:546.35:536.58

NAUMOV, A. P.

"Temperature and Light Intensity Control Systems in an Alkali-Vapor Magnetometer"

Tr. metrol. in-tov SSSR (Works of the Metrology Institutes of the USSR), 1971, No. 113(173), pp 57-59 (from Referativnyy Zhurnal, Metrologiya i izmeritel'naya tekhnika, No 11, Nov 71, Abstract No 11.32.1743)

Translation: Systems for controlling the absorption chamber temperature and the light intensity of the spectral source of a mockup of a rubidium-vapor magnetometer are discussed. The assigned temperature of $59 \pm 0.5^\circ\text{C}$ was maintained by a constant two-step thermal regulator. The pumping light intensity was maintained in the range $\pm 5\%$ by controlling the power supply of the excitation generator. The shift in the resonance frequency did not exceed $0.5 \cdot 10^{-10}$ tesla under operation of the mockup in the magnetic field of the earth. 2 ill., 2 ref.

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1/2 042

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--LOWER ATMOSPHERE OF VENUS FROM RADIO ASTRONOMICAL AND SPACE MEASUREMENTS -U-
AUTHOR--(104)-KUZMIN, A.D., NAUMOV, A.P., SMIRNOVA, T.V., VETUKHNOVSKAIA, YU.N.

COUNTRY OF INFO--USSR

SOURCE--PLENARY MEETING. 13TH LENINGRAD, USSR, MAY 20-29, 1970, PAPER. IIP.
DATE PUBLISHED-----70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, ATMOSPHERIC SCIENCES

TOPIC TAGS--VENUS PLANET, PLANETARY ATMOSPHERE, ATMOSPHERIC MODEL, RADIO ASTRONOMY, RADAR OBSERVATION, LOWER ATMOSPHERE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0548

STEP NO--UR/0000/70/000/000/0011/0011

CIRC ACCESSION NO--AT0126295

UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--A70126295

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF TWO MODELS FOR THE LOWER ATMOSPHERE OF VENUS TAKING INTO ACCOUNT AN ANALYSIS OF RADIO ASTRONOMY AND RADAR MEASUREMENTS BASED ON DATA OF THE SOVIET SPACECRAFT VENERA 5 AND 6. THREE INDEPENDENT EVALUATIONS OF THE PRESSURE AND THE TEMPERATURE OF THE VENUS ATMOSPHERE ARE MADE. AN ADIABATIC MODEL WITH RELATIVE ABUNDANCE OF WATER VAPOR OF 0.5PERCENT AND A MODEL WITH AN ISOTHERMAL NEAR SURFACE REGION AT A TEMPERATURE OF 650DEGREEK ARE DESCRIBED.

FACILITY: AKADEMIIA NAUK SSSR, FIZICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

NAUMOV, B. N., ZAKHAROV, V. G., FILINOV, Ye. N.

"Basic Principles of Creation of Combined Complexes of Computer Equipment for Control Systems"

Upravlyayushchiye Sistemy i Mashiny [Control Systems and Machines], 1972, No 1, pp 104-109 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V593).

Translation: The basic principles are presented for the creation of combined computer equipment complexes for the construction of ACS at various levels; the composition of systems developed and planned for development is indicated, and problems of their utilization in systems of varying complexity are described.

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USSR

LINKIN, V. M., NAUMOV, B. P.

"One Adaptive Algorithm for Determination of Changes in Characteristics of an Observed Random Process"

Probl. Peredachi Inform. [Problems of Information Transmission], 1972, Vol 8, No 4, pp 40-45 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V327, by the authors).

Translation: An adaptive algorithm is suggested for determination of changes in the characteristics of an observed random process. It is assumed that these changes occur according to an unobserved homogeneous Markov chain with unknown transition probabilities. The number of states in the Markov chain is assumed known, as well as the conditional distributions of the observed quantities. At each moment in time (discrete time), the a posteriori distribution of the unobserved states of the chain is calculated. An algorithm for estimation of the unknown transition probabilities of the chain is presented which produced values which converge on the true values. An example is presented of the operation of the adaptive algorithm constructed in a probabilistic model of a Markov chain with observed quantities distributed binomially.

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USSR

UDC 535.411.082.52

NAIMOV, B. V.

"The Sensitivity Threshold of a Photoelectrical Shadow Instrument With a Rectangular Light Source and Foucault Knife"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 12, Dec 70, pp 16-20

Abstract: Photoelectrical shadow instruments are used in the investigation of unstable processes in transparent, optically inhomogeneous media. Most extensively used are instruments with a rectangular light source and a Foucault knife. The article deals with a concept of the sensitivity threshold of a photoelectrical shadow instrument, in which account is taken of the statistical nature of the internal noise of the instrument. The relationship of the threshold to the design parameters of the instrument is determined; the limit value of the threshold for laboratory models of the instrument is calculated. 2 figures, 1 table, 10 bibliographic entries.

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USSR

UDC: 681.325.53

NAUMOV, D. S.

"A Device for Decoding the Values of the Distribution Function for a Random Quantity"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 8, Mar 71, Author's Certificate No 296101, division G, filed 19 Feb 70, published 12 Feb 71, p 151

Translation: This Author's Certificate introduces a device for decoding the values of the distribution function of a random quantity. For decoding m digital places, the device contains an m -place input register, a unit for decoding the values of the distribution function of a random quantity for the first $(m - 1)$ digital places, AND and OR elements, and $2^m - 1$ outputs. As a distinguishing feature of the patent, the circuit is simplified by connecting each output of the device for decoding the values of the distribution function of the random quantity for the first $(m - 1)$ digital places to the first inputs of one AND element, and the OR element is connected to the output of the m -th digital place of the input register.

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1/1

USSR

UDC 611.839+615.361.814.3]:359.6

POLOZHENTSEV, S. D., Lt Col Med Serv, Candidate of Medical Sciences, PADKIN, V. V., Lt Col Med Serv, Candidate of Medical Sciences, NAUMOV, G. M., Lt Col Med Serv, and MAKHNENKO, A. A., Maj Med Serv.

"The State of the Sympatho-Adrenal System in Sailors During Long-Term Cruises"

Moscow, Voenno-Meditsinskiy Zhurnal, No 6, 1973, pp 56-57

Abstract: Determinations of urinary excretion of catecholamines were performed on two groups of sailors. In the first group comprising 28 men, noradrenaline excretion was moderately increased (39 units/min) and adrenalin excretion decreased (7) prior to sailing, corresponding to the general emotional excitation of anticipation. During the second half of cruising when adaptation to the changed surroundings was achieved, noradrenalin excretion increased to 67.6 while adrenalin excretion remained unchanged (6.9). Immediately after completion of the cruise, noradrenalin excretion fell to 31.6 while adrenalin excretion rose to 13.6. The second group comprising 21 men repeatedly sailed from one climate zone into another. During the first half of cruising, excretion of both catecholamines was elevated to about 40, indicating exposure to severe stress. In the final period of cruising when marked fatigue was observed in most
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USSR

POLOZHENTSEV, S. D., et al., *Voyenno-Meditsinskiy Zhurnal*, No 6, 1973, pp 56-57

sailors, excretion of noradrenalin fell to 9.2 and that of adrenalin to 12.4. Immediately after completion of the cruise, noradrenalin excretion rose to 24.6 while adrenalin excretion further fell to 3.8. The figures indicate a dissociation between the activities of the adrenal medulla and the sympathetic nervous system, corresponding to the various periods of adaptation to the changing external conditions.

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USSR

UDC 621.372.85

STOLYAROV, A. K., SMIRNOV, V. S., and NAUMOV, I. A.

"Microband Ferrite Units for Integrated Super-High Frequency Circuits"

Elektron. tekhnika. Nauch.-tekhn. sb. Ferrit. tekhn. (Electronics Technology. Scientific-Technical Collection of Articles. Ferrite Technology), 1971, vyp.4 (31), pp 60-64 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B153)

Translation: The authors describe ferrite, super-high frequency, microband module-circulators, phase inverters, rectifiers, and amplifying circuits with circulators designed for use in integrated and hybrid integrated super-high frequency circuits. Resume.

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USSR

UDC: 621.372.852.2

STOLYAROV, A. K., NAUMOV, I. A.

"Problems of Optimum Design of Phase Shifters Based on Ferrites With Rectangular Hysteresis Loop"

V sb. Antenny (Antennas--collection of works), Vyp. 8, Moscow, "Svyaz'", 1970, pp 65-72 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7B175)

Translation: The paper gives the results of calculation of a nonmutual waveguide phase shifter represented as a ferrite-dielectric waveguide magnetized by an annular magnetic field; the ferrite has an arbitrary thickness. A strict solution is found for the problem of propagation of an electromagnetic wave along a two-layer dielectric rod, and the nonmutual effect is found by the perturbation method. Six illustrations, bibliography of four titles. Resumé.

1/1

USSR

UDC: 678.5.06:624.074.4.001

BELOZEROV, L. G., DZHANKHOTOV, S. O., and NAUMOV, I. M., Central Aerodynamics Institute imeni Prof. N. Ye. Zhukovskiy, Moscow Oblast'; Scientific-Research Institute of the Technology and Organization of Production, Moscow

"Critical Stresses of Compressed Cylindrical Shells Made From Orthotropic Layers With Differing Orientation"

Riga, Mekhanika Polimerov, No 4, Jul-Aug 73, pp 684-690

Abstract: Results are presented from an experimental study of the regularities associated with changes in deformations and critical stresses which take place in smooth thin-walled circular cylindrical shells made from glass reinforced plastic based on the EDT-10P binder with diverse orientation of the fabric filler during axial compression. The test results are compared to the calculated data which was obtained using formulas from the theory of elasticity of an orthotropic body and of orthotropic shells. It is shown that the walls buckled with accompanying flaking as the critical load was achieved during axial compression. Also two or three rows of rhombic depressions appeared on the shell surfaces stretching in a circular direction. The number of half-waves in the circular direction is six-seven. The buckling began in the elastic zone. After the load was removed the waves disappeared. It is shown that changing the angle of basis orientation during the combined winding of shells with $R/\delta=113$ does not have a significant effect on the magnitude of

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USSR

BELOZEROV, L. G., et al, Mekhanika Polimerov, No 4, Jul-Aug 73, pp 684-690

the critical stresses associated with axial compression. A comparison of the experimental and calculated results shows good agreement for the case where the axes of elastic symmetry of the material coincide with the main coordinate axes of the shells. In other instances, the calculated values exceed the experimental.

2/2

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1/2 009

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--A NEW RESEARCH SHIP -U-

AUTHOR--NAUMOV, K.

COUNTRY OF INFO--PACIFIC OCEAN, USSR

SOURCE--VODNYI TRANSPORT, SEPTEMBER 1, 1970, P 4, COL 1

DATE PUBLISHED--01SEP70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--METEOROLOGIC SHIP, OCEANOGRAPHIC EXPEDITION/(U)PRI80V METEOROLOGIC SHIP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1636

STEP NO--UR/9028/70/000/000/0004/0004

CIRC ACCESSION NO--AN0138612

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AN0138612
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESEARCH FLEET OF THE
HYDROMETEOROLOGICAL SERVICE HAS RECEIVED A NEW VESSEL, THE "PRIBOY". IT
HAS LEFT THE ODESSA PORT FOR THE PACIFIC.

UNCLASSIFIED

USSR

JDC 575.24:578

PROZOROV, A. A., SAVCHENKO, G. V., NAUMOV, L. S., and LAKOMOVA, N. M., All Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms, Moscow

"Mutants of *Bacillus subtilis* with a Modified DNA Donor Capacity in Spontaneous Transformation. I. The Method of Isolation of Mutants."

Moscow, *Genetika*, Vol 8, No 3, Mar 72, pp 79-86

Abstract: A method was developed for the isolation of *Bac. subtilis* mutants with a modified capacity of acting as donors of DNA in spontaneous transformation. The donor strain *Bac. subtilis* thr⁻thy⁻met⁻ was derived from a thy⁻met⁻ strain by treating the latter with diethylsulfate, whereupon 0.1-1% of the cells survived. Subsequent application of thymine starvation and treatment with penicillin killed cells with a normal rate of growth, while cells of ts-mutants with respect to DNA synthesis survived because of their subnormal rate of growth. To isolate mutants with modified donor capacity, mutagenized colonies of the donor strain were imprinted on agar covered with surface colonies of the recipient strain *Bac. subtilis* 39-22 leu⁻his⁺ind⁻. For the genetic mapping of auxotrophic mutations, strains leu⁻his⁺ind⁻ and leu⁻his⁻ind⁺ were transformed that had been obtained from strain 39-22 by treatment with DNA of the corresponding mutants. The transforming DNA was isolated by a modified Kirby

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USSR

PROZOROV, A. A., et al., Genetika, Vol 8, No 3, Mar 72, pp 79-86

method. To determine the relative distance of mutations from the markers his₂ and ind, the method of difactor crossings was applied. Fourteen mutations of the donor strain with modified donor capacity were isolated. Most mutations showed linkage and the his₂ and ind markers. The method applied makes it possible to isolate other auxotrophic mutations as well with the same marker linkage as that associated with modified donor capacity.

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USSR

NAUMOV, L.S., PROZOROV, A.A., SAVCHENKO, G.V., and VELIKZHANINA, G.A., All Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms, Moscow

"Comparative Study of Induced Mutagenesis in Rec⁺ and Rec⁻ Strains of *Bacillus subtilis*"

Moscow, Genetika, Vol 6, No 3, 1970, pp 51-58

Abstract: In previous works, mutants of *B. subtilis* with disrupted recombination and elevated sensitivity to various mutagens were described. It was observed that mutations were localized in the same part of the chromosome. Experiments on the mutagenic influence of diethylsulfate and embichine 7 on the initial and rec strains are described. The number of auxotrophic mutations in the strain *Bacillus subtilis* rec 149 was greater than in the initial strain. This may be due to errors in synthesis of reparative DNA in rec-strains.

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USSR

UDC 621.43.011:533+621.5:533

BAKHITGOZIN, SH. KH., NAUMOV, M. S., SHELUKHIN, G. G.

"Calculating a Turbulent Flare at the Wake Boundary"

V sb. 3-y Vses. simpozium po goreniyu i vzryvu, 1971 (Third All-Union Symposium on Combustion and Explosion, 1971--collection of works), Chernogolovka, 1971, pp 126-128 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B305)

Translation: Some principles of the procedure for calculating the characteristics of a turbulent gas flare during diffusion combustion are discussed. A study was made of two schemes for feeding the components to the combustion chamber: 1) along the chamber axis with axial arrangement of the jets; 2) through jets normal to the chamber axis. The diffusion flare was calculated by the method of the equivalent problem of the theory of thermal conductivity. The solution of the partial differential equations with one sliding limit was found by the approximate Polhausen-Karman method. The temperature and concentration fields along the length of the chamber were calculated. The mean integral gas temperature at the chamber outlet was determined. The calculations were checked experimentally. Using a high-speed movie and the color method, the temperature distribution in the flare was measured and compared with the calculated temperature.

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USSR

UDC: 621.373.531.1(088.8)

NAUMOV, N. M., ZAKS, D. I., Taganrog Radio Engineering Institute

"A Slave Multivibrator"

USSR Author's Certificate No 270785, filed 8 Jul 68, published 11 Aug 70
(from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2G262 P)

Translation: This Author's Certificate introduces a transistorized slave multivibrator which utilizes the thermal capacity between circuit components as the time-mark element. To reduce overall dimensions and make the relaxation time independent of the ambient temperature, the temperature-dependent element -- a semiconductor diode -- is connected in parallel with the base-emitter junction of the transistor in one of the arms of the multivibrator.

1/1

USSR

UDC 599.32-12:616.981.452-036.22(252-925.2)

~~NAIMOV~~, N. P., LOBACHEV, V. S., DMITRIYEV, P. P., KANATOV, Yu. V., and SMIRIN, V. M., Moscow State University and Central Asian Antiplague Institute

"Experience in Studying the Dispersal Rate and Paths of Movement of Plague Epizootics in the Northern Desert"

Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, No 2, 1973, pp 78-85

Abstract: Microbiological, immunological, and ecological data were employed to trace the paths and rates of plague epizootic dispersal northward across a front of over 200 km east of the Aral Sea in 1966-1969. Data were obtained for the most part from *Ruombomys opimus* Licht, and its parasites. Presence of animals with acute manifestations of plague and incomplete antibodies was assumed to suggest a new invasion. Prior to the period of investigation, plague foci were noted only on the outskirts of this territory following a rodent and ectoparasite eradication program conducted in 1958. In the spring 1966 northward dispersal began from foci just north of the Syr-Dar'ya River. Most progress occurred during 5 months of summer and fall and ranged from 15 to 50 km per year. By fall 1969 the epizootic became stabilized somewhat. Forward progress was stalled in areas that had been subjected to one-time eradication programs, but it was not entirely arrested. The radial dispersal of the

USSR

NAUMOV, N. P., et al., Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii,
No 2, 1973, pp 78-85

epizootic that was revealed suggests that the disease is spread predominantly
through the dispersal of young *R. opimus*. This research demonstrates that
epizootics can be traced reliably by direct observation in the field.

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USSR

NAUMOV, N. P.

UDC 518:519.3:62-50

"A Quantitative Method for Solving Linear Dynamic Programming Problems"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, vol. 11, No. 5, September-October 1971, pp 1180-1192

Abstract: The author defines linear dynamic programming as that branch of the mathematical theory of linear optimal processes capable of solving multidimensional problems in which limitations on phase coordinates are taken into account. The theory of optimal processes is used in the organization of management and economics. In this paper, a new algorithm based on the generalized Lagrange method and other theoretical approaches to the problem of linear dynamic programming given in an earlier paper (Yu. P. Krivenkov, Matematicheskive i vychislitel'nyye voprosy lineynogo dinamicheskogo programirovaniya -- Mathematical and Computational Problems of Linear Dynamic Programming -- VTs AN SSSR, Moscow, 1969) is developed. The methods of its development are fully explained, and an example of its use in solving optimal problems is given. The author expresses his gratitude to the aforementioned Yu. P. Krivenkov for his advice and interest.

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USSR

UDC 599.323.4 Rhombomys:591.555

~~NAUMCH, N. P.~~, DMITRIYEV, P. P., and LOBACHEV, V. S., Moscow State University

"Changes in Biocenoses in the Aral Kara Kum Caused by the Extermination of Great Gerbils"

Moscow, Zoologicheskii Zhurnal, Vol 49, No 12, Dec 70, pp 1758-1766

Abstract: The effect of the mass extermination of great gerbils in the Aral Kara Kum desert on the general biocenosis of the area was studied. The observations were conducted in the period of 1961 to 1967. Seed -- oats and wheat -- treated with 3% vegetable oil and 15-20% zinc phosphide was scattered throughout the desert in an area thickly populated with the rodents. The mass extermination of gerbils was gradually followed by the disappearance of mice, jerboas, and hamsters and in lesser numbers by disappearance of insectivora and reptiles. The disappearance of these animals produced a sharp change in the trophic conditions of the area with the result that the number of all types of vertebrates and predatory birds gradually diminished. The extermination of the gerbils and disappearance of other rodents led also to a change in the structure of the ground: the numerous nests and tunnels dug in the ground by

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USSR

NAUMOV, N. P., et al, Zoologicheskiy Zhurnal, Vol 49, No 12, Dec 70,
pp 1758-1766

the rodents gradually collapsed and filled, thereby changing also the vegetation character of the area. As a consequence of the change in the general biocenosis in the area, conditions were created favoring the breeding of herbivorous animals in the Aral Kara Kum desert.

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Biophysics

USSR

NAUMOV, N. P., Professor, Head, Soil Biology Department, Moscow State University

"Technical Progress and Nature's Patents"

Moscow, Nedelya, 16-22 Mar 70, p 4

Abstract: This article contains a brief discussion of the general interest in bionics on the part of biologists and engineers, followed by a discussion of phenomena of interest in the area newly named chemical bionics. In particular, the discussion centers around the mechanisms of bioorganic synthesis by cells and microorganisms. An example of an interesting application is the operation of the salt glands of salt-water fish, which convert seawater to fresh water. Orientation, navigation and homing devices in insects, birds, fish and mammals are discussed briefly. The olfactory sense and sensitivity to light are also analyzed. Population, species and biocenoses are of interest in connection with problems of organization of complex interrelated processes in production, transportation, and so on. The technical possibilities of all these mechanisms should not be overestimated, since they operate on the principle of selecting the best of existing possibilities and are not necessarily aimed at the "technical ideal." The basic

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NAUMOV, N. P., et al., Moscow, Nedelya, 16-22 Mar 70, p 4

advantage of biological subjects is that they are a united, connected system.

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USSR

UDC 51

BELOZEROV, V. V., NAUMOV, N. P., SHABUNIN, M. I.

"Problem of Mathematical Description of the Process of Executing an Operation"

V sb. Issled. operatsiy. Modeli, sistemy, resheniya. Vyp. 3 (Operations Research. Models, Systems, Decisions. Vyp. 3 -- collection of works), Moscow, 1972, pp 64-74 (from RZh-Kibernetika, No 9, Sep 73, Abstract No 9V516)

Translation: A study is made of an approach to the mathematical description of the process of executing an operation in which along with the ordinary factors (such as the operation execution time, the intensity of resource consumption, and so on) the results achieved during the processes executing the operation are considered in accordance with the stated goal. We are talking about describing such operations the initial information for which, as a rule, is of a hypothetical nature and can be obtained by expert evaluations. The process of executing the operation is described using a differential equation or system of equations the right-hand sides of which can be obtained from solving the problem of minimizing the quadratic form of a special type in the presence of certain restrictions. The proposed approach for practical utilization of it permits implementation on a computer.

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Construction

USSR

UDC 624.139.22

TSIUNCHIK, B. I., NAUMOV, N. YA., Novosibirsk

"The Deformation of a Large-Span Industrial Building in Connection With Frost-Actuated Heaving of the Foundation Soil"

Moscow, Osnovaniya, Fundamenty i Mekhanika Gruntov, No 6, 1970, pp 28-30

Abstract: In planning practice it sometimes considered that if building foundations are laid below the frost line, deformations from frost heaving will occur only in comparatively small buildings. However, experience shows that the heaving properties of soils freezing at building foundations also cannot be disregarded in the case of industrial buildings, without danger of incurring severe consequences. One such instance is discussed in the article. The conclusion is drawn that calculation checks of foundation stability against frost heaving must be made if a building is to be erected on soil subject to heaving, even if the thickness of this soil is small. 2 figures.

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USSR

UDC 599.325.2:59.084.2

NAUMOV, R. L., and LUR'YE, A. A., Institute of Medical Parasitology and Tropical Medicine, Ministry of Health USSR

"Tagging the Mountain Pika With Radioactive Cobalt"

Leningrad, Zoologicheskii Zhurnal, No 11, 1971, pp 1,728-1,731

Abstract: A cobalt 60 source (with an activity of 57 meq of Ra) was implanted in the scapular region of a young female mountain pika (*Ochotona alpina* Pall.) in western Sayan (1450 m above sea level). The animal, which was tracked with two field radiometers could be detected several dozen meters away while above ground and for several meters when it moved among stones. Direct tracking for 21 hours and 17 minutes over a period of 4 days revealed that the animal spent about 34% of the time in feeding, 26% in moving about, and 40% in resting. One old and two young pikas were observed in the same areas. Although there were no signs of hostility, the territorial principle seemed well established.

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USSR

UDC 614.449.542-036.8

NAUMOV, R. L., and RUBINA, M. A., Institute of Medical Parasitology and Tropical Medicine imeni E. I. Martsinovskiy, USSR Ministry of Health, Moscow

"Extermination of the Vector of Tickborne Encephalitis in the Construction Zone of the Sayan-Shushenskaya Hydroelectric Power Station and the Resulting Parasitological Effect"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 40, No 3, May/Jun 71, pp 286-291

Abstract: Similar measures as those taken during the 1957-1963 construction of the Krasnoyarsk Hydroelectric Power Station were taken to protect the population and construction crews from tickborne encephalitis in connection with the construction of the Sayan-Shuchenskaya Hydroelectric Power Station on the Yenisey River. A 10% dust and 25% DDT emulsion were sprayed from helicopters over the surrounding area after careful mapping of the terrain with respect to the abundance of encephalitis-carrying ticks. Difficulties were encountered with the dust application, and pilots had to sly at longer intervals in order not to strike the dust cloud remaining behind from a preceding flight. The parasitological effectiveness of the treatments was determined by comparison of the abundance of ticks on the treated territory and their abundance on a

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USSR

NAUMOV, R. L., and RUBINA, M. A., Meditsinskaya Parazitologiya i Parazitarnyye Rolezni, Vol 40, No 3, May/June 71, pp 286-291

control territory. Each area was treated from one to three times. Prior to the treatment the tick density had been 500 ticks per km² in some areas. After the five-year extermination work, complete absence of ticks in all stages of their growth was achieved (with a maximum of 0.4 ticks per km²) and from 73.4% up to 98.5% of larvae and nymphs were exterminated. It was concluded that to obtain a long-term effect in mountainous terrain, it is sufficient to treat the area twice or three times in two to three consecutive years or every other year. Also, a large treated strip of land should be maintained around the town under construction between the river and mountains.

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USSR:

UDC 595.421

LUR'YE, A. A., NAUMOV, R. L., and ARUMOVA, YE. A., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, USSR Ministry of Health, Moscow

"Radioactive Tracing of Ixodes persulcatus Ticks"

Leningrad, Parazitologiya, Vol 5, No 3, May/June 71, pp 281-183

Abstract: Two radiotracer methods were used for the longterm study of ticks (for periods up to five years), since the lifespan of the encephalitis-carrying tick is considered to be 3-5 years. The first method was difficult since it did not produce a sufficiently high radioactivity in the labeled larvae. The method involves subcuticular inoculation of 12 females with a 25 microcurie dose of labeled glucose saline solution. Larvae from these females numbered 1,500-2,300 within 16-20 days with a radioactivity of 0.2-2.2 pulses/sec and 0.8-7.2 pulses.sec per crushed larva. After one month, larvae became ticks. The maximum activity of larvae and ticks was measured and found to vary -- depending on the number of days between treatment and egg-laying. Larval activity ranged from 4 to 20 impulses/second, rarely from 30 to 60 impulses/second. The other radiotracer method used allows one to obtain labeled larvae and ticks by letting them feed on laboratory animals previously treated with 1/2.

USSR

LUR'YE, A? A., et al., Parazitologiya, Vol 5, No 3, May/Jun 71, pp 281-288

radioactive substances. White mice were used as radioactive blood donors, since they have a relatively high resistance to radioactivity in comparison with other animals. Labeled glycine was intraperitoneally administered to white mice. Ten mice were used to feed 4,000 ticks and close to 300 nymphs. Most of the radioactive ticks and nymphs were used in field experiments; 150 ticks and 30 nymphs were kept in the laboratory. It was found that the activity of live engorged larvae was 0.5 to 1.1 pulses/sec and that of crushed ones was 4 to 10 pulses/sec. The activity of nymphs was considerably higher. The second radiotracer method is recommended because a label of sufficiently high radioactivity could be obtained and maintained for a longer time period. The development phases of ticks can thus be easily followed by the second method.

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USSR

UDC 595.421 - 19(235.223)

NAUMOV, R. L., and RUBINA, M. A., Entomological Division, Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

"Distribution of *Ixodes persulcatus* P. Sch. Ticks on the Northern Slope of Western Sayany and Factors Determining It. Communication II. Small Mammals as Hosts of *I. persulcatus* Larvae and Nymphs"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 39, No 5, Sep/Oct 70, pp 578-583

Abstract: The role of small mammals in providing food for larvae and nymphs of *Ixodes persulcatus* P. Sch. ticks was studied from 1965 to 1968 in the zone of the construction of Sayany-Shushenskaya Hydroelectric Power Station on the left bank of the Yenisey. Small mammals which are hosts of tick larvae and nymphs are not numerous in the area studied as compared to other regions. Their number differs with altitude; they are most abundant in the grassy cedar-fir forests at 600-1,100 m above sea level, and least numerous in the forest steppe. The ticks in the preimaginal phase also differ as to their abundance in different vegetation zones. They feed most intensively in grassy cedar-fir forests because

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NAUMOV, R. L. and RUBINA, M. A., Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 39, No 5, Sep/Oct 70, pp 578-583

of the relatively abundant rodent population. The number of parasites and the duration of parasitizing decreases moving in sparcely wooded forests and forest-steppe areas.

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USSR

UDC 911.3.616.9.576.895.42(42+57)

BABENKO, L. V., NAUMOV, R. L., USPENSKIY, I. V., MERINOV, V. A., RUBINA, M. A., VASIL'YEVA, I. S., IOFFE, I. D., OBLESOVA, L. N., and RAZUMOVA, I. V.

"A Biological Study of Ixodes Ticks -- Disease Vectors -- and a Scientific Study of Countermeasures in Natural Foci"

V sb. Materialy Nauchn. konferentsii, posvyashch. 50-letiyu In-ta med. parazit. i tropich. med., 1970 (Proceedings on the Conference Commemorating the 50th Anniversary of the Institute of Medical Parasitology and Tropical Medicine 1970 -- collection of works), Moscow, 1970, pp 52-53 (from RZh-36. Meditsinskaya Geografiya, No. 1, Jan 71, Abstract No. 1.36.67)

Translation: This study has four objectives: a) study of the ecology and population biology of the prevalent Ixodes and Dermacentor tick species; b) complex study of biological laws in natural foci of tickborne encephalitis and in one focus of Asian tickborne rickettsiosis (in Krasnoyarskiy Kray); c) study and practice of countermeasures against tickborne encephalitis for residents of large, newly-constructed housing developments in the hill rayons of Krasnoyarskiy Kray; and d) study of the effect of pesticides on ticks (*I. persulcatus*, for example).. A proposal is advanced for research on the

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USSR

BABENKO, L. V., et al., V sb.. Materialy Nauchn. konferentsii, posvyashch. 50-letiyu In-ta med. parazitol. i tropich, med., 1970 (Proceedings on the Conference Commemorating the 50th Anniversary of the Institute of Medical Parasitology and Tropical Medicine 1970 -- collection of works), Moscow, 1970, pp 52-53 (from RZh-36.. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No I.36.67)

characteristics of the population biology, morphology, and physiology of ticks within various geographic conditions.

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 UNCLASSIFIED
 TITLE—TICKS ON THE NORTHERN SLOPE OF THE WESTERN SAYAN MOUNTAINS AND
 FACTORS DETERMINING IT. I: DISTRIBUTION OF ADULT I. PERSULCATUS -U-
 AUTHDR—(02)—RUBINA, M.A., NAUMOV, R.L.
 COUNTRY OF INFO—USSR
 SOURCE—MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI, 1970, VOL
 39, NR 3, PP 269-274
 DATE PUBLISHED—70
 SUBJECT AREAS—BIOLOGICAL AND MEDICAL SCIENCES
 TOPIC TAGS—TICK, ENCEPHALITIS, GEOGRAPHIC PATHOLOGY
 CONTROL MARKING—NO RESTRICTIONS
 DOCUMENT CLASS—UNCLASSIFIED
 PROXY REEL/FRAME—2000/0230
 CIRC ACCESSION NO—AP0123992
 STEP NO—UR/0358/70/039/003/0269/0274
 UNCLASSIFIED

2/2 015

CIRC ACCESSION NO—AP0123992
ABSTRACT/EXTRACT—(U) GP-0-

UNCLASSIFIED

PROCESSING DATE—30OCT70

ADULT Ixodes persulcatus P. SCH. TICKS WERE CARRIED OUT FOR 5 YEARS (1964-1968) IN A FOCUS OF TICK BORNE ENCEPHALITIS IN THE ZONE OF CONSTRUCTION OF THE SAYANO SHUSHENSKAYA HYDROPOWER STATION (HPS). THE POPULATION OF TICKS INHABITING MOUNTAINS HAS CERTAIN CHARACTERISTICS FEATURES. IN PARTICULAR, THE ABUNDANCE OF TICKS IN MOUNTAINS IS QUITE HIGH IN COMPARISON WITH THAT IN FLAT TERRAIN. AREAS OF THE GREATEST ABUNDANCE OF TICKS ARE ASSOCIATED WITH GRASS ABIES FORESTS AT 700-1000 M ABOVE SEA LEVEL. THE DENSITY OF TICKS IN DIFFERENT LANDSCAPES VARIES CONSIDERABLY: FROM 22-181 IN PINE BIRCH FORESTS TO 199-754 IN DARK CONIFEROUS CEDAR ABIES FORESTS. THE PERIOD OF ACTIVITY OF TICKS IN MOUNTAINS IS MUCH LONGER THAN IN PLAIN TAIGA.

FACILITY:
ENTOMOLOGICHESKIY OTDEL, INSTITUTA MEDITSINSKOY PARAZITOLOGII I TROPICHESKOY MEDITSINY IM. YE. I. MARSINOVSKOGO, MOSKVA.

UNCLASSIFIED

USSR

UDC 539.376:620.171

MILOSERDIN, Yu. V., NABOYCHENKO, K. V., CHEBURKOV, V. I., NAUMOV, S. G.,
LAVEYKIN, L. I., BORTSOV, A. G., Moscov

"High Temperature Creep of Zirconium Carbide"

Problemy Prochnosti, No 3, 1972, pp 50-53.

Abstract: Results are presented from creep and long-term strength tests of specimens of zirconium carbide in the 2,450-2,810°K temperature range. The nature of behavior of the zirconium carbide in various stages of creep and the relationship between parameters characterizing creep and the test conditions of the material are studied. It is demonstrated that in the 2,450-2,810°K temperature interval with stresses of 0.3-1.0 kg/mm², the stable stage of creep of zirconium carbide is determined by a diffusion process with an activation energy of 116 ± 18 kcal/mol.

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1/2 027

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--DESIGN PRINCIPLES OF HOLOGRAPHIC MEMORY DEVICES -U-

AUTHOR--(04)-MIKAELIANE, A.L., BOBRINEV, V.I., NAUMOV, S.M., SOKOLOVA, L.Z.

COUNTRY OF INFO--USSR

SOURCE--IEEE J. QUANTUM ELECTRONICS USA, VOL. QE 6, NO. 4, P. 193-8
(APRIL 1970)

DATE PUBLISHED----APR70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--HOLOGRAPHY, MEMORY ELEMENT, INFORMATION STORAGE AND RETRIEVAL, HOLOGRAM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0072

STEP NU--US/0000/70/000/004/0193/0198

CIRC ACCESSION NO--AT0123844

UNCLASSIFIED

2/2 027

CIRC ACCESSION NO--AT0123844:
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT. TWO METHODS OF INFORMATION STORAGE IN A HOLOGRAPHIC MEMORY DEVICE ARE DISCUSSED: CONSECUTIVE STORAGE OF INDIVIDUAL BINARY NUMBERS ON THE SAME HOLOGRAM, AND PARALLEL STORAGE OF MASSES OF BINARY NUMBERS ON INDIVIDUAL HOLOGRAMS. OPTICAL SETUPS OF RESPECTIVE MEMORY DEVICES ARE DESCRIBED. EXPERIMENTAL RESULTS OF THE INVESTIGATION OF THESE SETUPS ARE PRESENTED. FACILITY: A.S. POPOV SOC. RADIO ENGG. AND TELECOMMUNICATIONS, MOSCOW, USSR.

UNCLASSIFIED

USSR

URC 523.27

NAUMOV, V. A., GULYAYEVA, N. A. and PUDOVIK, M. A.; Institute of Organic and Physical Chemistry Acad. A. Ye. Arbuzov, USSR Academy of Sciences, Kazan'

"Electron-Diffraction Study of the Structure of the N,N'-Dimethyl-2-Chloro-1,3,2-Diazaphospholane Molecule"

Moscow, Doklady Akademii Nauk SSSR, Vol 203, No 3, 1972, pp 590-592

Abstract: There is experimental evidence to suspect significant lability of the P — Cl bond length in various compounds containing a tricoordinated phosphorus atom. To clarify this situation (relation of bond length to change in the immediate vicinity of the P atom, the structure of the N,N'-dimethyl-2-chloro-1,3,2-diazaphospholane molecule, in which the P atom is directly bound with two nitrogen atoms, was studied. F. NAZIREZ's method (1957) was used to synthesize this compound, for which intensity and radial curves ($I(s)$ and $f(r)$) were obtained, the peaks being associated with various bond lengths, and these in turn being used to analyze possible configurations of the molecule ("envelope" and "armchair" types). The envelope model, with axial P — Cl bond and equatorial position of methyl groups, was indicated by the data obtained; also, valence angles of $\text{NP}=\text{Cl} = 100^\circ$, $\text{CCH} = 108^\circ$, $\text{CH}_2\text{NP} = 116^\circ$, etc. Comparisons were made with other known data for seven chlorides of this group.

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NAUMOV, V. A., et al., Doklady Akademii Nauk SSSR, Vol. 203, No 3, 1972,
pp 590-592

Distinct lability of the P — Cl bond length is supported by these data, but
marked differences between several subgroups in this respect remain unexplained.

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USSR

UDC 539.27

NAUMOV, V. A., and SEMASHKO, V. N., Institute of Organic and Physical Chemistry named A. Ye. Arbutov, Academy of Sciences USSR, Kazan'

"Electron-Diffraction Study of Structure of 3-Oxo-3-chloro-1,3-thiaphosphethane Molecule"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 4, 1971, pp 882-885

Abstract: The authors made an electron-diffraction study of 3-oxo-3-chloro-1,3-thiaphosphethane, first synthesized by N. V. IVASYUK and I. M. SHERMERGORN, for purposes of determining the shape of a four-membered ring containing both sulfur and phosphorus atoms in the 1,3-position. Two possible nonplanar molecular models were used to interpret the experimental data, viz. model I with the phosphoryl group in a pseudoaxial position, model II with a pseudoequatorial P=O bond. Theoretical intensity curves were calculated with the aid of a "Minsk-22" computer. It was found that the pairs of 3-oxo-3-chloro-1,3-thiaphosphethane consist of different kinds of molecules with a nonplanar ring. The phosphoryl group may take an axial or an equatorial orientation. A calculation of theoretical intensity curves for mixtures indicates that the proportion of molecules with an axial phosphoryl group is ~ 80 percent and with an equatorial phosphoryl group ~ 20 percent.

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USSR

NAUMOV, V. A., and SEMASHKO, V. N., Doklady Akademii Nauk SSSR, Vol 200, No 4, 1971, pp 882-885

The article lists the definitive geometric parameters of 3-oxo-3-chloro-1,3-thiaphosphethane and compares them with the principal structural parameters of different phosphethane derivatives.

The investigated compound was synthesized by M. M. GILYAZOV under the direction of I. M. SHERMERCORN.

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USSR

NAUMOV, V. A., SLIZOV, V. P.

UDC 621.039.526

"Some Characteristic Features of the Physics of Fast Neutron Reactors Cooled by Dissociating Gases"

Dissotsiruyushch. gazy kak teplonositeli rab. tela energ. ustanovok -- V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 27-35 (from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U109)

Translation: A calculation procedure is used to compare the basic physical characteristics of plutonium reactors with different heat exchange agents in the range of spherical core sizes of 1,000 to 5,000 liters. It is demonstrated that fast reactors with dissociating gases (N_2O_4 and Al_2Cl_6) by comparison with a sodium reactor have better operating characteristics. The basic physical characteristics of 1,000 megawatt fast reactors of cylindrical configuration with sodium and gas heat transfer agents have been obtained. The reactors with fuel compositions of $PuO_2 + UO_2$ and UO_2 are investigated. It is demonstrated that the used method of small-group diffusion calculation permits absolute values of the physical characteristics of the fast reactor to be

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USSR

NAUMOV, V. A., et al., Dissotsiiruyushch. gazy kak teplonositeh rab. tela energ. ustanovok, Minsk, Nauka i Tekhn. Press, 1970, pp 27-35

obtained with satisfactory accuracy. There are 6 tables, 3 illustrations and a 12-entry bibliography.

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USSR

UDC 539.27

NAUMOV, V. A., ZARIPOV, N. M., DASHEVSKIY, V. G., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Institute of Element-Organic Compounds, Academy of Sciences USSR

"Electronographic Study of the Molecular Structure of Methyl Dichlorophosphite"

Moscow, Zhurnal Strukturnoy Khimii, Vol 12, No 1, Jan-Feb 71, pp 158-160

Abstract: Tricoordinated phosphorus compounds with directly bound nitrogen and oxygen atoms have much longer P-Cl bonds than PCl_3 . This study centered around molecules with only a single oxygen atom, methyl dichlorophosphite (I) being selected as the model compound. Experimental data obtained showed that the molecular configuration of (I) corresponds to the rotational isomer with $\phi = 17^\circ$. The P-Cl bond length was found to be about 0.02 Å shorter than that of the ethylene chlorophosphite. The value obtained is identical to the P-Cl distance in dimethylamidodichlorophosphite. It is concluded that both the nitrogen and oxygen atoms similarly affect the changes in the P-Cl bond length.

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USSR

UDC 539.27

NAUMOV, V. A., and SEMASHKO, V. N., Institute of Organic and Physical Chemistry
Imeni A. Ye. Arbutov, Academy of Science USSR, Kazan'

"Electronographic Study of the Molecular Structure of 1-keto-1-chlorophosphacyclopentene-3"

Moscow, Zhurnal Strukturnoy Khimii, Vol 11, No 6, Dec 70, pp 979-982

Abstract: Experimental data are reported on the molecular structure of 1-keto-1-chlorophosphacyclopentene-3. The five-membered heterocyclic molecule has the shape of an envelope; the carbon atoms are all located in one plane. The P:O bond is cis with respect to the C:C bond, while the P-Cl bond is trans. Following molecular parameters have been obtained: C:C bond length = 1.340 ± 0.020 Å, C-C bond length = 1.510 ± 0.015 Å, P:O bond length = 1.440 ± 0.010 Å, P-C bond length = 1.835 ± 0.008 Å, and the P-Cl bond length = 2.040 ± 0.008 Å; the CPC angle = $98.5 \pm 1.5^\circ$, the ClPC angle = $101.3 \pm 1.0^\circ$, the ClPO angle = $115.3 \pm 2.0^\circ$, and the PCl angle = $101.3 \pm 1.5^\circ$.

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USSR

UDC 547.879:539.27+546.13'18:539.27

NAUMOV, V. A., and ZARIPOV, N. M., Institute of Organic and Physical Chemistry
Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Kazan'

"Electronographic Study of the Molecular Structure of Trimethylene Chlorophosphate"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 5, Sep-Oct 72, pp 768-773

Abstract: According to electronographic data obtained, the most probable structure of a molecule of trimethylene chlorophosphate is a chair conformation with an axial P-Cl bond. According to B. A. AREUZOV this molecule should have an equatorial P-Cl bond. No explanation is given for these contradictory statements.

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USSR

UDC 546.18'13:539.27

NAUMOV, V. A., ZARIPOV, N. M., and GULYAYEVA, N. A., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR, Kazan'

"Electronographic Study of the Molecular Structure of Phenylchlorophosphine"

Moscow, Zhurnal Strukturnoy Khimii, Vol 13, No 5, Sep-Oct 72, pp 917-918

Abstract: Molecular structure of phenylchlorophosphine was studied by the electronographic method. The data obtained indicated a symmetrical model for the molecule with the angle of rotation about the P-C bond φ being 0° and 90° . Further investigation showed that the rotation about that bond is hindered with the minimum angle at $\varphi = 0$. Evidently there is no conjugation between the π -electrons of the phenyl ring and the unshared electron pair of the phosphorus atom, which would tend to stabilize the configuration.

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1/2 023 UNCLASSIFIED PROCESSING DATE--300CT70
TITLE--MOSSBAUER EFFECT AT IMPURITY NUCLEI OF PRIME119 TIN IN MERCURY AND
IN THE ALPHA PHASES OF SILVER, CADMIUM AND SILVER, ZINC ALLOYS: INTERNAL
AUTHOR--(03)--CHEKIN, V.V., NAUMOV, V.G., PONASHKIN, L.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, MAR. 1970, 29, (3), 524-529

DATE PUBLISHED--70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--MOSSBAUER EFFECT, TIN ISOTOPE, MERCURY, ALPHA PHASE, SILVER
BASE ALLOY, METAL OXIDATION, ZINC CONTAINING ALLOY, CADMIUM CONTAINING
ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0452

STEP NO--UR/0126/70/029/003/0524/0529

CIRC ACCESSION NO--AP0129677

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129677

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MOSSBAUER PROBABILITY AND THE ISOMERIC SHIFT ASSOCIATED WITH PRIME119 SN IMPURITY NUCLEI IN THE ALPHA PHASES OF THE AG-CO AND AG-ZN SYSTEMS WERE STUDIED. IN CONTRAST TO EXISTING VIEWS, THERE WAS NO MARKED CORRELATION BETWEEN THE ISOMERIC SHIFT AND THE M. PROBABILITY IN ALLOYS OF DIFFERENT COMPOSITIONS. THIS LACK OF AGREEMENT IS TENTATIVELY EXPLAINED BY MEANS OF A MODEL ACCORDING TO WHICH THE PROBABILITY IS DETERMINED BY THE VALENCE ELECTRONS OF THE IMPURITY ATOMS WHILE THE ISOMERIC SHIFT IS INSENSITIVE TO THE CONDUCTION BAND CHARACTERISTICS. A POSSIBLE APPLICATION OF THESE EFFECTS TO THE STUDY OF INTERNAL OXIDATION IN ALLOYS IS CONSIDERED.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--300GT70
TITLE--MECHANICALLY DRIVEN MOESSBAUER SPECTROMETER -U-
AUTHOR--(04)-CHEKIN, V.V., BALKASHIN, O.P., NAUMOV, V.G., SEMIKIN, V.A.
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECH. DRIVE SPECTROMETER WAS CAREFULLY DESIGNED WITH A CONST. SPEED SYNCHRONOUS MOTOR WITH A WORM GEAR EXHIBITING A GEAR RATIO OF 1:80, A SINGLE CHANNEL GAMMA SPECTROMETER, AN ELECTRONIC NETWORK REGULATOR, AND SPECIAL REINFORCING TO IMPROVE THE DRIVE RIGIDITY. WHILE COSTING ONLY A FRACTION OF THAT FOR THE BASIC ELECTRODYNAMIC VIBRATOR SET UP, THE RESULTS WITH THE PRIME57 FE NUCLEUS WHEN BOTH SET UPS WERE COMPARED WERE EQUIV. WITHIN THE LIMITS OF EXPTL. ERROR. FACILITY: FIZ.-TEKH. INST. NIZKIKH TEMP., KHARKOV, USSR.

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