

USSR

UDC 621.311-52

SILAKOV, V. N.

"Principles of Creating and Using a Software System for Controlling the Operating Conditions of Electric Power Systems"

V sb. Optimiz. i upr. bol'shimi sistemami v energ. (Optimization and Control of Large Systems in Power Engineering -- collection of works), Irkutsk, 1970, pp 301-322 (from RZh-Elektrotehnika i Energetika, No 4, Apr. 71, Abstract No 4 Ye233)

Translation: The urgency of creating an automated information computation dispatch control system for the operating conditions of the Unified Power System of the USSR is determined. The problems of various automated control systems in power engineering in the USSR are analyzed. The characteristic features of the ASDU [Automated Information Computation Dispatch Control System] are isolated. The control circuits are subdivided into five groups with respect to information circulation time. The complex of functions and problems of the ASDU are listed. Four subsystems are distinguished with respect to functional purpose. The general principles of constructing a specialized software system are defined. Requirements are formulated  
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USSR

SILAKOV, V. N., Optimiz. i upr. bol'shimi sistemami v energ. (Optimization and Control of Large Systems in Power Engineering -- collection of works), Irkutsk, 1970, pp 301-322 (from RZh-Elektrotehnika i Energetika, No 4, Apr 71, Abstract No 4 Ye233)

for both the hardware and software. It is demonstrated that construction of ASDU is possible only on the basis of third generation computer systems. Special significance is attached directly to program compatibility and the presence of a powerful operational system. These two concepts are investigated in detail. In accordance with the dispatch control cycles, the specialized software system is divided into three subsystems: operative dispatch control, daily planning and long-term planning. Optimal breakdown of the functional possibilities of the specialized software systems for isolation of program modules is proposed. The bibliography has 14 entries.

2/2

- 113 -

USSR

UDC 576.809.31

USHAKOV, V. M., SILAKOVA, A. N., and FIKHMAN, B. A., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

"Eccentric Vibrator for Mechanical Disintegration of Microorganisms"

Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, Vol 7, No 4, Jul/Aug 71,  
pp 490-493

Abstract: An eccentric vibrator designed for hyperfine grinding of powders was tested for potential application for disintegration of microorganisms. Test cultures of *E. coli* and *Staph. aureus* were used, and spheroidized silica sand powders added to the microbial suspension were used as abrasives. The effectiveness of disintegration was determined by the percentage of disintegrated cells, the amount of protein escaping from the cells, and changes in the catalyzing activity in homogenates. Test results demonstrated that the eccentric vibrator effectively disintegrates microorganism cells and can be used for disintegration of large volumes of biomass. Mechanical disintegration is accomplished under relatively gentle conditions, leaving subcellular structures intact.

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USSR

UDC 632.954:633.15

MILASHCHENKO, N. Z., SILANT'YEV, A. N., Siberian Scientific Research  
Institute of Agriculture

"On the application of Herbicide Mixtures to Corn Seedlings"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 10 (84), Oct 70,  
pp 49- 51

Abstract: The authors studied the effectiveness of herbicidal mixtures with various ratios of components on corn plantings in 1967-1968. Bukovinskiy-3 hybrid corn was sprayed with herbicides after development of 3-5 leaves. The mixtures contained a constant 0.6 kg/hectare of 2,4-DA and M-4Cl, while the quantity of 2,3,6-TB and Banvel-D was varied from 0.95 to 0.12 kg/hectare. It was found that mixtures of Bancel-D and 2,4-D or 2M-4Cl have a number of advantages over the compounds applied separately. The mixtures are effective regardless of weather conditions, have a fairly strong residual effect on weed sprouts which appear after summer rains, are safe for the next rotational crop (wheat), and assure a higher corn silage harvest. In mixtures designed for treating corn plantings, the concentration of Banvel-D should be higher than for treatment of other cereal grasses. The optimum amount for a mixture with 0.6 kg/hectare of 2,4-DA or 2M-4Cl is 0.24-0.34 kg/hectare. 1/1

40

USSR

UDC: 539.183.2

SILANT'YEV, A. N., POLYAKOVA, T. V., RABOTNOVA, F. A., SHKURATOVA, I. G.

"Isotopic Analysis of Samples of Radioactive Fallout and Aerosols Using Beta Spectrometry"

Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. min. SSSR (Works. Institute of Experimental Meteorology. Main Administration of the Hydrometeorological Service Affiliated With the Council of Ministers of the USSR), 1972, vyp. 25, pp 136-140 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 6, Jun 72, Abstract No 6.32.1275)

Translation: The paper deals with a method of determining the content of isotopes radium-106, praseodymium-104, yttrium-90 and strontium-89 by beta spectrometric analysis. A scintillation beta-spectrometer with plastic scintillator 70 mm in diameter and 20 mm thick was used as the spectrometer. Only beta emission with energy above 630 keV is considered in processing the spectra. Spectra measured in the range from 630 keV to 3.5 MeV are broken down into intervals, and the system of equations

$$N_i = a_i^{89} S_{i1} + a_i^{90} S_{i2} + a_i^{104} S_{i3} + a_i^{106} S_{i4}, \quad i = 1, 2, 3, 4$$

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USSR

SILANT'YEV, A. N., Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. min. SSSR, 1972, vyp. 25, pp 136-140

is solved, where  $N_i$  is the number of pulses registered in interval  $i$ ;  $S$  is the number of pulses registered in the interval above 630 keV;  $a_i$  is a factor for converting from the number of pulses in an interval to the number of pulses registered in the interval above 630 keV; and conversion from the number of pulses registered to the radioactivity of the isotopes can be computed by the formula

$$N = A_0 \epsilon \omega \frac{1 - e^{-\mu d}}{\mu d},$$

where  $N$  is the count rate in the interval above 630 keV;  $A_0$  is the activity of the preparation;  $\epsilon$  is the effectiveness of registration in the interval considered;  $\omega$  is the solid angle which accounts for angular distribution;  $d$  is the thickness of the layer, and  $\mu$  is the coefficient of attenuation of beta emission. Four illustrations, bibliography of two titles. Resumé.

2/2

- 110 -

USSR

UDC: 539.1.075

KOVNATSKIY, Ye. F., ROSLYY, Ye. I., SILANT'YEV, A. N.

"A Simple Two-Dimensional Analyzer of Beta-Gamma Coincidences for Analyzing Samples of Radioactive Fallout"

Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. min. SSSR (Works. Institute of Experimental Meteorology. Main Administration of the Hydrometeorological Service Affiliated With the Council of Ministers of the USSR), 1972, vyp. 25, pp 117-120 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 6, Jun 72, Abstract No 6.32.1322)

Translation: The paper describes a two-dimensional  $\beta$ - $\gamma$  coincidence analyzer based on two industrial AI-100 analyzers. A distinguishing feature of the unit is the possibility of registering the coincidence spectra on punched tape during measurement. The beta and gamma spectra taken in the single-crystal spectrometer mode are registered on the tape at the end of the experiment. A block diagram of the unit is given along with a schematic of the control module. Two illustrations, bibliography of four titles. Resumé.

1/1

USSR

UDC 632.954 + 668.7:633.11

SILANT'YEV, A. N., and MILASHCHENKO, N. Z., Siberian Scientific Research  
Institute of Agriculture

"Aftereffects of the Herbicides -- Derivatives of Benzoic Acid -- on Spring  
Wheat Under Conditions Prevailing in Western Siberia"

Moscow, Khimiya v Sel'skom Khozyaistve, No 4, 1973, pp 46-48

Abstract: It has been shown that the decomposition of 2,3,6-TB and Banwel-D  
in argillaceous chernozem soil in Western Siberia is very slow due to the  
limited moisture content of the soil. Under these conditions Banwel-D is  
deactivated about 3-4 times faster than 2,3,6-TB. Using optimal doses of  
Banwel-D (0.95-1.35 kg/hectare) on corn fields produces no undesirable  
aftereffects of this herbicide on spring wheat.

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1/2 023 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--ANOMALIES OF DEVELOPMENT OF THE WEIGHTBEARING LOCOMOTOR APPARATUS  
-U-  
AUTHOR--(02)--LABUNETS, N.N., SILANTYEV, E.A. S  
COUNTRY OF INFO--USSR  
SOURCE--ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE, 1970, NR 4, PP 19-22  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--HUMAN GENETICS, BONE DISEASE, CEREBRUM, PARALYSIS  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1990/0591 STEP NO--UR/9115/70/000/004/0019/0022  
CIRC ACCESSION NO--AP0108806  
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0108806

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS HAD UNDER OBSERVANCE 158 PATIENTS: 42 ORTHOPAEDIC AND 116 PATIENTS WITH CONGENITAL MALDEVELOPMENT OF THE LOWER EXTREMITIES. THE OBSERVED CONTINGENT OF PATIENTS HAS BEEN STUDIED FROM THE POSITIONS OF MODERN ACHIEVEMENTS OF MEDICAL GENETICS. SPONTANEOUS MUTATIONS WERE RESPONSIBLE FOR THE CAUSAL GENESIS IN 38 ORTHOPAEDIC PATIENTS, AND IN 4 PATIENTS THE SPASTIC CEREBRAL PARALYSIS WAS THE RESULT OF RH BLOOD INCOMPATIBILITY OF THE FETUS AND MOTHER. THE CAUSES OF MALDEVELOPMENT OF THE LOWER EXTREMITIES WERE ANOMALIES OF AMNION, NOXIOUS TERATOGENIC AGENTS (SYPHILITIC AND ALCOHOLIC INTOXICATION, THIOPHOSPHAMIDE, EXCESS DOSE OF ROENTGEN IRRADIATION, ETC.), MARRIAGE OF RELATIVES IN THE THIRD GENERATION, MANIFESTATION OF NONSPECIFIC PATHOLOGICAL HEREDITY IN THE FAMILY, POSSIBLE PHENOCOPIES WITH TRAITS OF RECESSIVE AND PRIMARY DOMINANT MUTATIONS. IN THE MAJORITY OF THE CASES, THE CAUSE OF CONGENITAL MALFORMATIONS COULD NOT BE ESTABLISHED. FACILITY: KHARKOV INSTITUTE OF PROTECTIVE MEDICINE, ORTHOPAEDIC AND TRAUMATOLOGY IM. M. I. SITENKO.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--POLARIZATION OF PARTICLES AND QUANTA SCATTERED BY THICK LAYERS OF  
MATTER -U-  
AUTHOR--(03)--GNEDIN, YU.N., DOLGINOV, A.Z., SILANTYEV, N.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,  
NR 2, PP 706-720  
DATE PUBLISHED--70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LIGHT POLARIZATION, ANGULAR DISTRIBUTION, PARTICLE SCATTER,  
LIGHT SCATTERING, NEUTRON POLARIZATION, SPIN ORBIT COUPLING, NEUTRON  
SCATTERING, OXYGEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1976/2068

STEP NO--UR/0056/70/058/002/0706/0720

CIRC ACCESSION NO--AP0043595

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0043595

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS PROPOSED FOR CALCULATING THE POLARIZATION AND ANGULAR DISTRIBUTION OF SPIN ONE HALF PARTICLES AND OF QUANTA SCATTERED BY A PLANE LAYER OF LARGE OPTICAL DENSITY. POLARIZATION OF PHOTONS REFLECTED AND TRANSMITTED BY AN OPTICALLY THICK MEDIUM CONSISTING OF FREELY ORIENTED PARTICLES (ELECTRONS, ATOMS, DUST GRAINS) IS CALCULATED ON THE ASSUMPTION THAT THE INITIAL PHOTON BEAM IS INCIDENT AT AN ARBITRARY ANGLE TO THE SURFACE OF THE MEDIUM AND POSSESSES AN ARBITRARY POLARIZATION. ANALYTIC FORMULAS ARE ALSO OBTAINED WHICH DESCRIBE THE POLARIZATION OF NEUTRONS SCATTERED BY A PLANE LAYER OF MATTER, THE POLARIZATION BEING DUE TO SPIN ORBIT INTERACTION WITH THE NUCLEI. A NUMERICAL CALCULATION CARRIED OUT FOR THE O PRIME16 NUCLEUS SHOWS THAT THE POLARIZATION MAY BE QUITE LARGE. THIS PERMITS ONE TO OBTAIN AN INTENSE NEUTRON BEAM WITH A POLARIZATION OF SEVERAL TENS OF PERCENT.

UNCLASSIFIED

USSR

ATANOV, P. K., KATMAN, A. K., VASIL'YEV, G. F., SAPRONOV, V. I., SILANT'YEV,  
F. P.

"Single-Pole Transistor Flip-Flop" . . .

USSR Authors' Certificate No 250997, Filed 14 May 1968, Published 3 January  
1970 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychis-  
litel'naya Tekhnika, No 10, 1970, Abstract No 10B110P, by N. V.)

Translation: The flip-flop suggested differs in that the load resistors are  
connected in series with the source-drain junctions of blocking single-pole  
transistors, the gates of which are combined and connected to the control  
input. The substrate of the blocking transistors is isolated from the sub-  
strate of the remaining flip-flop circuit. This allows the speed of the  
flip-flop to be increased while decreasing the dissipated power. One  
illustration.

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USSR

UDC 621.3-528.3.025.135

ANISIMOV, B. V., Doctor of Technical Sciences, SOLOMATIN, N. M., Candidate of Technical Sciences, BELYAYEV, V. A., and SILANT'YEV, YU. N., Engineers

"Design of Digital, Computer-Based, Factographic Data Retrieval System"

Moscow, Mekhanizatsiya i Avtomatizatsiya Proizvodstva, No 12, 1972, pp 48-49

Abstract: The article describes a factographic data retrieval system created at the Chair of Mathematical Machines, Moscow Higher Technical School imeni N. E. Bauman, for automatically finding short abstracts of scientific and technical articles placed in the storage of a computer. The abstracts issued at the request of instructors and students can be read without subsequent processing. The unique feature of the system is the complete formalization of the reduction of the primary entries before they input into the computer. This reduces to a minimum the subjective factors which are characteristic of unformalized reduction techniques and which are the principal sources of the errors that occur in machine retrieval.

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USSR

FOMENKOV, V. N., STREKALOVA, E. Ye., KATOSOVA, L. D., CHIRKOVA, Ye. M.,  
SAL'NIKOVA, L. S., SILANT'YEVA, I. V., YEFIMENKO, L. P., KULAKOV, A. Ye.

"Experimental Data on Adaptation and Its Limits in the Action of Poisons  
Having a Mutagenic and Embryotropic Action"

Sb. Farmakol, Khimioterapevt. sredstva. Toksikol. Probl. toksikol.  
(Pharmacology of Chemically Therapeutic Substances. Toxicology. Problems  
in Toxicology--Collected Works), T. 5 (Itogi nauki i tekhn. VINITI AN  
SSSR - Results in Science and Technology of the All-Union Institute of  
Scientific and Technical Information, Academy of Sciences, USSR), 1973,  
pp 128-145) (from Referativnyy Zhurnal, 30F, Biologicheskaya Khimiya,  
No 18, 25 September 1973, abstract No 1754)

Translation: The dependence of the development of a cytogenetic and embryo-  
tropic effect on long-term exposure was studied in an example of the action  
of different groups of chemicals: chlorine releasing substances, phenoxy-  
acetic acid esters, triazines, carbamates, epoxy compounds, imines, and  
others. The possibility of adaptation of animals to some substances that  
cause pathological changes in offspring was demonstrated.

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USSR

UDC 543.39

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ZHARIKOVA, G. G., MARKELOVA, S. I., BOBKOVA, T. S., LANDAU, N. S., SMOLINA, G. S., and SILAYEV, A. B., Moscow State University imeni N. V. Lomonosov, Moscow

"Destruction of Lacquer and Paint Coatings by Bacteria and Actinomycetes"

Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, Vol 7, No 2, Mar-Apr 71, pp 236-242

Abstract: From the soil of various regions of the USSR, the following strains of bacteria and Actinomycetes were isolated which were found to cause destruction of surface coatings: *Bacillus sphaericus* var. 2P, *Bac. cohaerens* var. 4P, *Bac. subtilis* var. 1B, *Flavobacterium acetylicum* var. 7P, *Mycobacterium* sp. var. 1P, *Propionibacterium pentosaceum* var. 4B, *Micrococcus aurantiacus* var. 14C, *Micrococcus aurantiacus* var. 16 C, *Actinomyces globisporus* var. 9B, *Actinomyces globisporus* var. 10C, *Actinomyces* sp. Var. 10E. The cultural, morphological, and biochemical characteristics of the eight bacterial strains were determined. The behavior of surface coatings based on epoxy resin, alkyd resin, teflon, pentaphthalic resin, PVC, and organosilicon resin with respect to the 11 microorganisms isolated was determined in tests in which a sample of the surface coating was kept for 1 yr in contact with 1/2



USSR

ZHARIKOVA, G. G., et al., Prikladnaya Biokhimiya i Mikrobiologiya, Vol 7,  
No 2, Mar-Apr 71, pp 236-242

a culture medium containing (in g/l.)  $\text{CaCO}_3$  3,  $\text{MgSO}_4$  0.5,  $\text{KH}_2\text{PO}_4$  1, KCl 0.2,  
agar 20 (pH 7.0-7.5). The only source of C for the microorganism was the  
coating. The samples were examined every month. The behavior of alkyd resin,  
epoxy resin, and teflon coatings with respect to mixtures of some of the  
microorganisms was determined in similar tests. The results of the tests  
are tabulated. The bacteria and actinomucetes isolated can be used for  
determining whether or not a surface coating is resistant to the action of  
microorganisms.

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- 21 -

Acc. Nr: AP0034679

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 2, pp 140-144

PRIMARY ASSESSMENT OF ANTITUMOROUS ACTIVITY OF SOME FRACTIONS  
ISOLATED FROM THE CELLS OF STRIGOMONAS ONCOPELTI  
Sukhareva-Nemakova, N. N.; Silavev, A. B.; Katrukha, G. S.;  
Zeleneva, R. N.; Urinyuk, V.M.

Moscow State University

The study of the effect of fractions isolated from the cells of Strigomonas oncopelti on sarcoma-180 revealed that the cellular homogenate stimulates the growth of this tumor, the amino-acid fraction inhibits it, the peptide fraction is inactive, the total lipid fraction inhibits the growth of sarcoma-180 at early periods of tumor development and causes stimulation in a more prolonged introduction, the lipid fraction devoid of sterines and their esters is not endowed with a stimulating action, both at early and late periods of tumor development, microsomal-mitochondrial fraction possesses a significant antitumor activity; the removal of lipids by the extraction of this fraction with a chloroform-methanol mixture leads to a loss of its antitumor effect.

D.H.

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Acc. Nr.: **AP0029499**

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 1, pp 25-28

**A STUDY OF THE CHEMICAL COMPOSITION AND ANTITUMOR ACTIVITY OF PROTAMINES, ISOLATED FROM STURGEON MILT**

Yermol'yeva, Z.V.; Silayev, A.B.; Yulikova, Ye.P.;

Pokidova, N.V.; Pasternak, N.A.; Kolosova, I.V.;

Yevseyenko, L.K.; Shenderovich, V.A.

Central Post Graduate Medical Institute, Moscow State University

Triprotamines in the form of sulfates were isolated from the milt of individual sturgeon stocks. The amino acid composition of triprotamines was determined and their antitumor activity was studied. It was shown that protamine from *Ac. guldenstadti* and *Ac. stellatus* inhibited tumor growth by 60--80 per cent, while protamine from *Ac. nudiventris* was practically inactive.

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REEL/FRAME

19681100

USSR

UDC 621.762.2

GRATSIANOV, YU. A., PUTINTSEV, B. M., and SILAYEV, A. F.,

"Metal Powders From Melts"

Metallicheskiye poroshki iz rasplavov (cf. English above), Moscow, "Metallurgiya," 1970, 245 pp, ill., 73 k (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G403K by authors)

Translation: Some questions regarding the structure of metallic melts are considered, as well as their physical and technological properties. On the basis of experiments, mechanisms of the failure of the flow of metallic melts are analyzed, as well as the shape and structure formation of powder particles. The shape of powder particles and powder dispersity can be regulated. The authors note the large part played by small impurities, superheating, and supercooling in the shape and structure formation of particles. The technological processes for obtaining metal powders and alloys are described. Ninety-three illustrations. Forty-seven tables. Bibliography with 130 titles.

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USSR

UDC: 621.762.224

GRATSIANOV, Yu. A., PUTIMTSEV, B. N., and SILAYEV, A. F.

"Metallicheskiye poroshki iz rasplavov" (Metal Powders From Melts), Moscow, Izd-vo "Metallurgiya," 1970, 248 pp.

Translation of Annotation: Certain problems of the structure of metal melts and their physical and technological properties are considered. On the basis of experiments, analyses are made of mechanisms of metal fusion stream disintegration, and of the shape and formation of structure of powder particles. It is shown that the shape and size of a powder particle may be controlled. The significant role played by small additions, overheating and overcooling in the formation of particle shape and structure is pointed out. Industrial processes for the production of metal powders and melts are described.

The book is intended for scientific and engineering-technical personnel of research institutes, who are involved with problems related to physical and powder metallurgy and metal ceramics. Ninety-three figures, 47 tables, 130 references.

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USSR

GRATSIANOV, Yu. A., et al., "Metallicheskiye poroshki iz rasplavov" (Metal Powders From Melts), Moscow, Izd-vo "Metallurgiya," 1970, 248 pp

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GRATSIANOV, Yu. A., et al., "Metallicheskiye poroshki iz rasplavov" (Metal Powders From Melts), Moscow, Izd-vo "Metallurgiya," 1970, 248 pp

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GRATSIANOV, Yu. A., et al., "Metallicheskiye poroshki iz rasplavov" (Metal Powders From Melts), Moscow, Izd-vo "Metallurgiya," 1970, 248 pp

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USSR

GRATSIANOV, Yu. A., et al., "Metallicheskiye poroshki iz rasplavov" (Metal Powders From Melts), Moscow, Izd-vo "Metallurgiya," 1970, 248 pp

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USSR

UDC 621.762.2.001

FISHMAN, B. D., SILAYEV, A. F., and VALOV, M. Ye., Siberian Institute of Metallurgy imeni S. Ordzhonikidze, All-Union Institute of Aviation Materials

"Effect of Physical Properties of Metal Melts on Spheroidization of Drops in the Process of Their Crystallization"

Kiev, Poroshkovaya Metallurgiya, No 2 (122), Feb 73, pp 5-8

Abstract: The conditions for the formation of particles of spherical form, when diffusing melts by compressed air, are discussed. A brief analysis is made of existing theories and available practical data of relations between volumetric, thermophysical, and surface properties of substances. To estimate the capacity for spheroidization, it is suggested that a comparison be made between simple substances by the magnitude of the ratio of surface energy and the product of atomic volume and temperature conductivity values. Methods are given for the determination of the spheroidization capacity of particles for binary systems with unlimited mutual solubility, for binary systems containing chemical compounds, and for ternary systems. Three figures, eight formulas, thirteen bibliographic references.

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Aerosols

USSR

UDC 541.18.053:541.182.2/3:621.034

BAKHANOVA, R. A., SILAYEV, A. V., and SHIMANOVA, O. M., Ukrainian Hydro-meteorological Institute, Kiev.

"Possibility of Degree of Dispersion in Atomization of Liquids with Low-Frequency Ultrasound"

Moscow, Kolloidny Zhurnal, Vol XXXIII, No 1, Jan-Feb 1971, pp 18-22

Abstract: Conventional concave-mirror type dispersers used in generating mists for simulated fog studies do not secure the optimal range of particle diameter, especially when the dispersed liquid is a colloidal system.

A dispersion device combining a low-frequency ultrasonic generator with an exponential ultrasonic concentrator equipped with a cap of porous material, was found to produce a significantly larger number of particles of optimal diameter for study with optical microscopes (1-5  $\mu$ ).

With use of this equipment, probable aerosol particle diameter is only slightly dependent on the physico-chemical properties of the dispersed liquid, the nature of the porous cap, or the acoustic power and frequency, 1/2.

USSR

BAKHANOVA, R. A., et al., Kolloidnyy Zhurnal, Vol XXXIII, No 1, Jan-Feb 1971, pp 18-22

which factors, however, figure more largely in the "output" (concentration) of the artificial fog. Graphical data are included to illustrate the results of the tests.

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1/2 036 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--THE APPLICATION OF MATRICES AND GRAPHS TO THE ANALYSIS OF ULTRA  
HIGH FREQUENCY DEVICES -U-  
AUTHOR-(02)-SILAYEV, M.A.; BRYANTSEV, S.F.  
COUNTRY OF INFO--USSR  
SOURCE--THE APPLICATION OF MATRICES AND GRAPHS TO THE ANALYSIS OF ULTRA  
HIGH FREQUENCY DEVICES (PRILOZHENIYE MATRITS I GRAFOV K ANALIZU SVCH  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATHEMATICAL SCIENCES, ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--ELECTRONIC CIRCUIT, ELECTRONIC COMPONENT, ULTRAHIGH FREQUENCY,  
GRAPH THEORY, GRAPH TECHNIQUE, MATHEMATIC MATRIX, IMPEDANCE BRIDGE,  
COUPLING CIRCUIT, ANTENNA COMPONENT, HANDBOOK  
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ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT. TABLE OF CONTENTS: INTRODUCTION  
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DEVICES. THE APPLICATION OF THEM TO THE CALCULATION OF THE  
CHARACTERISTICS OF THESE DEVICES 217. APPENDIX 242. THE BOOK IS  
DESIGNED FOR ENGINEERS, SCIENTIST DEVELOPING AND INVESTIGATING VARIOUS  
ULTRA HIGH FREQUENCY DEVICES. EACH CHAPTER HAS A BIBLIOGRAPHY.

UNCLASSIFIED

USSR

UDC 548.52

PORTNOY, K. I., GRIBKOV, V. N., SHCHETANOV, B. V., UMANTSEV, E. L., SILAYEV,  
V. A.

"On the Mechanism of Growth and Etching of Aluminum Nitride Whiskers"

Moscow, Kristallografiya, Vol 18, No 3, May/Jun 73, pp 599-604

Abstract: An investigation is made of the influence of iron impurities on the growth of aluminum nitride whiskers in the process of carbon reduction of aluminum oxide in a nitrogen atmosphere in accordance with the reaction  $Al_2O_3 + 3C + N_2 = 2AlN + 3CO$ . It is established that the presence of iron is a decisive factor in growth of the crystals. While it does not participate in the process of aluminum oxide reduction, the iron promotes whisker growth by the vapor - liquid - solid phase mechanism, acting as an aluminum and nitrogen solvent. It is shown that with insufficient aluminum in the gaseous phase, the reverse process of nitride whisker evaporation may take place by the solid phase - liquid - vapor mechanism with the iron acting as a solvent.

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Powder Metallurgy

USSR

UDC 621.762.224

SILAYEV, V. A., and PUTIMTSEV, B. N., Redkin Experimental Plant and Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Eardin

"Properties and Use of Sprayed Metal and Alloy Powders"

Kiev, Poroshkovaya Metallurgiya, No 9, Sep 73, pp 1-5

Abstract: Data from studying the process of producing powders from melts under production conditions and results of studying certain physical and engineering properties of powders and pure metals (iron, nickel) and alloy powders (bronze, steel Kh18N9) are presented. The powders were made in a gas-jet unit at the Redkin Experimental Plant according to technology developed jointly with the Institute of Precision Alloys, Central Scientific Research Institute of Ferrous Metallurgy: melting metals and alloys in a basic crucible, diffusion deoxidation of the melts through a synthetic limestone slag with calcium borate, and dispersion of the jet of the melt with technically pure nitrogen (99.8% N<sub>2</sub>). Data are presented on using air, nitrogen or argon mediums for spraying powders and the resultant content of oxygen and nitrogen after spraying, after annealing in hydrogen, and after sintering in hydrogen, where the contents of the two gases diminishes in the order given above. Tables are given which show the volumetric mass, pycnometric density, flowability, and pressability of the sprayed powders. 2 figures, 4 tables, 1 bibliographic reference.

1/1



USSR

UDC 548.52

GRIBKOV, V. N., ~~SILAYEV, V. A.~~, SHCHETANOV, B. V., UMANTSEV, E. L., and ISAYKIN, A. S.

"Peculiarities of the Growth Mechanism of Silicon Nitride Whiskers"

Moscow, Kristallografiya, Vol 16, No 5, Sep-Oct 71, pp 982-985

Abstract: The authors studied the growth conditions and mechanism of  $\alpha$ - $\text{Si}_3\text{N}_4$  whiskers grown by the reaction of silicon dioxide with silicon at 1350-1480° C in an atmosphere of nitrogen containing about 1 percent hydrogen, with special emphasis on the role of mullite. It was found that mullite is the best substrate for  $\alpha$ - $\text{Si}_3\text{N}_4$ . In the absence of mullite, whisker growth occurs only if iron or aluminum impurities are present in the initial charge or are introduced into the growth zone. Under these conditions deposition proceeds by a vapor-liquid-solid phase mechanism with the participation of drops consisting of aluminum-silicon, iron-silicon, or iron-aluminum-silicon alloys, while crystallization from the liquid phase proceeds by an axial screw dislocation mechanism.

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- 94 -

SILAYEV, V.N.

Communications/data link systems

CAEDU  
JPRS 59662  
31 July 1975

All-Communications/  
Data Link Systems

TECHNICAL FACILITIES OF THE STATE-OWNED DATA LINK SYSTEM

Article by candidates of technical sciences V. N. Silayev, O. K. Bazilchenko, V. L. Kalirakh, Yu. F. Bubonov, V. Ye. Kuznetsov, and Engineers A. S. Izotov, Yu. M. Muravinskiy, G. M. Ponomarev, and V. A. Prityorov. *Prilozheniya k Zhurnalov, Moscow, Priority 1 System, Upravleniya, Gostin, No. 4, April 1975, pp. 1-13.*

The rational organization of a data link in geographically scattered systems of the type Sirena [1] largely determines the economic effectiveness of the entire system.

A data link combines into one system the peripheral subdivisions [2] and the technological data processing center (DPC) [3]. The link is a set of channels and technical facilities that provide a high communication channel utilization coefficient, reliable transmission and processing of data and direct multichannel communications. Accordingly, the technical facilities of a link are divided into three groups: data traffic concentrator facilities (DTC); data exchange reliability group and multichannel communications group.

Means of Concentrating Data Flows

The purpose of facilities of this group is to ensure economically efficient utilization of uncommunicated channels  $K_c$  for a given subscriber service quality. The prerequisites for extensive application of various data traffic concentration methods in a data link were formulated in [1].

According to the criterion  $\phi = L_i/L_j$  of the ratio of distances between the sources (1-n) and the concentrator K and between the concentrator and DPC, the following methods of traffic concentration may be used (Figure 1): local concentration ( $L_i \ll L_j$ ;  $L_i < 100$  m); central traffic concentration ( $L_i \ll L_j$ ;  $L_j < 100$  m); concentration of data from geographically scattered points ( $L_i = L_j$ ;  $L_i, L_j >> 100$  m). The technical facilities of DTC may be based on the utilization of the principles of communication of either the channels or the traffic.

USSR

UDC: 681.3:656.072

ZHOZHAKASHVILI, V. A., MITSKEVICH, L. A., NOVOKHATNIY, A. A., SILAYEV, V. N.

"The 'Sirena' Time-Sharing Queueing System"

Moscow, Pribory i Sistemy Upravleniya, No 9, Sep 70, pp 1-4

Abstract: A generalized analysis is presented of the requirements placed on remote automatic queueing systems, systems with large numbers of widely separated information sources (and consumers), a widely branched network of information transmission, and centers for storage and processing of information. Study of currently available series-produced equipment for use in such systems has indicated that the available equipment does not satisfy the requirements of such a system, particularly as concerns input-output and information transmission devices with sufficient reliability, devices for concentration of information flow, and devices for interconnection of channels and machines. Therefore, a new series of devices has been developed, including a cathode ray tube information terminal and display unit with a universal information keyboard; an information editor, a memory device for storage of information from the keyboard or information arriving from the information processing center; and a device for parallel printing of documents on standard blanks. This equipment plus equipment already available

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USSR

ZHOZHUKASHVILI, V. A., et al, Pribory i Sistemy Upravleniya, No 9, Sep 70, pp  
1-4

has been combined into the "Sirena-I" computerized airline reservation system used for reservation of seats on Aeroflot Aircraft. The first portion of this system is presently being installed in Moscow. The computer used with the system is the M-3000 hybrid computer. A brief analysis of the operation of the system is presented.

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USSR

UDC 612.039

KUZ'MIN, A. M., KASHUTIN, A. A., SILAYEV, Yu. V., and KHROMOV, V. V.

"Solution of Certain Optimization Problems for Fast Reactors"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 17-32 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V526)

Translation: Problems illustrating the possibilities of the ROKBAR program and giving an idea of the nature of solutions and the optimization of high-power fast reactors are described. Reactors with oxide fuel and sodium coolant are considered; the core consists of two regions with different concentrations of fissionable isotopes. The following problems are solved: 1. the minimum of the critical mass for a constant reactor power; In seeking the optimum the dimensions of the fuel elements and the assembly, the dimensions of the core regions, the step of the fuel element lattice, the velocity of the coolant, and the concentration of fissionable isotopes were varied. Results are presented for reactors with an electric power from 500 to 2500 Mw. The minimum critical mass is achieved for very high values of the maximum thermal stress, which drops from 2590 to 2050 kw/l with an  
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USSR

KUZ'MIN, A. M., et al, Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 17-32 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V526)

increase in power in this range, so that the value of the minimum critical mass increases by a factor of 4 with the rise in power. The minimum of the critical mass is achieved for a flattening coefficient of  $\sim 0.3$ . 2. The minimum of the doubling period of the breeder reactor system. It is shown that in this case the doubling period drops with a rise in reactor power and can be decreased by holding a constraint on the average heating of the coolant and also through creating a weakly stressed active section in the center of the reactor or a zone with raw material. 3. The minimum expenditure of plutonium to ensure a given rate of development of nuclear power. The results of calculations are given and discussed. Experience accumulated in the process of optimization studies with the aid of the ROKBAR program is discussed, and recommendations are made on the selection of a plan for the solution of optimization problems taking into account thermophysical and strength relationships. S. M. Zaritskiy.

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USSR

UDC 621.039

KHROMOV, V. V., KUZ'MIN, A. M., KASHUTIN, A. A., and SILAYEV, Yu. V.

"Computational Optimization Complex for Fast Atomic Reactors (ROKBAR)"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors --- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 3-16 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V528)

Translation: A program for the M-20 computer is described that is intended for finding the optimal version of a fast power reactor considering the interrelationship of its thermal, strength, and neutron-physics parameters. The algorithm for gradient search is achieved through the use of formulas of the theory of small perturbations and linear programming (the method of consecutive shortening of discrepancies). Following are considered given in the optimization: reactor power, the form and properties of the fuel and structural materials, the coolant circuit and the coolant, the structural solution, the maximum temperature of the coolant at the output of the core, and the parameters of the external fuel cycle. The ROKBAR program makes it possible to optimize the doubling time of fast reactors, the critical mass, the coefficient of nonuniformity of the heat release field, the energy

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USSR

KHROMOV, V. V., et al, Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 3-16 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V528)

intensity of the fuel in the cycle, etc., and also any combination of these quantities. Two-dimensional cylindrical reactors having no more than 2 zones with respect to height and several zones with respect to radius can be considered. To satisfy the optimality criterion, one can change the following controlling parameters: the height of the core, the thickness of the individual zones, the dimensions and step of the fuel elements, the velocity of the coolant, the enrichment of the fuel, and the volume of boron rods for compensation of reactivity. Constraints are imposed on the region of change of the controlling parameters and on several quantities which have a functional dependence on the reactor parameters. S. M. Zaritskiy.

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USSR

UDC 621.039.51

KHROMOV, V. V., KUZ'MIN, A. M., KASHUTIN, A. A., and SILAYEV, YU.V.

"Calculation Optimization Complex for Fast Nuclear Reactors (ROKBAR)"

Fiz. Yadern. Reaktorov (Nuclear Reactor Physics -- collection of works), No 2, Moscow, Atomizdat Press 1970, pp 3-16 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.63)

Translation: The ROKBAR program for optimization of fast nuclear reactors has been written for the M-20 computer at the Moscow Engineering Physics Institute. The ROKBAR program allows sequential search for the optimal version of a fast reactor considering its thermal, strength, and neutron physical characteristics while avoiding variant calculation. The program is based on an algorithm of gradient search for an optimal version using formulas from the theory of small perturbations and linear programming. The authors preferred this method of optimization above other methods (dynamic programming, the maximum principle of Pontryagin), since it is most universal and has been developed in sufficient detail. The

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USSR

KHROMOV, V. V., et al., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press 1970, pp 3-16 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.63)

creation of the ROKBAR optimization complex was facilitated by the experience in the planning of fast nuclear reactors accumulated at the Institute of Physics and Power Engineering. Optimization studies of a BN-350 nuclear reactor have shown that 2 to 3 minutes of M-20 computer machine time is required for each step in the search, the total time expended for optimization of the nuclear reactor being not over 1.5 hr. Studies performed using the ROKBAR program have shown that it is a reliable and effective tool for the search for optimal compositions of fast nuclear reactors. 9 biblio. refs.

2/2

1/2 011 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--METHOD OF PREPARATION OF 2,C PRIME14,CYTIDINE AND URIDINE  
NUCLEOTIDES WITH THE USE OF ENZYME PREPARATION FROM M-1 RAT SARCOMA -U-  
AUTHOR--SILAYEVA, S.A., AVDEYEVA, L.V., DEBOV, S.S.  
COUNTRY OF INFO--USSR  
SOURCE--VOPROSY MEDITSINSKOY KHIMII, 1970, VOL 16, NR 2, PP 207-210  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--RAT, SARCOMA, PROTEIN, ENZYME, NUCLEOTIDE, NUCLEOSIDE, CARBON  
ISOTOPE  
CONTROL MARKING--NO RESTRICTIONS  
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PROXY REEL/FRAME--1986/0645 STEP NO--UR/0301/70/016/002/0207/0210  
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UNCLASSIFIED

2/2 011

CIRC ACCESSION NO--AP0102631

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE METHOD OF PREPARATION OF C  
 PRIME14 LABELLED CMP, UMP, CDP, UDP, CTP AND UTP FROM CORRESPONDING C  
 PRIME14 NUCLEOSIDES WITH THE USE OF PROTEIN FRACTION OBTAINED FROM M-1  
 RAT SARCOMA WAS DESCRIBED. THE SUPERNATANT OBTAINED AFTER  
 CENTRIFUGATION OF TUMOR HOMOGENATE AT 105,000 G, OR PROTEIN CONTAINING  
 SOLUTIONS PREPARED FROM FRACTIONS ISOLATED FROM CELL FREE EXTRACTS AT  
 25-50PERCENT, 25-60PERCENT, AND 25-80PERCENT OF SULPHATE AMMONIA  
 SATURATION WERE USED AS THE ENZYME SOURCE. DURING THE INCUBATION OF C  
 PRIME14 CYTIDINE AND URIDINE WITH SUPERNATANT C PRIME14 CTP AND UTP  
 (WITH 40-50PERCENT OF YIELD) WERE OBTAINED. THE USE OF THE FIRST  
 PROTEIN FRACTION GAVE C PRIME14 CDP AND UDP (THE YIELD 70-85PERCENT),  
 THE SECOND FRACTION GAVE C PRIME14 CDP AND UDP (THE YIELD 50-60PERCENT),  
 AND THE LATTER C PRIME14 CTP AND UTP (WITH 70-85PERCENT OF YIELD). THE  
 SAMPLES OF NUCLEOTIDES OBTAINED WERE HOMOGENOUS AT SPECTROPHOTOMETRIC  
 AND CHROMATOGRAPHIC ANALYSIS, POSSESSED THE SPECIFIC RADIOACTIVITY OF  
 PARENT NUCLEOTIDES, AND WERE USED AS SUBSTRATES IN FOUR ENZYMATIC  
 SYSTEMS.

UNCLASSIFIED

USSR

UDC 547.556.07

SILAYEVA, N. D., and KOZLOV, V. V., Moscow Institute of National Economy  
Imeni G. V. Plekhanov

"Studies in the Area of Diazo Compounds. XXXIX. Pyrophosphates of Aromatic  
Amines and Diazo Compounds"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 6, No 9, Sep 70, pp 1860-1864

Abstract: Diazotization of aromatic amines by means of sodium nitrite in aqueous solutions of pyrophosphoric acid was studied. The rate of diazotization decreased with the decrease of basicity constants of the amines in water. The reactions took place upon combining the reagents. The products had a composition of 2:1 of the amine to pyrophosphoric acid. When the amines were dissolved in 85% formic acid prior to mixing -- the product had a 1:1 composition. After repeated recrystallization the 1:1 product converted to the 2:1 material. Diazotization of these compounds gave pyrophosphates of the diazo-compounds  $\text{XC}_6\text{H}_4\text{N}_2\text{H}_3\text{P}_2\text{O}_7^-$ . Also salts of aromatic amines with orthophosphoric acid of a 1:1 composition were obtained, which upon diazotization gave orthophosphates of the diazo-compounds  $\text{XC}_6\text{H}_4\text{N}_2\text{H}_2\text{PO}_4^-$ .

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USSR

UDC 548.522

ISAYKIN, A. S., GRIBKOV, V. N., SHCHETANOV, B. V., SILAYEV, V. A., and  
LEVINSKAYA, M. KH.

"Growth of Filamentary Aluminum Oxide Crystals During Reduction of Aluminum Oxide"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan/Feb 73, pp 112-119

Abstract: Thermodynamic analysis of aluminum oxide reduction by hydrogen and carbon showed that  $Al_2O$  produced the highest pressure among the gaseous reaction products and that  $Al_2O$  was primarily responsible for the mass transfer in the gaseous phase. A participation of aluminum vapors in this process was determined by the pressure of CO vapors within the reduction zone of alumina. Reduction of  $Al_2O_3$  by C and H produced mainly  $Al_2O$  and Al, and the pressure of  $Al_2O$  was three times as high when the reduction was accomplished by carbon. A difference in temperatures between reduction and condensation zones of the order of 200-300°C produced a supersaturation equaling 10. Corundum whiskers were successfully grown in the presence of hydrogen when the difference in temperature between reduction and condensation zones was 60-80°C. A rapid growth of whiskers was observed at 2000-2050°C in the reduction zone when this temperature difference amounted to 150°C and the  
1/2

USSR

ISAYKIN, A. S., et al, Moscow, Fizika i Khimiya Obrabotki Materialov, No 1,  
Jan/Feb 73, pp 112-119

supersaturation was  $S \approx 5$ . The diameter of whiskers in this case was  $10-30 \mu$  and they were 20-25 mm long. When the difference in temperature between zones was  $200-220^\circ\text{C}$ , the whiskers were  $1-10 \mu$  in diameter and 8 mm long, but they had many defects. The whiskers were of irregular shape and very small when the temperature difference was  $250-280^\circ\text{C}$ . A condensation of aluminum droplets in the growing zone of whiskers led to the conclusion that the initial crystallization centers originated in these droplets and the growth of corundum whiskers in this process took place according to the vapor - liquid - solid phase mechanism.

2/2

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USSR

UDC 621.74

SYDORIN, I. I., Doctor of Technical Sciences, Professor, SILAYEVA, V. I., Candidate of Technical Sciences, Docent, SLOTIN, V. I., Candidate of Technical Sciences, SOLOV'YEVA, T. V., Candidate of Technical Sciences, Docent, and BSKIN, G. I., Candidate of Technical Sciences, Moscow Higher Technical School imeni N. E. Bauman

"Obtaining a Composite Casting Alloy for Percussive Rock Drills by Means of Ultrasonic Treatment of the Melt"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 8, 1972, pp 116-121

Abstract: A composite alloy for cumulative-action percussive rock drills is obtained on the basis of alloy NVTU-3. This alloy has high hardness and strength values, and possesses considerable brittleness and fragmentability. In order to make the alloy still stronger, and to increase its brittleness and fragmentability, refractory carbide particles and oxides, of varied dispersity, were introduced into the alloy in combination with ultrasonic treatment of the molten metal. Best results were obtained with silicon carbide.

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USSR

SIDORIN, I. I., et al., Izvestiya Vysshykh Uchebnykh Zavedeniy, Mashinostroyeniye, No 8, 1972, pp 116-121

As a result of ultrasonic treatment in the molten metal, intensive cavitation processes originate, which bring about dispersion and destruction of the refractory particles; this facilitates wetting of the particles by the base metal, and facilitates their uniform distribution in the composition material. Study of the mechanical properties of compositions of varied content showed that they are determined by the nature of their components, as well as by the quantity and dispersity of the strengthening particles. The properties of the obtained composition alloy in a cast state are presented, before and after ultrasonic treatment. The obtained composition is recommended for the production of cumulative-action percussive rock drill parts operating at high hydrostatic pressures and temperatures of 100-150° C. 1 table. 5 figures. 3 references.

2/2

- 47 -

Acc. Nr: AP0043663

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Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy  
Fiziki, 1970, Vol 58, Nr 2, pp 475-485  
EXCITON AND EXCITON-MAGNON ABSORPTION  
IN ANTIFERROMAGNETIC CsMnF<sub>2</sub>

Belyayeva, A. I.; Yerezenko, V. V.;  
Silayev, V. I.; Petrov, S. V.

The absorption spectrum of antiferromagnetic CsMnF<sub>2</sub> is studied in detail in the C-group band region of the Mn<sup>2+</sup> ion shifted from the inversion center. The temperature was varied between 1.2 and 60° K and the external magnetic field between 0 and 25 kOe. Identification of the spectrum is performed within the framework of group theory analysis. It is shown that CsMnF<sub>2</sub> is an unusual crystal among antiferromagnetic substances. For the Mn<sup>2+</sup> ion in it pure exciton transitions are allowed in the electric dipole approximation. The main properties of pure exciton and exciton-magnon absorption bands are obtained in accordance with the Loudon scheme [2]. «Hot» and «cold» magnon satellites and also two-magnon satellites of pure exciton absorption bands are detected in the absorption spectrum and investigated. The maximal magnon frequency at the boundary of the Brillouin zone is determined,  $\Delta_2 = 38 \text{ cm}^{-1}$ . The problem of distortion of this quantity due to exciton-magnon interaction in processes induced by excitation of one or two magnons together with the exciton is discussed.

REEL/FRAME

19770067

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1/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--CHARGED AND NEUTRAL ION CARRIERS THROUGH BIMOLECULAR PHOSOLIPID  
MEMBRANES -U-  
AUTHOR--(03)-LIBERMAN, YE.A., TOPALY, V.P., SILBERSTEYN, A.Y.  
COUNTRY OF INFO--USSR  
SOURCE--BIOCHIM. BIOPHYS. ACTA 1970, 196(2), 221-34  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PHOSPHOLIPID, PHOSPHORYLATION, PHOSPHORUS, SODIUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1984/1088 STEP NO--NE/0000/70/196/002/0221/0234  
CIRC ACCESSION NO--AP0055774  
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0055774

ABSTRACT/EXTRACT--(U) GP-0- ABSTCT. TO CLARIFY THE INFLUENCE OF CONFIGURATION OF MOLS. ON THEIR MOTION WITHIN BIMOL. PHOSPHOLIPID MEMBRANES, THE ELEC. PROPERTIES OF THESE MEMBRANES IN THE PRESENCE OF SPHERICAL LIPID SOL. MOLS. OF 1,2, DICARBADODECABORANE (BARENE) DERIVS. WERE INVESTIGATED. DECACHLOROBARENE IN THE PH REGION 2-13 IS AN EFFECTIVE CARRIER OF H PRIME POSITIVE THROUGH BIMOL. MEMBRANES, AND IS AN UNCOUPLER OF OXIDATIVE PHOSPHORYLATION. THE HG DERIVS. OF BARENE ARE CARRIERS OF THE HALOGEN AND RHODANIDE ANIONS. PHENYLDICARBAUNDECABORANE ANIONS ON THE NATURE OF THE CARRIERS WHICH CAN BE RESPONSIBLE FOR THE PROPERTIES OF EXCITABLE CELL MEMBRANES. AN ASSUMPTION IS MADE THAT K PRIME POSITIVE AND NA PRIME POSITIVE CARRIERS OF THE VALINOMUCIN OR GRAMICIDIN TYPE CAN SERVE AS EXCITABILITY INDUCING SUBSTANCES IF THE MOLS. OF THESE CARRIERS CONTAIN ONE POS. OR TWO NEG. CHEM. LINKED CHARGES, OR IF TWO OR MORE SIMILAR MOLS. ARE LINKED TOGETHER BY FLEXIBLE BONDS WHICH DO NOT HINDER THE COMPLEXING WITH CATIONS. SUCH AN EFFECT SHOULD ALSO BE OBSERVED IF THE MOBILE LIPID SOLS. MOLS. COMPLEX WITH TWO OR MORE CATIONS.

UNCLASSIFIED

USSR

UDC 669.71'721'782

GREBENKIN, V. S., ~~SIL'CHENKO, T. V.~~ GORSHKOV, A. A. and DZYKOVICH, I. YA.,  
Institute of Casting Problems, Academy of Sciences Ukrainian SSR

"Effect of Magnesium on Tin and Lead Distribution in Aluminum-Silicon Alloys"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 3, 1972,  
pp 50-54

Abstract: The impurities in secondary aluminum alloys include readily fusible and liquation-prone  $\beta$ -type elements such as Sn, Pb, As, Sb (up to 0.1-0.2% of each) which appear to impair the mechanical properties of the alloys at both room and higher temperatures. Alkaline, alkali-earth, transition (Ti, Zr, V), and rare-earth elements form chemical compounds with the  $\beta$ -type elements and under certain conditions neutralize their adverse effect in the alloys. This study involving Al-Si-Mg alloys with Sn and Pb additions to the Mg Si-type phase revealed appreciable amounts of Sn and Pb which had affected the phase composition and changed it to  $Mg_2Si_{0.3\beta}0.7$  ( $\beta = Sn$  or Pb). In Al-Si-Cu-Mg alloys Pb and Sn act to hinder the formation of the quaternary phase  $W(Al_xMg_5Cu_4Si_4)$  while promoting the

1/2

USSR

GREBENKIN, V. S., et al, Metallovedeniye i termicheskaya obrabotka metallov, No 3, 1972, pp 50-54

formation of the  $Mg_2Si$  phase which also contains Cu, Sn and Pb. In Al-Si-Cu-Mg alloys, Sn hinders while Pb promotes the formation of the  $CuAl_2$  phase. There were no inclusions of free Sn in the Al-Si-Mg and Al-Si-Cu-Mg alloys. Despite the low Mg contents in the chemical compounds, they appear to have combined the entire tin. The study shows that both Sn and Pb are electronic analogs of Si. They are capable of substituting for Si in  $Mg_2Si$  or  $W(Al_xMg_5Cu_4Si_4)$ -type magnesium compounds, making it possible to neutralize the adverse effect of Sn and Pb in aluminum alloys. (1 illustration, 3 tables, 14 bibliographic references).

2/2

USSR

UDC 669.715'782:[620.186 + 539.531]:669.781'779

GORSHKOV, A. A., SAP'YAN, V. G., SIL'CHENKO, T. V., CHERNOGORENKO, V. B., and GREBENKIN, V. S.

"Influence of Phosphides A<sup>III</sup>B<sup>V</sup> on the Structure and Certain Properties of Hypereutectic Silumins"

V sb. Modifitsir. siluminov (Modification of Silumins -- Collection of Works), Kiev, 1970, pp 77-82 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 1749 by I. NABATOVA)

Translation: By microanalysis and microhardness methods the authors investigated the modifying and alloying action of phosphides of the type A<sup>III</sup>B<sup>V</sup> (BP, AlP, GaP, ZnP) on hypereutectic Silumins containing (in %): Si 18, Cu 2.08, Mg 0.4, Ni 1.05, Mn 0.12, Zn up to 0.3, and Fe 0.42. Phosphides were introduced at melt temperature of 800° in an amount constituting 0.4% of the weight of the alloy. Modification time, 2-3 minutes; subsequent homogenization time at 800°, 30 minutes. BP and AlP significantly reduce alloy structure; GaP has less effect on structure, and ZnP very slight effect, which is due to the different phosphorus content of the phosphides. BP and AlP occur in silicon in the form of solid solutions and increase the microhardness of primary silicon 1/2

USSR

GORSHKOV, A. A., et al, Modifitsir. siluminov (Modification of Silumins -- Collection of Works), Kiev, 1970, pp 77-82 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 1749 by I. NABATOVA)

crystals to H 50/5 1600 and 1460 respectively. GaP and ZnP raise H 50/5 to 1190 and 1170 due to the formation of AlP, which becomes part of the silicon lattice. Total hardness of alloys does not vary after modification. One illustration. Two tables. Bibliography of 23 titles.

2/2

- 14 -



1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--ESR OF ENERGETICALLY NONEQUIVALENT TETRAGONAL CU PRIME2 POSITIVE  
IONS IN HYDRATED CUNAA ZEOLITE -U-  
AUTHOR-(04)-SILCHENKO, V.A., PAFOMOV, N.N., MATYASH, I.V., PIONTKOVSKAYA,  
M.A. S  
CCOUNTRY OF INFO--USSR  
SOURCE--DOPOV. AKAD. NAUK UKR. RSR, SER. A 1970, 32(3), 235-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ELECTRON SPIN RESONANCE, COPPER, ION, ZEOLITE, EPR SPECTRUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1298 STEP NO--UR/0441/70/032/003/0235/0237  
CIRC ACCESSION NO--AT0126712  
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AT0128712

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANAL. OF THE MEASURED EPR SPECTRA OF CU PRIME2POSITIVE IONS IN A HYDRATED A TYPE ZEOLITE IN WHICH SIMILAR TO 20PERCENT OF NA PRIME POSITIVE IONS WAS REPLACED (BY USUAL ION EXCHANGE PROCEDURE) REVEALED THAT THE CU PRIME2POSITIVE IONS IN THE ZEOLITE ARE IN 2 ENERGETICALLY NONEQUIV. STATES MAGNITUDE OF X PRIME2-Y PRIME2 GREATER THAN AND MAGNITUDE OF 3Z PRIME2-R PRIME2 GREATER THAN. THE SPECTRUM OF THE HYDRATED ZEOLITE CONTG. SIMILAR TO 20PERCENT CU PRIME2POSITIVE IONS IS CONSIDERED AS A SUPERPOSITION OF 2 COMPONENTS: THAT OF LOW CU CONTENT ZEOLITE (UP TO SIMILAR TO 3PERCENT) AND OF A DEHYDRATE (AT 500DEGREES AND 10 PRIME NEGATIVE6 MM HG) ZEOLITE. THE EXPTL. EPR SPECTRUM OF CU PRIME2POSITIVE IONS IN THE GROUND STATE MAGNITUDE OF 3Z PRIME2-R PRIME2 GREATER THAN IS DESCRIBED FOR THE 1ST TIME.

FACILITY: DONETS. FIZ.--TEKH. INST., DONETSK, USSR.

UNCLASSIFIED

USSR

UDC 541.15 : 546.287 : 547.539.162

ZIMIN, A. V., VAYNSHTEYN, B. I., SIL'CHENKO, YU. I., Physicochemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry

"Radiation-Induced Synthesis of Perfluorophenylchlorosilanes"

Moscow, Khimiya Vysokikh Energiy, Vol 4, No 5, Sep-Oct 70, pp 419-424

Abstract: The article describes results of a study of the radiation-induced synthesis of previously undescribed methylpentafluorophenyl-dichlorosilane  $(CH)_3C_6F_5SiCl_2$  and pentafluorophenyltrichlorosilane  $C_6F_5SiCl_3$  -- compounds which are perfluorophenyl analogs of methylphenyldichlorosilane and phenyltrichlorosilane, synthesized by A. V. ZIMIN, et al. The radiation-induced synthesis is based on the method previously suggested by ZIMIN, et al. for the condensation reaction of hydridochlorosilanes with halogenated benzenes under the action of ionizing radiation by a chain mechanism. The optimal physicochemical conditions for the radiation-induced synthesis of these compounds are determined, including the use of a

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USSR

ZIMIN, A. V., et al, Khimiya Vysokikh Energiy, Vol 4, No 5, Sep-Oct 70, pp 419-424

reactor employing steel 1Kh18N9T. An advantage of the method is that, unlike ordinary chemical methods for the synthesis of organo-silicon monomers, there is no need for costly catalysts or high temperatures or many synthesis steps. The most important physico-chemical constants of the resultant compounds are determined.

2/2

USSR

UBC 547.759.3:545.422.25

NOVIKOVA, M. N., SILENKO, I. D., KUCHEROVA, N. F., and ZAGOREVSKIY, .  
A., Institute of Pharmacology, USSR Academy of Medical Sciences, Mos-  
cow

"Indole Derivatives. XII. Cyclization of 1-R-2-( $\beta$ -Aminoisobutyl)In-  
dole With Cyclic Ketones"

Uziga, Khimiya Geterotsiklicheskikh Soyedineniy, No 7, 1973, pp 942-  
944

Abstract: Experiments were conducted on the cyclization of 2-( $\beta$ -amino-  
isobutyl)indole and 1-methyl-2-( $\beta$ -aminoisobutyl)indole with several  
alicyclic and heterocyclic ketones in a mixture of absolute ethanol and  
benzene containing catalytic amounts of HCl. These reactions yielded  
imines or spirans of the 1,2,3,4-tetrahydro- $\gamma$ -phenolic series.

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AP 9053080

UR 0289

PRIMARY SOURCE: Izvestiya Sibirskogo Otdeleniya, AN SSSR,  
Seriya Khimicheskikh Nauk, Nr 12(162), Nr 5,  
PP 26-32

N. D. Biruckov, K. L. Siletskaya

ON INNER STRESS IN GALVANIC DEPOSITS

15  
3  
21

Construction of a device allowing contact force of copper and nickel bands occurring as a result of galvanic deposition of Ni and Co has been designed. Equation for calculation of inner stress both relaxable,  $\sigma_1$ , and nonrelaxable,  $\sigma_2$ , in Ni and Co deposits has been derived. Values of relaxable stress,  $\sigma_1$ , can be obtained in two ways:  
a) by direct measurement of the force which should be applied to prevent contraction of copper band covering by galvanic deposits;

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b) by calculation using experimentally obtained values of the contraction  $\Delta$ .  
Deposition of Ni and Co allows residual stress to be obtained by mean of reduction of the stress as a result of Ni and Co deposition. Correct values of  $\sigma_a$  and  $\sigma_p$  are obtained only in the cases if metal substates are properly annealed. It has to be pointed out, that reduction of inner stress in deposits in course of increasing it's thickness is very low.

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1837





SILETSKAYA, L. A.

Radiation Biology

SO: JPRS 55100

14 FEB 72

UIC 582:287:332\*576-852.29 (Hydrogenomonas):629.78

STUDY OF THE EFFECT OF FLIGHT FACTORS ON THE ZOND-8 AUTOMATIC STATION ON A CULTURE OF YEASTS AND ALGAL BACTERIA

Article by E. A. Romanova, L. A. Makhimova, L. A. Siletskaya, Ye. A. Krasavin and V. K. Kovalenkova; *Hydrogenomonas* and *Hydrogenomonas eutropha* *Biologiya* 1971, pp 41-47

Abstract: This paper gives the results of studying the yeast *Candida tropicalis* SK-4 and the bacterium *Hydrogenomonas eutropha* Z-1 which were aboard the automatic station Zond-8 during its lunar flight. The survival of yeast cells during flight and the physiological and biochemical properties of their subsequent generations remained unchanged. The survival of bacteria decreased by 5 percent in comparison with the control. Subsequent generations of bacteria tended to decrease their productivity during autotrophic cultivation, the level remaining within the limits of productivity variations under laboratory conditions. Bacterial radiosensitivity did not change after the flight.

In the biological experiments carried out earlier aboard Soviet and American spacecrafts and artificial earth satellites microorganisms were used for the most part as indicators for the biological dosimetry of cosmic radiation and commonly employed genetic objects (Junkins; N. Zhukov-Vereshnikov, et al., 1962; N. V. Kovyazin, et al.; G. P. Farfenov and A. A. Lukin; N. N. Zhukov-Vereshnikov, et al., 1968).

During the period 20-27 October the Zond-8 automatic station, which flew around the moon on 24 October, carried a culture of the yeast *Candida tropicalis* SK-4 and a culture of *Hydrogenomonas eutropha* Z-1.

The selection of yeasts and *Hydrogenomonas* as objects for investigations aboard the Zond-8 was dictated by the need for studying the tolerance to spaceflight factors of microorganisms promising as biological objects for

USSR

SILICH, V. A., SHEPELINA, M. M.

"Program for Construction of Linear Set Regression Equations"

Kibernetika i vuz. [Cybernetics and the University -- Collection of Works], Tomsk, Tomsk University Press, No 4, 1971, pp 164-173, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V717 by the author's).

Translation: A brief description is presented of an algorithm and program for construction of linear set regression equations using the method of set correlation analysis in ALPHA-language and machine language for the MIR-1 computer.

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USSR

SILICH, V. A., OGAY, V. S.

"Program for Processing Statistical Data Using the Method of Primary Components"

Kibernetika i vuz. [Cybernetics and the University -- Collection of Works], Tomsk, Tomsk University Press, No 4, 1971, pp 174-183, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V718 by the author's).

Translation: A program is described for realization of the method of primary components in ALPHA-language and MIR-1 computer language.

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USSR

UDC: 8.74

SILICH, V. A., SHEPELINA, M. M.

"Program for Checking Joint Distribution for Multidimensional Normality"

Tomsk, Kibernetika i vuz--sbornik (Cybernetics and Higher Education--collection of works), vyp. 5, 1972, pp 146-157 (from RZh-Kibernetika, No 5, May 73, abstract No 5V790 by the authors)

Translation: A program is given for verifying the normality of multidimensional distribution. The program consists of two sub-programs: the first is compiled in ALPHA language, and the second in "MIR-1" computer language.

1/1

- 101 -

1/2 017

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--IMUNOLOGICAL STRUCTURE OF TULA POPULATION IN RESPECT TO MEASLES AT  
DIFFERENT PERIODS OF THE YEAR -U-

AUTHOR--(04)-SILICH, V.A., KHAZANOV, M.I., ZHDANOVA, G.L., SEVEROV, A.M.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 5,  
PP 109-115

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IMMUNOLOGY, HEMAGGLUTINATION INHIBITION TEST, MEASLES

CONTROL MARKING--NO RESTRICTIONS .

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/0150

STEP NO--UR/0016/70/000/005/0109/0115

CIRC ACCESSION NO--AP0114546

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0114546

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMMUNOLOGICAL STRUCTURE OF TULA POPULATION IN RESPECT TO MEASLES WAS STUDIED WITH THE AID OF HEMAGGLUTINATION INHIBITION REACTION. OVER 3,000 UNSELECTED CASES FROM VARIOUS AGE GROUPS WERE EXAMINED IN MARCH AND IN DECEMBER, 1966. THERE WAS NOTED A REGULARITY COMMON TO BOTH SEASONS: THE NUMBER OF POSITIVE REACTIONS INCREASED FROM 5-14PERCENT AT THE AGE OF 1-2 YEARS TO THE MAXIMAL IN SCHOOLCHILDREN AND ADULTS EQUAL TO 89PERCENT IN MARCH, AND 54PERCENT IN DECEMBER. IN DECEMBER (THE TIME OF INTENSIVE ELEVATION OF MEASLES INCIDENCE IN TULA) THE PERCENTAGE OF POSITIVE HEMAGGLUTINATION INHIBITION REACTIONS WAS MUCH LESS THAN IN MARCH. A FALL IN THE LEVEL OF IMMUNOLOGICAL REACTIONS IN DECEMBER COULD BE ATTRIBUTED TO THE DEPRESSIVE EFFECT OF NONSPECIFIC SEASONAL FACTORS ON THE GENERAL IMMUNOLOGICAL REACTIVITY OF THE ORGANISM, AND ALSO TO REDUCTION OF THE CIRCULATION OF MEASLES VIRUS DURING THE PRECEDING PERIOD OF LOW MEASLES INCIDENCE. ONE OF THE CAUSES OF ELEVATION OF MEASLES INCIDENCE DURING THE AUTUMN WINTER PERIOD IS POSSIBLY A REDUCTION OF THE IMMUNITY LEVEL TO MEASLES AMONG THE POPULATION. FACILITY: TSENTRAL'NYY INSTITUT EPIDEMIOLOGII.

UNCLASSIFIED

USSR

UDC 550.42

SILICHEV, M. K., BELOZERTSEVA, N. V., Yakutsk Territorial Geological Administration

"Distribution of Gold in Sedimentary and Igneous Rocks in the Region of Nezhdaninsk Gold Ore Deposits"

Moscow, Geokhimiya, No 6, Jun 73, pp 931-935

Abstract: In the sedimentary and igneous rocks of the Nezhdaninsk gold ore deposits, unchanged by secondary processes, the coefficient of variation of the gold content is below 84.6%, indicating possible syngenetic nature of its increased concentration in these rocks. Both the sedimentary and igneous rocks in this region contain high concentrations of gold. Maximum levels are found in the pyritiferous siltstones of the lower Permian period and in gabbrodiorites of the Geldian group of blocks. An assumption has been expressed that this increased gold content is connected in some way with the assimilation of the terrigenous rocks of the aleuropelitic composition enriched with this material.

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1/2 028

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--METHOD FOR THE WEAR TESTING OF MATERIALS DURING DRY FRICTION USING  
RADIOACTIVE ISOTOPES -U-

AUTHOR--(03)--DROZDOV, YU.N., PUCHKOV, V.N., SILIN, A.A.

COUNTRY OF INFO--USSR

SOURCE--ZAVUD. LAB. 1970, 36(3), 345-6

DATE PUBLISHED--70

S

SUBJECT AREAS--MATERIALS

TOPIC TAGS--RADIOACTIVE ISOTOPE, CYCLOTRON, FRICTION, WEAR RESISTANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1052

STEP NO--UR/0032/70/036/003/0345/0346

CIRC ACCESSION NO--AP0123045

UNCLASSIFIED



2/2 028

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123045

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SAMPLE IS 1ST ACTIVATED BY RHO (6-7 MEV) IN A CYCLOTRON, AND AFTER THE FRICTION OPERATION ITS RADIOACTIVITY IS MEASURED AND COMPARED WITH THE RADIOACTIVITY OF A MODEL SAMPLE OF KNOWN DEPTH OF WEAR. FACILITY: GOS. NII MASHINOVED., USSR.

UNCLASSIFIED

1/2 023

TITLE--AMPLITUDE MANIPULATED SIGNAL RECEPTION IN POWERFUL AM NOISE -U-

PROCESSING DATE--09OCT70

AUTHOR--(02)--SILIN, A.V., SHIRNOV, N.M.

S

COUNTRY OF INFO--USSR

SOURCE--KIEV, IZVESTIYA VUZOV SSSR RADIOELEKTRONIKA, VOL 13, NO 2, 1970,  
PP 242-245

DATE PUBLISHED--70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION

TOPIC TAGS--TELEGRAPH SIGNAL, SIGNAL RECEPTION, ELECTROMAGNETIC NOISE,  
RADIO RECEIVER, AMPLITUDE MODULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1991/1450

STEP NO--UR/0452/70/013/002/0242/0245

PROCESSING DATE--090CT70

UNCLASSIFIED

2/2 023

CIRC ACCESSION NO--AP0110946  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THIS PAPER IS CONCERNED WITH PROTECTION OF THE RADIO RECEIVER FROM NOISE OF A LEVEL EXCEEDING THAT OF THE DESIRED SIGNAL. THE RECEIVER IS ASSUMED TO HAVE AN AMPLITUDE MANIPULATED SIGNAL OF A PARTICULAR CARRIER FREQUENCY IN AMPLITUDE MODULATED NOISE AT ITS INPUT. THE AMPLITUDE OF THE NOISE ENVELOPE IS A RANDOM PROCESS WITH A SPECTRUM LIMITED BY THE FREQUENCY. THE FREQUENCY DIFFERENCE OF CARRIER AND NOISE SIGNALS IS SOMEWHAT HIGHER THAN THE UPPER FREQUENCY OF THE SIGNAL ENVELOPE SPECTRUM. IT IS ALSO ASSUMED THAT THE SIGNAL AND NOISE FREQUENCIES AT THE RECEIVER END OF THE COMMUNICATION CHANNEL ARE KNOWN. THE INITIAL TELEGRAPH SIGNAL IS TO BE DETECTED AT THE RECEIVER OUTPUT. A RECEIVER TO COPE WITH THIS PROBLEM WAS DESIGNED AND TESTED BY THE AUTHORS. THE BLOCK DIAGRAM OF THIS RECIEVER IS GIVEN. AS THE AM NOISE, THEY USED A 120 KHZ OSCILLATION WITH A SUPPRESSED CARRIER; THEY USED A NOISE PROCESS WITH LIMITED SPECTRUM AS THE MODULATING FUNCTION. THE TELEGRAPH SIGNAL WAS SUPPLIED BY KEYING. THE AUTHORS REPORT THAT THE NOISE HAD PRACTICALLY NO EFFECT ON THE RECEPTION. THEY CONCLUDE WITH THE ASSERTION THAT THE RECEIVER CAN ALSO BE USED IN MULTIPLEXING.

UNCLASSIFIED

UDC 621.391:519.2

USSR

SILIN, A. V.

"Separation of Two AM-Signals with Voice Information"

Uch. zap. Gorkovsk. un-t (Scientific Notes of Gorkiy University), 1970, vyp. 105, pp 50-53 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9A43)

Translation: When solving the problem of separating two AM-signals with overlapping frequency spectra by the method of synchronous detection, the necessary condition of separation is exact reproduction of the carrier oscillations of both signals on the receiving end of the communications channel. Accordingly, the procedure for reproducing the carrier oscillations based on using the spaces in the noise envelope characteristic of voice information during which tuning of the heterodyne modulating the useful signal oscillations is realized, is investigated. The schematic of the receiver is presented. There are two illustrations and a three-entry bibliography.

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Receivers and Transmitters

UDC 621.391.3

USSR

S  
SILIN, A. V. and SMIRNOV, N. M.

"Amplitude-Manipulated Signal Reception in Powerful AM Noise"

Kiev, Izvestiya VUZov SSSR-Radioelektronika, Vol 13, No 2, 1970, pp 242-245

Abstract: This paper is concerned with protection of the radio receiver from noise of a level exceeding that of the desired signal. The receiver is assumed to have an amplitude-manipulated signal of a particular carrier frequency in amplitude-modulated noise at its input. The amplitude of the noise envelope is a random process with a spectrum limited by the frequency. The frequency difference of carrier and noise signals is somewhat higher than the upper frequency of the signal envelope spectrum. It is also assumed that the signal and noise frequencies at the receiver end of the communication channel are known. The initial telegraph signal is to be detected at the receiver output. A receiver to cope with this problem was designed and tested by the authors. The block diagram of this receiver is given. As the AM noise, they used a 120 KHz oscillation with a suppressed carrier; they used a noise process with 1/2

USSR

SILIN, A. V., et al., Izvestiya VUZov SSSR-Radioelektronika, Vol 13, No 2,  
1970, pp 242-245

limited spectrum as the modulating function. The telegraph signal was supplied by keying. The authors report that the noise had practically no effect on the reception. They conclude with the assertion that the receiver can also be used in multiplexing.

2/2

1/2 029  
 TITLE--SPECTRAL PROPERTIES AND PHOTSENSITIVITY OF ISOSTRUCTURAL  
 AMINOINDENES -U-  
 AUTHOR-(04)-GAILIS, A., MURNIECE, D., SILIN, E., FREIMANIS, J.  
 COUNTRY OF INFO--USSR  
 SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, FIZ. TEH. ZINAT. SER. 1970, (1),  
 9-17  
 DATE PUBLISHED-----70

UNCLASSIFIED

PROCESSING DATE--30OCT70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--ELECTRON SPECTRUM, PHOTSENSITIVITY, AMINE, AROMATIC KETONE,  
 BENZENE DERIVATIVE, ORGANIC SULFUR COMPOUND, GOLD COMPOUND,  
 PHOTOELECTRIC PROPERTY, VIBRATION SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--1997/0680

STEP NO--UR/0371/70/000/001/0009/0017

CIRC ACCESSION NO--AP0119588

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

2/2 029

CIRC ACCESSION NO--AP0119588

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. ELECTRONIC AND VIBRATIONAL

ABSORPTION SPECTRA OF THE 2 ISOSTRUCTURAL AMINOINDENES

3,PHENYLAMINO,2,PHENYLINDEN,1,ONE (R-O) AND

3,PHENYLAMINO,2,PHENYLINDENE,1,THIONE (R-S) IN SOLID STATE AND IN SOLN.

HAVE BEEN INVESTIGATED. THE ENERGY OF INTRAMOL. H BOND HAS BEEN

EVALUATED: FOR (R-O) THE VALUE OF DELTAH EQUALS 2.66 CAL-MOLE, FOR

(R-O) 2.42 CAL-MOLE. SOME PHOTOELEC. PROPERTIES OF THIN LAYER SYSTEMS

AU-(R-O)-AU AND AU-(R-S)-AU HAVE BEEN INVESTIGATED. THE

PHOTOSENSITIVITY OF (R-S) EXCEEDS THAT OF (R-O) BY 2-3 ORDERS. POSSIBLE

INFLUENCE OF THE SUBSTITUTED ATOMS IN ISOSTRUCTURAL COMPOS. ON THEIR

PHOTOSENSITIVITY HAS BEEN SUGGESTED. FACILITY: FIZ.-ENERG.

INST., RIGA, USSR.

UNCLASSIFIED



Acc. Nr: **AP0044039** -

Ref. Code: UR 0240

PRIMARY SOURCE: *S* Gigiyena i Sanitariya, 1970, Nr 2, pp 34-38

CHANGES IN THE HUMAN BLOOD SERUM PROTEINS  
UNDER THE EFFECT OF HIGH TEMPERATURE

B. G. Afanasiev, V. A. Zhestovskiy, I. V. Stikh

Changes in the blood proteins of man under the effect of high temperature and also in nitrous metabolites were determined by using electrophoresis. Continuous exposure to high temperatures was found to modify but slightly the total blood protein and its fractions, irrespective of the calorific value of the food allowance. Thermal action in conjunction with physical load produced material changes of the protein metabolism in the organism's tissues with but insignificant modifications occurring in the protein fractions of the serum. Changes taking place in the blood serum proteins following exposure to high temperature cannot serve as a hygienic test of modifications occurring in the organism.

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REEL/FRAME  
**19770485**

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USSR

UDC 615.851.2

SILIN, L. F., First Sterlitamakskiy City Hospital, and Chair of Psychiatry,  
Bashkir Medical Institute

"Objective Evaluation of the Depth of Hypnotic Sleep"

Kazan', Kazanskiy Meditsinskiy Zhurnal, No 6, Nov/Dec 70, p 39

Abstract: Electromyography is suggested as a useful means of evaluating the depth of hypnotic sleep. Study of 136 EMG's from 68 patients showed that when they were awake the average frequency of oscillations of bioelectric potential of resting muscles was  $601.4 \pm 3.69$  per sec with an average amplitude of  $3.3 \pm 0.23$ . In the first stage of hypnosis the mean frequency of oscillations was lower than during wakefulness, and it was lower in the second stage than in the first. The amplitude of the oscillations was greatest in the second stage. In the third stage there was a consistent dissociation between the frequency and amplitude of the muscle biopotentials. The number of oscillations increased and their amplitude decreased.

1/1

USSR

UDC: 621.362.2(088.8)

TEREKOV, A. Ya., SILIN, L. L., CHERKASSKIY, A. Kh.

"An Installation for Durability Testing of Thermocouples"

USSR Author's Certificate No 252436, filed 6 Aug 68, published 19 Mar 70  
(from RZh-Elektrotehnika i Energetika, No 10, Oct 70, Abstract No 10A164 P)

Translation: An installation is proposed for durability testing of thermocouples. The unit contains a hermetically sealed housing which accommodates two heaters for the cold and hot ends of the specimen to be tested, electrically insulated thermal junctions between the specimen and the heaters, measurement thermocouples, and probes. To increase the operational reliability of the installation, flexible heat contact plates based on steatite with the addition of 1-20 percent molybdenum are used as the electrically insulated thermal junctions.

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- 91 -

1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INDUSTRIAL ADOPTION OF A ZINC ABSORBER FOR THE THOROUGH REMOVAL OF  
HYDROGEN SULFIDE FROM HYDROCARBON GASES -U-  
AUTHOR--(02)-POYEZD, D.F., SILIN, N.G.

S

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERAB. NEFTEKHIM. (MOSCOW) 1970, (5), 33-5

DATE PUBLISHED-----70

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

TOPIC TAGS--HYDROGEN SULFIDE, ZINC, GAS ADSORPTION, KADLIN, PELLETIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1085

STEP NO--UR/0318/70/000/005/0033/0035

CIRC ACCESSION NO--AP0134774

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NU--AP0134774

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KAOLIN (1 PART) WAS MIXED WITH 10 PARTS TECH. ZNO AND THEN WITH WATER AND NH SUB3 SOLN., PELLETTED (6-10 MM), AND DRIED IN AIR AND THEN IN N. THE ABSORBER HAD GOOD EFFICIENCY AND HIGHER MECH. STRENGTH THAN THE TABLETTED PRODUCT.

UNCLASSIFIED

USSR

UDC 621.385.6.01

BURTSEV, V.V., SILIN, R.A.

"Distinctive Features Of The Conditions For Synchronism Of Electrons With A Wave In Two-Dimensional--Periodic Retarding Systems Enclosed In A Cylinder"

Elektron.tekhnika. Nauch.-tekhn.sb. Elektron.SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1971, Issue 7, pp 3-15 (from RZh--Elektronika i yeye primeneniye, No 11, Nov 1971, Abstract No 11A19)

Translation: The conditions are considered for synchronism of electrons with a wave in 2-dimensional--periodic retarding systems (RS) enclosed in a cylinder. It is shown that in the general case of electrons moving in an arbitrary direction relative to a series of arrays [reshetka] of the RS, synchronism conditions at any frequency in the passband of the system are realized at any velocity of the electrons, if only for one of the spatial harmonics. There exist, however, such directions of movement of the electron flow (e.g., along the series of arrays) where the synchronism conditions can be realized simultaneously for an infinite set of spatial harmonics. The conditions are studied for the existence of feedback in devices based on the use of RS enclosed in a cylinder. It is shown that irrespective of the type of dispersion characteristic, feedback exists if projections of the group velocity of the wave and the velocity of the electrons on the axis of the cylinder have an opposite sign. Summary.

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USSR

S UDC 621.385.6:681.3 2

BLEYVAS, I. M., LUKOSHOV, V. S., MIKHAYLUS, F. F., POBEDONOSTSEV, A. S., SAZONOV,  
V. P., SILIN, R. A.

"Machine Methods of Planning Microwave Electrovacuum Devices -- Means of Increasing  
the Efficiency of Development"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology.  
Scientific-Technical Collection. Microwave Electronics), 1970, No 4, pp 74-97  
(from RZh--Elektronika i veye primeneniya, No 7, July 1970, Abstract No 7A118)

Translation: The basic problems of machine planning of microwave electrovacuum  
devices are formulated, and some concrete examples of machine planning in the area  
of electronics, electrodynamics, and electron optics are considered. Problems  
are discussed of the creation of a system of procedure in machine planning and  
problems in the area of machine planning of microwave electrovacuum devices.  
55 ref. Summary.

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USSR

UDC: 621.762:669.018.25(088.8)

POVIDAYLO, V. A., SILIN, R. I., TUMANOV, V. I., YUREVICH, R. V.

"Method of Processing of Metal Ceramic Products"

USSR Author's Certificate Number 354939, Filed 26/02/71, Published 13/11/72  
(Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No  
8G441), by S. Krivosova).

Translation: The method suggested includes surface oxidation of products in air at 850-950°, cooling and subsequent removal of the oxide layer by vibration. In order to increase the mechanical properties of the products and simplify the technology of their processing, products are oxidized in a stream of compressed air heated to the oxidation point, then cooled at up to 100°/min. The method can be used in the production of hard alloy drilling and cutting tools, for example for hardening of hard-alloy teeth of drilling machines.

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SILIN, V. P.

ANOMALOUS NONLINEAR DISSIPATION OF HIGH-FREQUENCY  
RADIO WAVES IN PLASMA

JPRS 59283  
24 August 1973

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Article by V. P. Silin, Physics Institute Imeni N. N. Lebedev,  
USSR Academy of Sciences, from Russian-language journal Fizicheskii Nauch,  
pp 635-654, Fizicheskii Nauch, Vol. 108, No. 4, December 1972, Moscow.

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[I - USSR - L]

TITLE--THEORY OF DEGENERATIVE ELECTRON FLUID AND ELECTROMAGNETIC WAVES IN METALS -U- UNCLASSIFIED PROCESSING DATE--27NOV70

AUTHOR--SILIN, V.P.

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CIRC ACCESSION NO--AP0129177  
ABSTRACT/EXTRACT--(U) GP-0-

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PROCESSING DATE--27NOV70

DEGENERATE ELECTRON FLUID IN METALS IS PRESENTED AND INTERPRETED IN  
TERMS OF THE ELECTRICAL AND MAGNETIC PROPERTIES OF METALS AND ALLOYS,  
WITH SPECIAL REF. TO THE QUESTION OF THE PROPAGATION OF ELECTROMAGNETIC  
WAVES THROUGH AND ALONG THESE. THE PRINCIPLES UNDERLYING THE THEORY OF  
OF QUASI PARTICLES ARE EXPLAINED AND APPLIED TO THE THEORY OF  
PARAMAGNETIC SUSCEPTIBILITY IN METALS. SPIN AND QUANTUM WAVES ARE  
INTERPRETED ON THE BASIS OF PRACTICAL PHYSICAL PROPERTIES.

UNCLASSIFIED

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USSR

YELEONSKIY, V. M.; OGANES'YANTS, L. G.; ~~SILIN, V. P.~~ (Lebedev Physics Institute,  
USSR Academy of Sciences)

"Three-Dimensional Vector Field Structure in Self-Focussing Waveguides"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; August, 1972;  
pp 532-9

ABSTRACT: It is shown that if account is made for the real vector nature of an electromagnetic field, the equations of nonlinear electrodynamics lead to new self-focussing waveguide solutions. This opens up the possibility of the existence of self-focussing waveguides in which the transverse and longitudinal field strengths are of the same order of magnitude. As particular cases the set of self-focussing waveguides which is characterized by an unusual type of polarized structure of the electrical field includes the TE- and TM-modes previously studied. For a plane geometry a qualitative analysis of the nonlinear electrodynamics equations yields a classification of states of vector self-focussing waveguides. It is shown that under certain conditions in a nonlinear

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USSR

YELEONSKIY, V. M., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; August, 1972; pp 532-9

medium a peculiar type of phenomenon arises: viz, spatial stratification of the electromagnetic field into "nearly" self-focussing regions of TE- and TM-mode fields. Characteristically, the change in space of the "nearly" self-focussing field mode is due to nonlinear interaction at weak field strengths.

The article includes 13 equations and 5 figures. There are 7 references.

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USSR

UDC: 533.951.8

BAYKOV, I. S. and SILIN, V. P., P. N. Lebedev. Physics Institute,  
Moscow

"Parametric Instability in a Nonuniform Plasma With Hot Ions"  
Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 1, 1973, pp 3-13

Abstract: The present paper is the follow-up of an earlier paper by the second of the authors named above, in which it was found that the anomalous absorption of monochromatic electromagnetic waves in a plasma is connected with the plasma's development of parametric instabilities when the amplitude of the variable electric field of the pumping wave exceeds the threshold value (ZhETF, 48, 1965, p 1679). The authors of the present paper consider a nonuniform plasma in which the ion temperature is much higher than the electron temperature, a situation likely to occur in the interaction of a neutral bunching of the plasma with an external high-frequency field. The cases of aperiodic and periodic plasma instabilities are theoretically investigated. It is found that with plasmas in which the ion temperature exceeds the electron temperature the threshold for the parametric excitation of ion-acoustical waves exceeds the

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USSR

UDC: 533.951.8

BAYKOV, I. S., et al, Zhurnal Tekhnicheskoy Fiziki, No 1, 1973,  
pp 3-13

threshold for the excitation of purely aperiodic instabilities,  
under a condition specified in the article.

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USSR

UDC 533.951

SILIN, V. P., Physics Institute imeni P. N. Lebedev, Academy of Sciences  
USSR

"Anomalous Nonlinear Dissipation of High-Frequency Radio Waves in a Plasma"

Moscow, Uspekhi Fizicheskikh Nauk, Vol 108, No 4, Dec 72, pp 625-654

Abstract: There have been numerous studies of the effects of weak waves on a plasma when such phenomena correspond to linear electrodynamics. Now there is intensive study of the effect of high-power electromagnetic radiation on a plasma when the possibility arises of a whole series of different nonlinear phenomena. The present article surveys one such collection of non-linear phenomena in a plasma which is characterized by the appearance of anomalous high-frequency resistance due to the resonance parametric effect of powerful radiation, resulting in the development of perturbations in the plasma and a turbulent state. The survey covers results which have been obtained in the last few years by a number of authors and only those which are characterized by sufficient completeness.

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SILIN, V. P., Uspekhi Fizicheskikh Nauk, Vol 108, No 4, Dec 72, pp 625-654

The following are considered: results of the theory of parametric instability of a plasma in an electromagnetic wave field; quasilinear and nonlinear theory of anomalous high-frequency conductivity of a parametrically unstable plasma; numerical experiments simulating a parametrically unstable plasma and anomalous high-frequency conductivity; experimental study of the anomalous nonlinear dissipation of high-frequency radio waves in a parametrically unstable plasma.

Conclusion: The theoretical results obtained in recent years regarding the parametric effect on a plasma have made it possible to predict a qualitatively new range of phenomena in the interaction of electromagnetic waves with a plasma. These involve the development of parametric instabilities in the plasma due to the nonlinear effect on the plasma of a strong high-frequency electric field. The development of parametric instabilities leads to the appearance of a turbulent plasma state, one of the manifestations of which is the anomalous high-frequency conductivity of the plasma.

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USSR

SILIN, V. P., Uspekhi Fizicheskikh Nauk, Vol 108, No. 4, Dec 72, pp 625-654

The theoretical prediction of anomalous nonlinear dissipation of high-frequency electromagnetic waves in a plasma has been confirmed in a number of experimental studies leading to the experimental discovery of anomalously strong absorption of an electromagnetic field by a plasma. These important first steps in the experimental study of the effect of high-power electromagnetic radiation on a plasma show the need for an extensive and detailed study of the phenomena that take place in a plasma under such conditions.

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