

KUZNETSOV, V.I.

SPH 5

69.2.68
L 73

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STRUCTURE OF LAYERS DURING EPITAXY FROM A SOLUTION IN A PERO-

Article by V. A. Zerkovskiy, A. I. Kuznetsov, V. I. Rubtsov, V. A. Kozlovskiy,
Odesa; Novosibirsk, III Department of Protections, 2011, 1. Sibirskaya Polymernaya
Nauka, Kristallografiya, Moscow, 12-17 June 1972, p. 206.

The structural perfection of monocrystalline layers of semiconducting
materials is one of the basic properties determining their quality and further
use in the manufacture of instruments.

In this paper a study was made of the formation and the types of struc-
tural defects in the monocrystalline layers of germanium, gallium arsenide and
phenylphosphine obtained from a solution in media of different media depending on
the conditions of obtaining them.

It was demonstrated that the structural perfection of the monocrystal-
line layers depend on the state of the substrate surface before the epitax-
ial process, the selection of the initial solvent and the nature of variation of the
thermal field in the crystallization zone. Some causes of the variation of
the defect distribution with respect to thickness of the epitaxial layer were
discussed.

USSR

UDC 536.421.4+536.421.1

KUZNETSOV, V. I., MOIRITSKIY, V. A. BUKAYEV, V. A., and PESOTSKIY, G. S.

"Investigating Epitaxy Conditions of Gallium Arsenide"

V sb. Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations--collection of works) Minsk, "Nauka i tehn." 1971, pp 71-79 (from RZh-Fizika, No. 9, 1971, Abstract No. 95397)

Translation: The peculiarities of the oriented growth of GaAs layers from a solution of As in a Ga melt on a GaAs substrate are investigated. A method is developed for obtaining early stages of the epitaxial layers from the solution-melt. An optimal method is selected for processing the substrate surfaces as well as for conditions of epitaxy of the layers with sufficiently perfect crystalline structures and good electrophysical characteristics.

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UDC $\Delta 539.1.03$

USSR

TRETYAKOV, Yu. P., KUL'KINA, L. P., KUZNETSOV, V. I., and PASTUK, A. S., Institute of Nuclear Research, Dubna

"An Economical Source of Multiply-Charged Ions of Calcium and Zinc"

Moscow, Priroda i Tekhnika Eksperimenta (Instruments and Experimental Technology), No. 5, Sept-Oct 1970, p 40-44

Abstract: An ion source, illustrated and described in detail, consists of a stainless steel discharge chamber and a molybdenum insert with an emission slit. The chamber, provided with titanium heat isolators, is temperature-controlled by a chrome-alumel thermocouple. The evaporating electrode is mounted on a water-cooled holder in a slender tube between a cathode and plate, just to the side of the discharge path. Adjustable screws move the evaporation surface into the discharge path. Xenon was used as the initiating gas for the calcium, and krypton for the zinc. Argon was also used. When the chamber is cold, a large proportion of the working substance is deposited on the walls, but when the chamber is heated, the substance readily sublimates. The evaporated substance is completely ionized and passes through the slit. A small portion is deposited on the cold parts of the source near the evaporating electrode. Heating the chamber makes it possible to economize on the consumption of the substance. The proposed

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USSR

TRETYAKOV, Ya. P., et al, Pribery i Tekhnika Eksperimenta, No 5, Sept-Oct 1970,
p 40-44

cyclotron source is only one of several possible configurations of a hot discharge chamber with a cathode evaporator. The distribution of Ca atoms and ions along the discharge chamber was measured and found to be higher than the distribution in a cold chamber. The authors thank G. M. Solov'yeva for designing the source, Y Duda for technical assistance, and Ye. D. Vorob'yev for supporting the work. Orig. art. has 2 figs. and 4 refs.

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1/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--MULTICHARGED CA AND ZN ION SOURCE -U-
AUTHOR--(05)-PASYUK, A.S., VORDBYEV, YE.D., IVANNIKOV, R.I., KUZNETSOV, V.I., KUTNER, V.B.
COUNTRY OF INFO--USSR
SOURCE--AT. ENERG. USSR, 28: 75-8, JAN 1970
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ION SOURCE, ION BEAM, CALCIUM, ZINC, METAL VAPOR, CYCLOTRON/(U)U300 CYCLOTRON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0213 STEP NO--UR/0089/70/028/000/0075/0078
CIRC ACCESSION NO--AP0105289
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105289

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTIONS ARE GIVEN OF THE DESIGN AND PERFORMANCE OF MULTICHARGED ION SOURCE. THE SOURCE WAS USED WITH CALCIUM AND ZINC METAL WITH THE VAPOR ELASTICITY REACHED AT ABOUT 800 TO 900DEGREESC. THE MULTICHARGED CALCIUM AND ZINC IONS WERE OBTAINED WITH A SOURCE DEVELOPED FOR THE U-300 CYCLOTRON. TABULATED DATA INDICATE PULSED CURRENT VALUES FOR NINE CHARGED CALCIUM IONS AND TEN CHARGED ZINC IONS. IN SUCH A CASE THE MEAN ZINC CONSUMPTION IS SIMILAR TO 50 MG,HR AND CALCIUM CONSUMPTION IS SIMILAR TO 100 MG,HR. EXPERIMENTS ON ACCELERATION OF HEPTA CHARGED CALCIUM IONS AND DECA CHARGED ZINC ION SHOWED A MEAN CURRENT FOR CA PRIME7 POSITIVE SUB40 IONS ON THE 100 CM RADIUS REACHED 3 MU A AND AN EXTRACTED DECD CHARGED ZINC BEAM UP TO CONGRUENT TO 10 NEGATIVE PRIME4 MU A.

UNCLASSIFIED

USSR

UDC 621.396.69:621.384.2(068.8)

IVANOV, A. B., ZAKHAROV, I. N., KUZNETSOV, V. I.

"A Ferrovariometer With Magnetic Control"

USSR Author's Certificate No 252418, Filed 9 Sep 67, Published 17 Feb 70 (from
RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V376 P)

Translation: The proposed ferrovariometer with magnetic control is based on an auto-transformer with a ferrite core and contains an input control winding with magnetization, and an output winding with variable inductance. As a distinguishing feature of the patent, the inductance control range is extended and core cooling is improved by making the core of the ferrovariometer in the form of a set of rectangular ferrite bars with longitudinal openings in which the above-mentioned output winding is located. The output winding is made in the form of segments of hollow copper tubes which are electrically interconnected on the end surfaces of the core.

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USSR

UDC: 539.4:629.7.02

GRIGOLYUK, E. I., KUZNETSOV, V. K.

"Investigation of Heat Exchange in Spacecraft"

V sb. Issled. po teorii plastin i obolochek. Vyp. 6-7 (Studies in the Theory of Plates and Shells—collection of works. No 6-7), Kazan', Kazan' University, 1970, pp 76-89 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4V719)

Translation: A survey is given of the results of theoretical studies of heat exchange in the hulls of spacecraft. The survey covers the period from 1956 to 1966. Consideration is given to cylindrical and spherical shells of space vehicles under conditions of nonstationary radiation heating and the quasi-steady state where balance exists between the overall heat absorbed by the spacecraft, and the heat radiated by the surface of the hull into space. Basic equations and computational formulas are presented. The results are discussed. Bibliography of 23 titles. L. A. Shapovalov.

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ENGINEERING

Acoustical and Ultrasonics

USSR

KUZNETSOV, V. K., Acoustics Department, Moscow State University

"The Method of Imaginary Sources in the Hydroacoustic Problem of Describing High-Frequency Acoustic Fields in a Wedge"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 2, Apr-Jun 72, pp 270-276

Abstract: The method of imaginary sources is used to analyze the radiation pattern of a high-frequency field in a wedge. It is shown that a multiply reflected ray in a wedge lies on the surface of an unparted hyperboloid of revolution; the elements of the ray are segments of the straight-line generatrices of the hyperboloid. Each ray leaving the source has its own corresponding hyperboloid. The coordinates of the points of location of the emitter and receiver determine the equations of the hyperboloids for all imaginary sources. A formula is derived for the acoustic field in the wedge in the form of a sum of fields of imaginary sources with regard to the coefficients of all reflections. It is shown that a region exists where beams arrive which have undergone only total internal reflection, so that all imaginary sources appear as bright as the real source. As analogy is drawn between the structure of normal waves (in the Brillouin sense) and the radiation pattern.

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USSR

UDC: 621.373.027.52(088.8)

ALEKSANDROV, V. P., RADIYEVSKIY, L. V., RUSIN, Yu. S., KUZNETSOV, V. K.
"A Thyristorized Series Inverter"

USSR Author's Certificate No 262253, filed 18 Nov 68, published 3 Jun 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B496 P)

Translation: This Author's Certificate introduces a thyristorized series inverter which contains commutating capacitors and an output transformer. To improve efficiency and reliability, the primary winding of the output transformer is connected between the cathode of one thyristor and the anode of another, and the commutating capacitors are connected between the other leads of the thyristors and the centertap of the same winding. The proposed inverter may be used as the output stage of an oscillator operating in the audio frequency range. V. P.

USSR

UDC: 629.78:533.6.011.6

GRIGOLYUK, E. I., KUZNETSOV, V. K.

"Investigation of Heat Exchange of Space Vehicles"

V sb. Issled. po teorii plastin i obolochek (Research in the Theory of Plates and Shells), vyp. 6-7, Kazan', Kazan' University, 1970, pp 76-89 (from RZh-Raketostroyeniye, No 1, Jan 71, Abstract No 1.41.90)

Translation: Design of artificial satellites and spacecraft involves determination of the surface temperature distribution for bodies of various geometric shapes subjected to solar radiation. In this paper the authors discuss the results of theoretical studies of heat exchange of cylindrical and spherical hulls of space vehicles under quasisteady-state conditions and in the case of nonstationary radiation heating. Bibliography of 23 titles. T. A. Ye.

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1/2 019

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--EFFECT OF LOCAL IMPERFECTIONS ON THE STABILITY OF A CYLINDRICAL
SHELL UNDER AXIAL COMPRESSION -U-

AUTHOR-(02)-KUZNETSOV, V.K., LIPOVITSEV, YU.V.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIYA NAUK SSSR, IZVESTIYA, MEKHANIKA TVERDOGO TELA, JAN.-FEB.
1970, P 134-136

DATE PUBLISHED-----70

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

TOPIC TAGS--STRUCTURE STABILITY, BIBLIOGRAPHY, CYLINDRICAL SHELL
STRUCTURE, BUCKLING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0175

STEP NO--UR/0484/70/000/000/0134/0136

CIRC ACCESSION NO--AP0054971

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054971

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE POSSIBILITY OF A LOCAL STABILITY LOSS IN A LONGITUDINALLY COMPRESSED CYLINDRICAL SHELL WITH AN INITIAL DEFLECTION IN THE FORM OF A LOCAL AXISYMMETRIC DEPRESSION. IT IS FOUND THAT THE PRESENCE OF INITIAL DEFLECTIONS OF A PRONOUNCED LOCAL CHARACTER LEADS TO A CONSIDERABLE REDUCTION IN THE CRITICAL LOAD. IN THE PARTICULAR CASE CONSIDERED, BUCKLING OCCURS PREDOMINANTLY IN THE REGION OF THE INITIAL DEPRESSION, RESULTING IN THE FORMATION OF A SERIES OF DEPRESSIONS LOCATED IN A CIRCLE.

UNCLASSIFIED

1/2 018 UNCLASSIFIED
TITLE--CALCIUM CHROMATE PRODUCTION -U- PROCESSING DATE--27NOV70

AUTHOR--(05)--TEPLYAKOV, B.V., DUBROVIN, A.S., SLEPOVA, L.V., GREKOV, S.D.,
KUZNETSOV, V.L.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,379

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(9)
DATE PUBLISHED--03MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CALCIUM COMPOUND, CHROMATE, CHEMICAL PATENT, CHEMICAL
PRODUCTION, METALLURGIC RESEARCH FACILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1449

STEP NO--UR/0482/70/000/000/0000/0000

IRC ACCESSION NO--AA0126980

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--27NOV70

IRC ACCESSION NO--4A0126980

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CA CHROMATE IS PREPD. BY 1ST
PURIFYING A SOLN. OF NA DICHROMATE WITH CACRO SUB4, CACL SUB2, OR THEIR
MIXT. IN A QUANTITY 100-200PERCENT OF THAT THEORETICALLY NECESSARY TO
PPT. CASO SUB4. THE SOLN. OF NA DICHROMATE AFTER SEPN. OF THE PPTO.
CASO SUB4 IS ACIDIFIED WITH CRO SUB3 OR HCL UNTIL THE SOLN. PH IS
0.0-1.0. THE FILTRATE IS TREATED 1ST BY HEATING WITH MILK OF LIME UNTIL
65-80PERCENT PPTN. OF CRO SUB4, AND AFTER SEPN. OF THE CACRO SUB4
PPT., WITH CACL SUB2. FACILITY: CHELYABINSKIY
NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT METALLURGI.

UNCLASSIFIED

USSR

UDC: 620.193.41

SOLOK, A. M., KHODOS, R. S., KUZNETSOV, V. M.

"Corrosion Resistance of the Alloys EI-435 and EI-437B in a Mixture of Nitric and Hydrofluoric Acids"

Moscow, Zashchita Metallov, Vol 9, No 3, Jul-Aug 73, pp 437-439.

Abstract: This article studies the influence of concentration, composition and temperature of the solution on the general and intercrystalline corrosion of EI-435 and EI-437B alloys in a mixture of nitric and hydrofluoric acids. The specimens were produced by open induction melting and vacuum-arc remelting. Both general and intercrystalline corrosion of both alloys were observed. The vacuum arc remelted metal corrodes significantly more strongly in all cases and has a significantly higher tendency toward intercrystalline corrosion than the open melted metal. An increase in the concentration of F⁻ ions causes greater general corrosion at all concentrations of nitric acid studied.

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USSR

UDC 621.3.023.1669.295

TROITSKIY, V. N., AYVAZOV, M. I., KIZNETSOV, Y. M., and KORYANIN, V. S.,
Institute for New Chemical, Academy of Sciences USSR

Application of Superhigh-Frequency Discharge to Obtain Titanium Nitride Powder

Kiev, Poroshkovaya metallurgiya, No 3, 1972, pp 8-11

Abstract: A description is given of the equipment and the procedure for producing titanium nitride by hydrogen reduction of titanium tetrachloride in a nitrogen current heated in superhigh-frequency heater, reactor, and bubble-type chloride feeder. The overall conversion efficiency of $TiCl_4$ is as high as 100%. Ammonium chloride is the by-product. The powder obtained is 98% nitride and is close in composition to $TiN_{0.95}$ with a pycnometric density of 5.11 g/cm^3 . It is finely dispersed and can be sintered at lower temperatures. Experimental sinters of the new powder at $1200-1300^\circ\text{C}$ and low pressures yielded high-strength specimens with 3-5% porosity. It is also readily compactable (three illustrations, 4 bibliographic references).

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USSR

UDC: 621.317.799(088.8)

KUPROVICH, V. P., PARKHOMENKO, P. P., KUZNETSOV, V. M., MERRAKOV, A. D., TOMFEL'D, D. L., Scientific Research Institute of Machine Building Technology, Institute of Automation and Remote Control (Technical Cybernetics)

"A Device for Automatic Quantitative and Qualitative Monitoring of Electrical and Time Parameters"

USSR Author's Certificate No 264794, filed 27 Dec 67, published 2 Jul 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A327 P)

Translation: A device is proposed for automatic quantitative and qualitative monitoring of electrical and time parameters. As a distinguishing feature of the patent, in order to reduce time and increase accuracy in localizing trouble spots in cable conductors, the device contains a trouble localizing unit in which the control input of the shift register is connected to the output of the data processing module, while the signal and control outputs of the shift register are connected to the control inputs of the block of output devices and the commutation module respectively. The control inputs of the switches of each of the cells of the high-voltage commutation circuits are connected to the outputs of a two-position storage element whose input is connected to the output of the commutation module through the commutation leads of one of the switches.

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USSR

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UDC: 621.382

VAGANOV, V. I. and KUZNETSOV, V. M.

"Modeling the Gunn Diode"

Kiev, Izvestiya Vuzov SSSR--Radioelektronika Vol 13, No 3, 1970,
pp 409-412

Abstract: The function of this brief is to set up a model for the Gunn effect, important in functional logic devices, which does not suffer from the defects of earlier models. These defects derive from the use of electromagnetic relays (Carroll & Gablin, "A Low-Frequency Analog for a Gunn-Effect Oscillator," IEEE Trans. on Electron Devices, 1967 ED-14, No. 10, 644). The authors of the communication list those defects as low operating frequency (3 Hz), high triggering currents, high control coil inductance, and the impossibility of modeling a diode of variable cross section.

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USSR

VAGANOV, V. I., et al, Izvestiya Vuzov SSSR--Radioelektronika, Vol 13, No 3, 1970, pp 409-412

Also shown are oscillograms of the voltage across the domain capacitance in the new model. There are two tables: one comparing the design formulas of the model and the actual diode; the other comparing the electrical characteristics of the two.

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1/2 018 UNCLASSIFIED
TITLE--SIMULATION OF A GUNN DIODE -U-

PROCESSING DATE--13NOV70

AUTHOR--(02)-VAGANOV, V.I., KUZNETSOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--RADIOELEKTRONIKA, VOL. 8, MAR. 1970, P. 409-412

DATE PUBLISHED----MAR70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--GUNN DIODE, MODEL, OSCILLOGRAM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FKAME--2000/0238

STEP NO--08/0452/70/003/000/0409/0412

CIRC ACCESSION NO--AP0124000

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124000

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. DESCRIPTION OF A GUNN DIODE MODEL WHICH IS SUPERIOR TO THE ONE PROPOSED BY CARROL AND GIBLIN (1957) IN THAT IT DOES NOT CONTAIN ELECTROMAGNETIC RELAY CIRCUITS AND IS FREE OF CONSTRAINTS ASSOCIATED WITH THEM, SUCH AS A LOW OPERATIONAL FREQUENCY, HIGH ACTUATION CURRENTS, HIGH WINDING INDUCTANCE, AND THE INCAPABILITY OF SIMULATING A DIODE WITH A VARIABLE CROSS SECTION. OSCILLOGRAMS ARE GIVEN TO SHOW THE OPERATION OF THIS MODEL IN THE SUBTHRESHOLD AND OSCILLATORY MODES OF ACTION IN SIMULATING A GUNN DIODE.

UNCLASSIFIED

1/2 050 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--A GAS LASER AUTOMATIC FREQUENCY STABILIZATION SYSTEM -U-

AUTHOR--KUZNETSOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--PRIBORY I TEKHNIKA, EKSPERIMENTA, JAN.--FEB. 1970, P. 189-191

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GAS LASER, AUTOMATIC FREQUENCY CONTROL, FREQUENCY STABILITY,
LASER CAVITY, LASER RADIATION SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1454

STEP NO--UR/0120/70/000/000/0189/0191

CIRC ACCESSION NO--AP0106210

UNCLASSIFIED

2/2 050

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106210

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. DESCRIPTION OF A GAS LASER AUTOMATIC FREQUENCY CONTROL SYSTEM WHICH ENSURES A RELATIVE LASER FREQUENCY STABILITY OF ABOUT 5 TIMES 10 TO THE MINUS 9TH. THE SYSTEM IS USED FOR THE STABILIZATION OF A SINGLE FREQUENCY HE-NE LASER. THE CAVITY LENGTH IS SUCH THAT ONLY ONE LONGITUDINAL MODE REMAINS IN THE OUTPUT SPECTRUM, WHILE SELECTION OF THE LOWEST TRANSVERSE MODE IS ENSURED BY THE SMALL DIAMETER OF THE LASER TUBE. THE MONOCHROMATICITY OF THE RADIATION AND THE FAIRLY HIGH AMPLIFICATION CREATE A LAMB DIP OF SUFFICIENT DEPTH IN THE LASER OUTPUT CONTOUR. THE BOTTOM OF THE DIP SERVES AS A REFERENCE FOR THE SYSTEM. THE SYSTEM DESCRIBED TUNES THE LASER CAVITY LENGTH TO THE EXTREMUM OF THE LASER OUTPUT POWER CURVE.

FACILITY: SIBIRSKII GOSUDARSTVENNYI NAUCHNOLSSLEDOVATEL'SKII INSTITUT METROLOGII, NOVOSIBIRST, USSR.

UNCLASSIFIED

USSR

UDC: 669.018

KHON, Yu. A., FADIN, V. P., and KUZNETSOV, V. V.

"Some Characteristics of Atom Segregation in Antiphase Boundaries of Triple Alloys With a Face-Centered Cubic Lattice"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy--Fizika, No 5, 1973, pp 18-25

Abstract: This paper examines the theory of the formation of atom segregation at antiphase boundaries of the {111} type in ternary alloys with face-centered cubic lattices. The interaction of the atoms in the first two coordination spheres is taken into account in this investigation into the effect of the size of the domains and the relationships between the atomic interaction energies on the extent of the segregations. It is assumed that the effect of antiphase boundary erosion can be neglected. The authors begin their analysis with the equation for the energy configuration per unit volume of the triple alloy and the expression for the configuration part of the entropy. Analysis of the equations of the solution derived in the article showed that the density of the antiphase boundary has little effect on the amount of segregation. It was 1/2

USSR

UDC: 669.018

KHON, Yu. A., et al, Izvestiya vysshikh uchebnykh zavadeniy--fizika,
No 5, 1973, pp 18-25

also found that with relatively strong interaction of the A and B atoms of the A-B-D components of the triple-alloyed material, substantial segregation of the B element occurs, with consequent delay in the ordering processes at the stage of domain growth. This conclusion agrees qualitatively with the known experimental results.

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USSR

UDC 662.951.2.001.5

KAPUSTIN, A. M., KUZNETSOV, V. N., OVSIANNIKOV, V. V., and SHADRIN, YE. N.

"On the Effect of the Nozzle's Diameter on the Injection Ratio of GBP Type Burners"

Nauch. tr. Omsk. in-t inzh. zh.-d/ transp. (Scientific Works of the Omsk Institute of Railroad Transportation Engineers), Vol 142, 1972, pp 17-19 (from Referativnyy Zhurnal -- Teploenergetika, No 3, 1973, Abstract No 3T93 by V. A. Speysheer)

Translation: The authors conducted experimental and theoretical investigations of the dependence of the injection ratio (U) of type GBP-140 panel burners, with full preliminary mixing, on the diameter of the gas nozzle (d) for various gas pressures (p_g). It is a well known fact that when p is constant, a reduction in d causes an increase in U . However, in order to insure that a furnace's heating power remains constant when the number of burners remains the same and d is reduced, it is necessary to increase p_g accordingly, so that the gas flow rate remains unchanged. These factors exert contradictory effects on U , which causes the effect of each of them to be weakened. As a result of their experiments, the authors established that a reduction in d (from 3 to 2.4 mm) can increase U somewhat. If a furnace's heating power is controlled this way, additional

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USSR

KAPUSTIN, A. M., et al., Nauch. tr. Omsk. in-t inzh. zh.-d. transp. Vol 142, 1972, pp 17-19

burners should be used. In the case where the number of working burners remains constant and a stable thermal state is maintained in the furnace, reducing d while simultaneously increasing the value of p_g will not cause any noticeable increase in U . (2 illustrations; 3 bibliog.ref.)

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USSR

UDC 621.396.967:629.7.072.8

ONUFRIYEV, V. P., KUZNETSOV, V. N., PETRUCHEK, T. P.

"An Imitator of Meteoric Radar Signals"

Radiotekhnika. Resp. mezhd. nauch-tekhn. sb. (Radio Engineering. Republic Interdepartmental Scientific and Technical Collection), 1971, vyp. 12, pp 38-40 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7G51)

Translation: This paper discusses development of a simulator designed for checking whether the units and modules of radar installations are functioning properly, and for imitating various characteristics of reflections from meteor trails. A description is given of an imitator which can be used to simulate Doppler frequency shift of a coherent pulse radar, and the time of existence of a reflection from a meteor trail. The Doppler frequency shift is simulated by means of two frequencies whose difference can be varied. The problem of obtaining the two frequencies is solved by the method of successive frequency displacement with splitting into two frequency channels. A block diagram of the simulator is presented and described. One illustration. Résumé.

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1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EXPERIMENTAL ACUTE HEPATIC INSUFFICIENCY IN DOGS -U-

AUTHOR--(05)--LOPUKHIN, YU.M., DUBROVSKIY, A.K., KUZNETSOV, V.N., KREMLI,
S.M., KHOVANSKAYA, M.G.
COUNTRY OF INFO--USSR

SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA, 1970, NR 3, PP
25-29
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DOG, LIVER FUNCTION, CARBON TETRACHLORIDE, BLOOD CHEMISTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1897

STEP NO--UR/0481/TQ/000/003/0025/0029

CIRC ACCESSION NO--AP0129249

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129249

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN VIEW OF THE FACT THAT UP TO THE PRESENT TIME THERE EXISTS NO SATISFACTORY METHOD OF INDUCING HEPATIC COMA THE AUTHORS CARRIED OUT THREE PRINCIPAL SERIES OF EXPERIMENTS: 1. DEVASCULARIZATION OF THE LIVER WITH PRELIMINARY ESTABLISHMENT OF PORTOCAVAL ANASTOMOSIS. 2. INJECTION OF HEPATOTROPIC POISON (CARBON TETRACHLORIDE) INTO THE BLOOD CHANNEL. 3. LIGATION OF THE HEPATIC ARTERY, BILE DUCTS WITH INTRODUCTION INTO THEM OF CARBON TETRACHLORIDE. EXPERIMENTS WERE CONDUCTED 47 MONGREL DOGS UNDER MORPHINE HEXANAL ANESTHESIA. THE DEVELOPMENT OF HEPATIC INSUFFICIENCY WAS EVALUATED BY THE CLINICAL COURSE, BIOCHEMICAL INDICES OF THE BLOOD (AMMONIUM, UREA, SUGAR, BILIRUBIN, LACTIC ACID) AND MORPHOLOGICAL STUDY OF THE LIVER. THE AUTHORS ARRIVED AT THE CONCLUSION THAT THE MOST COMPLETE SYMPTOM COMPLEX OF ACUTE HEPATIC INSUFFICIENCY IN DOGS WAS OBTAINED ONLY IN THE THIRD SERIES. AMMONIUM TOWARDS THE 3RD-5TH DAY INCREASED UP TO 1.8 PLUS OR MINUS 0.13 MGPERCENT (P SMALLER THAN 0.02); UREA DECREASED DOWN TO 19.0 PLUS OR MINUS 0.73 (P SMALLER THAN 0.02); BILIRUBIN UP TO 2.4 PLUS OR MINUS 0.003 (P SMALLER THAN 0.001); LACTIC ACID INCREASED UP TO 57.0 PLUS OR MINUS 0.001; SUBSEQUENTLY THE BIOCHEMICAL INDICES STEADILY DETERIORATED. THE CLINICAL PICTURE AND SEVERE MORPHOLOGICAL AFFECTATION OF THE LIVER SUPPLEMENTED THE BIOCHEMICAL INDICES OF THE BLOOD. THIS MODEL OF ACUTE HEPATIC INSUFFICIENCY ENABLES TO STUDY THE FUNCTIONAL ACTIVITY OF ISOLATED HOMO OR HETEROLIVER. FACILITY: LABORATORIYA PERESADKI ORGANOV TSENTRAL'NOY NAUCHNO-ISSLED. LABORATORII II MOSKOVSKOGO MEDITSINSKOGO INSTITUTA IM. N. I. PIROGOVA.

UNCLASSIFIED

USSR

UDC 537.533.54

BGGACHEV, I. N., KUDARAUSSAS, I. A., and KUZNETSOV, V. O., Ural Polytechnical Institute imeni G. M. Kirov, Sverdlovsk

"Effect of Adsorption on Kinetics of the Exoelectronic Emission"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 6, Jun 73, pp 1578-1579

Abstract: Exoemission of tin and zinc subjected to deformation by tension and rupture under vacuum (up to $2 \cdot 10^{-6}$ torr) was studied. The emission was stimulated by α mercury lamp, the rate of deformation was $4.24 \cdot 10^{-4}$ sec $^{-1}$. The experiment was based on the cyclic increase of pressure in vacuum from $2 \cdot 10^{-6}$ to $5 \cdot 10^{-4}$ torr. After rupturing the tin samples at $5 \cdot 10^{-4}$ torr some increase in emission was observed, followed by a gradual decrease in the emission intensity. When the vacuum was increased twofold, the emission at first decreased, then reached a maximum and decreased again. Similar phenomena were observed in the case of zinc, but decreases and increases were of much high magnitude. This behavior of emission is attributed to adsorption processes. Filling the vacuum chamber with air to $5 \cdot 10^{-4}$ torr pressure facilitated the adsorption process and it was accompanied by an intensive exoemission. If samples were held at this pressure for ~ 1 min., several increases and decreases in the exoemission were observed; however, during

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USSR

BOGACHEV, I. N., et al., Zhurnal Fizicheskoy Khimii, Vol 47, No 6, Jun 73, pp 1578-1579

the second increase in pressure, the kinetics of exoemission was not influenced much in the case of zinc but facilitated a more rapid decrease of the exoemission for tin. This indicated the irreversible nature of the emission process.

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USSR

KUZNETSOV, V. P.

"Nonparametric Statistics of Vector Observations"

Tr. Sib. fiz.-tekhn. in-ta pri Tomsk. un-te [Works of Siberian Institute of Physics and Technology of Tomsk University], 1973, No 63, pp 94-116 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V167 by D. Chibisov)

Translation: Procedures of ordering and partial ordering of vector observations are suggested, allowing transference of a number of properties of ranks, ordered statistics, criteria of permutation and rank criteria to be extended to the vector case. Analogs of the Kolmogorev-Smirnov statistics are presented, distributed as in the one-dimensional case.

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USSR

UDC 616.938.75-085.339:576.858.75.095.383:616.938.75-035.2]-036.1

GAYLONSKAYA, I. N., KOPELEV, M. F., BUSUYEK, G. P., KUZNETSOV, V. P., and
LOZINSKAYA, T. M., Institute of Epidemiology and Microbiology imeni
N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

"Clinical Course of Influenza Treated With Interferon and Symptomatic Agents"

Moscow, Klinicheskaya Meditsina, No 2, 1973, pp 117-119

Abstract: The clinical course of influenza was much milder in patients treated solely with concentrated leukocytic interferon than in a matched group treated with conventional symptomatic drugs. Interferon treatment was administered 4 days: 2 drops (= 200 units) instilled in each nostril the first and second days of the disease every other hour and the same amount on the third and fourth days 5 to 6 times a day. Total interferon used was 4 to 6 ml. In these patients, the symptoms of intoxication were less pronounced than in controls and they lasted 2.4 days compared to 3.8 days while chills persisted 2.0 and 2.6 days, respectively. Body temperature returned to normal on day 2 or 3 of the disease compared to day 4 or 5 in those treated with symptomatic drugs. The EKG changes too were less pronounced in the patients given interferon. Interferon did not produce side effects or complications nor did it prevent the formation of type-specific antibodies.

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Instruments and Measurements

USSR

UDC: 621.391.82:621.3.083

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

"Optimizing Measurements of Interference Parameters"

Moscow, Radiotekhnika, Vol 27, No 7, Jul 72, pp 61-67

Abstract: Let $\theta' = (\theta_1, \dots, \theta_n)$ be unknown interference parameters. To determine the optimum structure of an instrument for measuring the multidimensional parameter θ it is necessary to know the statistical properties of the interference and the cost function $C(\hat{\theta}, \theta)$ which characterizes losses due to deviation between the estimated value $\hat{\theta}$ and the actual value θ . In this paper $C(\hat{\theta}, \theta)$ is determined from the influence of measurement errors on the quality of a receiver which isolates a signal against a background of noise. From this is found the optimum structure of an instrument for measuring $\hat{\theta}$ at minimum measurement cost.

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KUZNETSOV, V.P.

Sr R 5 57265
6-73

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AV-12. TOTAL LAYS OF SUBSTITUTION OF DEFECTS AND TRANSPORT OF ADAPTIVELY TRAINED
CRAFTSMEN OF SILENT LAYERS OF SUBSTITUTION IN A TACTICAL

Articles by V. P. Kuratov, V. V. Zolotarev, I. P. Kozlov, and A. A. Belykh. III Symposium on Problems of the Physics of the Earth and the Atmosphere, 1972, June 1972, p. 231.

temperature known as temperatures of $T = 750-1,500^\circ \text{C}$ on silicon with 1200°C as a limit. Distinctions of two types were found in the layers. Some of them in the substrates during the experiment and some in a layer. Their density does not depend on the temperature T . The latter are more firmly on the film-substrate boundary and are directed towards it [10]. Their density decreases exponentially with an increase in temperature and linearly with a decrease in growth rate of the layer V . The partial defect density does not depend on the temperature, and in the first $2\text{-}\mu\text{m}$ at the expense of the layer, appreciably lower. The dependence of the concentration of the substituents P , As , Al and B in the layers on the concentration C in the sources is described by the formula $n = a \exp AS/T$ where A is 11 kcal/mole , 25 kcal/mole , 45 kcal/mole and 75 kcal/mole in the case of As , Al , B and P substituents. The dependence of n on V was investigated in this case very far for As substituents.

USSR

UDC 616.5-022.6-085.339:576.858.095.383

BORZOV, M. V., KUZNETSOV, V. P., and LOBANOVSKIY, G. I., Chair of Skin and Venereal Diseases, Odessa Medical Institute and Department of Interferon Synthesis, Institute of Microbiology and Epidemiology Iueni N. F. Gamaleya, Moscow

"Use of Interferon in the Treatment and Prevention of Viral Dermatoses"

Moscow, Vestnik Dermatologii i Venerologii, No 9, 1971, pp 14-17

Abstract: Good results were obtained from using interferon to treat 201 patients (5 to 70 years of age) with various viral dermatoses. Instead of lotions, ointments, etc. containing interferon, these three methods were used: (a) superficial traumatization of the skin with interferon applied to warts, papillomas, and some condylomas; (b) injection of a solution of interferon (1000 units in 1 ml of sterile distilled water) into the affected tissues in the case of herpes simplex, warts, and molluscum contagiosum; (c) iontophoresis for various forms of dermatoses. The particular mode of treatment was chosen in relation to the dermatosis, its site, and age of the patient. There were no side effects and recurrences were comparatively few.

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USSR

UDC 621.762.4.001

KUZNETSOV, V. P., and PIKUS, I. M.

"Temperature Measurement During Impulse Pressing of Metal Powders"

V sb. Progressiv. tekhnol. mashinostr. (Progressive Machine-Building Technology -- Collection of Works), Vyp. 2, Minsk, "Vysheysh. Shkola," 1971, pp 180-181 (from RZh-Metallurgiya, No 1, Jan 72, Abstract No 1G240 by S. Bobrova)

Translation of Abstract: The authors describe the methodology of temperature measurement during the explosive pressing of metal powders. The sensor is a thermocouple without a junction, whose working ends make contact through the powder under investigation. Thermocouple response does not exceed 0.08 microsecond. A dependence is obtained between signal amplitude ratios of sensors under static and dynamic conditions $n_{stat} = 2.4 n_{dyn}(0.84)$, which permits calibration of the apparatus under dynamic conditions. Three illustrations. Bibliography with four titles.

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USSR

UDC: 519.24

KUZNETSOV, V. P., LEVIN, B. R.

"Invariant Resolving Functions and the Method of Maximum Plausibility in the Case of an Undefined Situation"

V sb. Obnaruzh. i raspoznavaniye. Planir. eksperimentov (Detection and Recognition. Planning of Experiments--collection of works), Moscow, "Nauka", 1970, pp 11-18 (from RZh-Kibernetika, No 1, ~~Dec-70~~, Abstract No 1V150)
Jan 71,

Translation: Let us represent the observed process $X(t)$ in the form

$$X(t) = f_\theta[t, s; t], \quad (1)$$

where f is a predetermined function, $s(t)$ and $n(t)$ are random processes and θ is "a variable parameter of the situation, which describes the indefiniteness" of the given model (this type of model of the observed process is useful for instance in studies of communications systems). In this paper the authors examine problems of constructing invariant resolving devices for detecting or isolating the process $s(t)$. A resolving function $\phi(x)$ is called "invariant to the parameter θ " if for any s and n its value d is independent of the value of the parameter θ . Invariant resolving functions of this type form a class of functions $\phi[T(x)]$ of the maximum invariant $T(x)$

KUZNETSOV, V. P., LEVIN, B. R., Obnaruzh. i raspoznavaniye. Placir. eksperimentov, Moscow, "Nauka", 1970, pp 11-16

induced by transformation group G of the sample space. Group G is generated by transformations of the sample space which correspond to all possible changes in the parameter θ . It is shown that with certain additional restrictions, called conditions of admissibility of model (1), the method of maximum plausibility leads to invariant resolving functions. Yu. Shanakov.

1/2 028 UNCLASSIFIED PROCESSING DATE--25 OCT 70
TITLE--CORROSIVE WEAR IN WELLS AS A FUNCTION OF GAS CONDENSATE FLOW
VELOCITIES -U-
AUTHOR--(04)-KUTOVAYA, A.A., ULYANDV, A.M., KUZNETSOV, V.P.,
MIROSHNICHENKO, O.A.
COUNTRY OF INFO--USSR
SOURCE--GAZOV. PROM. 1969, 14(11), 8-10
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--PETROLEUM DEPOSIT, CORROSION RATE, METAL PIPE, PIPE FLOW/(U)D
STEEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1998/2032 STEP NO--UR/0492/60/014/011/0008/0010
CIRC ACCESSION NO--AP0122261
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122261

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CORROSION EROSION EXPTS. WERE CONDUCTED AT 4 WELL SITES ON TYPE O STEELS AT GAS CONDENSATE FLOW RATES OF 5-45 M,SEC. TEST SPECIMENS WERE LOCATED IN COUPLINGS CONNECTING 1.5M LONG SECTIONS OF 2, 2.5, 3, 4, AND 6 IN. PIPES. THE OPERATING CONDITIONS FOR THE NORTHERN STAVROPOLSK PETAGIADINSK (1) AND MATKOPSK (2) WELL SITES ARE, RESP.: LIQ. FLOWS, 320-380 AND 4-51.,DAY. GAS FLOWS, 180-200 AND 400-500 10 PRIME3 M PRIME3PERDAY. WELL PRESSURE, 26-27.5 AND 100-102 ATM. CONDENSATE TEMP., 51-3 AND 70-85DEGREES. CO SUB2 CONTENT, 0.7-0.9 AND 4.3 VOL.PERCENT. CL RPIE NEGATIVE IN CONDENSER WATER, 88-105 AND 30 MG-L. CORROSION RATES AT 1 INCREASED SLOWLY AT FLOWS OF 5-20 M,SEC, AND WERE AT A MAX. OF 0.18 MM,YEAR IN THE 20-28 M,SEC REGION, DRIPPING OFF SHARPLY TO 0.07 MM,YEAR AT 40-45M,SEC. AT SITE, 2, THE KORROSION INCREASED RAPIDLY AT FLOWS OF 2-7 M,SEC, WAS AT A MAX. OF 4.7 MMPERYEAR, IN THE 8-12 M,SEC REGION AND LEVELED OFF AT SIMILAR TO 3.2 MMPERYEAR AT FLOWS GREATER THAN 20 M,SEC. LOWER CORROSION RATES AT THE HIGHER FLOW RATES ARE DUE TO INCREASED TURBULENCE IN THE PIPES: EROSION CONTRIBUTIONS TO CORROSION ARE INSIFICANT EVEN AT HIGH FLOWS AS LONG AS THE CONDENSATE IS NOT CORROSIVE.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--LAYERS OF SILICON OBTAINED BY IN VACUO SUBLIMATION AT
430-600DEGREES -U-
AUTHOR--(03)-KUZNETSOV, V.P., POSTNIKOV, V.V., TOLOMASOV, V.A.
COUNTRY OF INFO--USSR
SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 391-2
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--SILICON, METAL COATING, METAL FILM, ELECTRIC RESISTANCE,
VACUUM SUBLIMATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1564 STEP NO--UR/0070/70/015/002/0391/0392
CIRC ACCESSION NO--AP0125190
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125190

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS A RESULT OF SI SUBLIMATION UNDER A VACUUM OF CONGRUENT TO 1 TIMES 10 PRIME NEGATIVE 7 MM HG (TEMP. OF THE SUPPORT 550-600 DEGREES), SI LAYERS WERE OBTAINED WITH HIGH ELEC. RESISTANCE OR OF N TYPE WITH HIGH CONCNS. OF ALLOYING ADDNS. (B, AS), CHARACTERIZED BY AN EXCELLENT STRUCTURE. AFTER EVAPN. OF SI WITH B ADDNS., SINGLE CRYSTAL LAYERS WERE OBTAINED IN WHICH THE STACKING FAULT D. WAS 10 PRIME 2 NEGATIVE 10 PRIME 2-CM PRIME 2; THE DISLOCATION D. WAS 10 PRIME NEGATIVE 3-10 PRIME NEGATIVE 4-CM PRIME 2; AND THE ELEC. RESISTANCE, WAS 60-70 OHM-CM. FACILITY: GOR'K. ISSLED. FIZ.,-TEKH. INST., GORKI, USSR.

UNCLASSIFIED

USSR

UDC 539.166

GABOVICH, M. D., KUZNETSOV, V. S., SOLOSHENKO, I. A., TRUBENKOV, G. I.,
Scientific Research Institute of Electrophysical Equipment (Imeni D. V.
Yefremov, Leningrad; Institute of Physics, Ukrainian SSR Academy of Sci-
ences, Kiev

"Investigation of Neutralization of an Intense Ion Beam by a Numerical
Method"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 43, No 10, Oct 73, pp 2178-2181

Abstract: Numerical solution of a system of equations of a self-consistent field is used to study neutralization of the space charge of an ion beam by introducing electrodes. The changes in configurations of transverse phase volumes of the electron and ion components lengthwise of the beam are considered. The values found for the radial potential differential in a neutralized beam are compared with the results of approximate calculation. The experimentally observed increase of electron temperature in the beam is confirmed and explained.

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UDC 621.384.664

USSR

GALYAYEV, N. A., GOLOVINA, N. I., GRACHEV, M. I., GRIDASOV, V. I., GUBRIYENKO, K. I., YEREMENKO, Ye. V., ZAPOL'SKIY, V. N., ZELENOV, B. A., KOTOV, V. I., KUZNETSOV, V. S., MERKER, E. A., MYZNIKOV, K. P., PUCHUGIN, V. A., PRILEPIN, A. A., SELEZNEV, V. S., SEREBRYAKOV, B. A., KHODYREV, Yu. S., and CHEPEGIN, V. N.

"Proton Beam With an Impulse of Up to 70 GeV/s Elastically Dispersed Inside a Target"

Leningrad, *Zhurnal Tekhnicheskoy Fiziki*, Vol 42, No 7, 1972, pp 1437-1445

Abstract: This paper discusses the operation of a channel built into the French liquid-hydrogen Mirabelle chamber for the accelerator of the Institute of High-Energy Physics (IFVE). The function of the channel is to form pure beams of pi and k mesons, and antiprotons, in a broad range of impulse magnitudes under the action of a high-frequency separator. The secondary particles are generated on the inside of a target placed in the path of a proton beam diverted from the accelerator with an energy of 70 GeV. By using a fast system for aiming the proton beam at the target, together with a kicker magnet in the channel, the required number of particles passing through the chamber can be provided. The optical system of the channel is described with the

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GALYAYEV, N. A., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 7, 1972, pp 1437-1445

aid of diagrams of two possible variants; the beam aiming system and the particle dosage for the bubble chamber are also explained. The authors thank R. M. Sulyayev, P. F. Yermolov, A. M. Moiseyev, M. I. Solov'yev, I. A. Danil'chenko, Ye. A. Parshin, V. M. Kolesnik, A. N. Alejev, V. D. Rudko, and V. M. Gorshkov for their assistance.

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USSR

UDC: 577.4

~~KUZNETSOV V. S.~~

"The Length of an Asymptotically Minimal Checking Test for One Class of Tables"

Moscow, V sb. Tekhn. diagnostika (Technical Diagnostics--collection of works) "Nauka," 1972, pp 264-265 (from RZh--Matematika, No 7, 1972, Abstract No 7V426)

Translation: An investigation is made of the asymptotic behavior of the length of a minimum checking test for "almost all" tables with the dimensions of $m \times n$, filled with the symbols $0, 1, 2, \dots, k-1$. It is shown that the random choice $(1 + \epsilon) \log kn$ ($\epsilon \rightarrow 0$ as $m \rightarrow \infty$) of tabular columns "almost always" yields an asymptotically minimal test for definite limits on the increase of m and n . Author's abstract

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USSR

UDC 577.4

KUZNETSOV, V. S.

"Length of an Asymptotically Minimal Inspection Test for a Class of Tables"

V sb. Tekhn. diagnostika (Technical Diagnostics -- collection of works), Moscow, Nauka Press, 1972, pp 264-265 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V426)

Translation: A study was made of the asymptotics of the length of the minimum inspection test for "almost all" $m \times n$ tables filled with the symbols $0, 1, 2, \dots, k-1$. It is demonstrated that the random sample $(1 + \epsilon) \log km$ ($\epsilon \rightarrow 0$ for $m \rightarrow \infty$) of columns of the table with defined restrictions on the growth of m and n "almost always" gives an asymptotically minimal test.

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USSR

UDC 533.922

AVRAMENKO, M. I., KUZNETSOV, V. S., KUZNETSOVA, N. P., NIKOL'SKIY, M. A.,
and FIDEL'SKAYA, R. P.

"Calculation of Phase Focusing of Intensive Bunches of Charged Particles in
Direct-Action Accelerators"

Moscow, Atomnaya Energiya, Vol 32, No 5, May 72, pp 437-440

Abstract: The study of particle dynamics in direct-action accelerators requires consideration of the Coulomb interaction of particles in a bunch, as well as the velocity spread of the particles. Such a problem is complicated to solve in a full volume, since the particle motion has to be considered in a six-dimensional coordinate and velocity space. To simplify the problem, it is assumed that the longitudinal motion of the particles of the bunch does not depend on their radial coordinates, nor the radial motion of the particles on their axial coordinates. It is also assumed that the particle density distribution in the transverse phase space is microcanonical and at a given moment of time is the same for any cross-section of the bunch $z = \text{const}$. These assumptions permit reducing the six-dimensional problem of the phase

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USSR

AVRAMENKO, M. I., et al., *Atomnaya Energiya*, Vol 32, No 5, May 72, pp 437-440

focusing of a bunch to a two-dimensional problem concerning the longitudinal coordinates and velocities of particles. The article considers a nonstationary case. No constraints are imposed on the particle density distribution function in the longitudinal phase space. A description is given of the calculation method used to study peculiarities of the formation of intensive bunches of nanosecond duration in direct-action accelerators. A diagram is given showing successive variations in the configuration of the longitudinal phase volume, the linear charge density distribution, and the longitudinal Coulomb repulsive force along a bunch during passage through an accelerator. It is shown that, due to the nonlinearity of the longitudinal Coulomb forces, the configuration of the longitudinal phase volume of the bunch is considerably distorted, which phenomenon limits the bunching factor.

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USSR

AVRAMENKO, M. I., KUZNETSOV, V. S.

"Phase Focusing of Intense Ion Bunches of Nanosecond Duration"

Moscow, Elektrofizicheskaya Apparatura, No 9, 1971, pp 63-68

Abstract: The formation of intense ion bunches with a duration of 1-5 ns in direct-action accelerators has aroused a good deal of interest recently. This article presents a method of computing the parameters of such bunches of ellipsoidal form, in drift space and in a uniform electrical field of the accelerator tube, in the presence of initial velocity modulation. The ellipsoidal formation is obtained in accelerators with a discontinuous system of a constant beam and a buncher between the ion source and the accelerator tube. Situations in which the axial semiaxis of the bunching is greater or less than the radial semiaxis are considered. It is shown that if the intensity of the uniform electric field satisfies the condition $E \ll U_0/a_0$, where U_0 is the potential at the input of the accelerator tube and a_0 is the length of the axial

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USSR

AVRAMENKO, M. I. et al, Elektrofizicheskaya Apparatura, No 9, 1971, pp 63-68

semiaxis of the bunching before the tube, the bunching will maintain its ellipsoidal shape even in the acceleration region. The method developed in this article was applied to the type NG-400 accelerator; the experimental data thus obtained was found to be in good agreement with computed results.

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USSR

UDC 621.384.6.01

KUZNETSOV, V. S., ABROYAN, M. A., SCLNYSHKOV, A. I., and FIDEL'SKAYA, R. P.

"Measurement and Investigation of the Redistribution of the Phase Density of Charged Particles in Real Fluxes"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol XLI, No 8, 1971, pp 1611-1617

Abstract: The density distribution of the charged particles of a beam in a four-dimensional phase space of transverse coordinates and velocities determines all the basic characteristics of the flux. The authors' actual measurements of this distribution for proton beams with a current of approximately 400 milliamperes and particle energies of 30 and 650 kiloelectron volts showed that the actual distribution of charged particles differs substantially from the distribution as it is usually calculated theoretically. Most methods of computing the parameters of intensive fluxes assume a microcanonical distribution in which the phase density of the particles does not change from one cross section of the beam to another. In actual fact, the phase density of the particles does change and, consequently, so do such basic characteristics of the flux as the density distribution of the current and the magnitude and configuration of the phase volume.

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USSR

KUZNETSOV, V. S.; FIDEL'SKAYA, R. P.

"Intense Beams with an Arbitrary Distribution of the Phase Density in External Focussing Fields"

Leningrad, Zhurnal Tekhnicheskoy Fiziki; October, 1970; pp 2099-2105

ABSTRACT: A method of obtaining beams with an arbitrary distribution of the phase density, developed by the authors in previous works appearing in earlier issues of the same journal (XXXVII, No. 5, 1967; XXXVIII, No. 2, 1968; XXXVIII, No. 10, 1968), is generalized for the case of the presence of external magnetic and electrical fields. Conditions are presented and formulated under which the general, stationary, six-dimensional problem on the determination of the distribution of the particle density in phase space can be reduced to a non-stationary, four-dimensional problem. Results of actual calculations illustrating the basic properties of beams with a distribution of the phase density different from the microcanonical are presented. In particular, it is shown that in such beams the projection of a four-dimensional phase space on the plane of cartesian coordinates x, x' may become larger.

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USSR

UDC 519.21

KUZNETZOV, V. S.

"The Probability of Appearance of a Series of Successes in A Bernoulli Plan"

Sovrem. Probl. Kibernet., [Modern Problems of Cybernetics--Collection of Works], Moscow, Nauka Press, 1970, pp. 243-244. (Translated from Referativnyy Zhurnal Kibernetika, No. 5, 1971, Abstract No. 5V2 by V. Prelov).

Translation: A sequence of intermittent Bernoulli tests with probability of success p is studied. Suppose $P(n, l)$ is the probability of appearance of a series of successes of length at least l at least one time in n tests. It is shown that

$$P(n, l) = \sum_{j=0}^n \left\{ \sum_{k=0}^j \sum_{i=0}^{\lfloor k/2 \rfloor} (-1)^{i-1} \left[C_{\lfloor k/2 \rfloor}^i C_{n-k}^{\lfloor k/2 \rfloor - i} C_{j-i-1}^{\lfloor k/2 \rfloor - 1} \right] + \right. \\ \left. + C_{\lfloor k/2 \rfloor}^i C_{n-k}^{\lfloor k/2 \rfloor - i} C_{j-i-1}^{\lfloor k/2 \rfloor - 1} \right\} p^l q^{n-l}.$$

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USSR

UDC 517.5

KUZNETSOV, V. S. (Moscow)

"The Task of Constructing All Samples in Order of Nondecreasing Weight"

Moscow, Avtomatika i Telemekhanika, No 6, Jun 71, pp 138-143

Abstract: This article describes a method for going from an implicit descriptive specification of a certain finite set M to a specific designation of all its elements. Basically, the method consists of the following steps: 1) definition of the relationship of order over the set M ; 2) selection of the first (least) element of M ; 3) selection of the succeeding element for any $a \in M$: that is, selection of the first element in the set $M_a = \{x / x \in M, a < x\}$. This approach is based on the structure of an ordered set which consists of a chain $a_1 < a_2 < \dots < a_m$, where a_1 is the first or least element in M and where a_{i+1} is the element which follows a_i ($i = 1, 2, \dots, m-1$). This method has the advantage of requiring storage of only the last element obtained in the process of constructing the set rather than all previously obtained elements, which procedure saves storage space. Furthermore, the method saves time by not requiring the construction of extraneous elements. As an illustration, the method

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USSR

KUZNETSOV, V. S., *Avtomatika i Telemekhanika*, No 6, Jun 71, pp 138-143

is applied to the problem of constructing all possible samples of a set in the order of nondecreasing weight, where the weight of a sample is taken to be the sum of the weights of the elements comprising it.

2/2

- 161 -

1/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--EFFECT OF VAPOR ADSORPTION ON THE SURFACE POTENTIAL OF GERMANIUM
-U-
AUTHOR--(03)-YENIKEYEV, E.KH., KUZNETSOV, V.S., HSU, N.
COUNTRY OF INFO--USSR
SOURCE--ELEKTROKHIMIYA 1970, 6(1), 49-56
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--GAS ADSORPTION, GERMANIUM, THERMAL EFFECT, PRESSURE EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0467 STEP NO--UR/0364/70/006/001/0049/0056
CIRC ACCESSION NO--AP0107073
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--15OCT70

CIRC ACCESSION NO--AP0107073

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OVER A FAIRLY WIDE RANGE OF PRESSURES, THE SURFACE POTENTIAL IS GOVERNED BY THE EXPRESSION $\Phi_{\text{SUBO}} = C + D \ln P$, WHERE D IS 0.4-0.98 FOR VARIOUS ADSORBATES. THE HIGHER THE TEMP., THE LOWER IS THE CHANGE IN Φ_{SUBO} IN A H_{SUB2} O VAPOR ATM., $\Phi_{\text{SUBO PRIME}}$, $\log P_{H_{\text{SUB2}} O}$. THE $\Phi_{\text{SUBO PRIME}}$ AS A FUNCTION OF TEMP. (WITH CONST. ADSORBATE PRESSURE) CAN BE EXPRESSED IN THE FORM $\Phi_{\text{SUBO PRIME}} = \Phi_{\text{SUBO0}} - \alpha T$, WHERE α IS SIMILAR TO $1.08 \times 10^3 \text{ PRIME NEGATIVE } V\text{-DEGREE}$. WHILE Φ_{SUBO0} IS GOVERNED BY THE ADSORBATE PRESSURE. WITHIN THE RANGE OF TEMPS. AND PRESSURES INVESTIGATED, THE THEORETICAL RETARDATION ISOTHERM DOES NOT CONTRADICT THE EXPTL. DATA. FACILITY: ~~INST. FIZ. KHM., MOSCOW,~~ USSR.

UNCLASSIFIED

USSR

UDC: 621.396.019.3:621.382.9

KUZNETSOV, V. S.

"Selection of Statistical Characteristics of Transistor Parameters Necessary for Investigating the Parametric Reliability of Electronic Circuits (Based on MP16A and P16B Transistors)"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1970, vyp. 194, pp 54-62 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2V317)

Translation: The author analyzes the mutual statistical relationships between the pulse parameters of transistors. This analysis gives a basis for selecting the minimum permissible parameters to reveal the most important principles which govern the variation in these parameters during tests with a predetermined confidence limit, as well as for selecting test specimens to give results of maximum reliability. Three illustrations, seven tables, bibliography of three titles. N. S.

Acc. Nr:

AA0108690

KUZNETSOV V.S.

Ref. Code:

Abstracting Service:

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent,

3/70

244368 SPRING SHEET GRAB/STACKER comprises a rotary frame (1) slotted for the plates (2) each with magnet (3), bolts (4) and spring (5) to soften impact when lowered on to the sheets. The fourth plate is linked to a ram (6) and carries two bars (7) with nuts (8) for setting the required sheet set-down pitch. All plates are linked by a parallelogram (9). The stacker is placed so that the plate magnets contact the spring sheets, are energised and lift the sheets to where the ram is cut in which spreads the sheets on the plates by the required pitch and so lay them on the hearth conveyor once the magnets are de-energised.

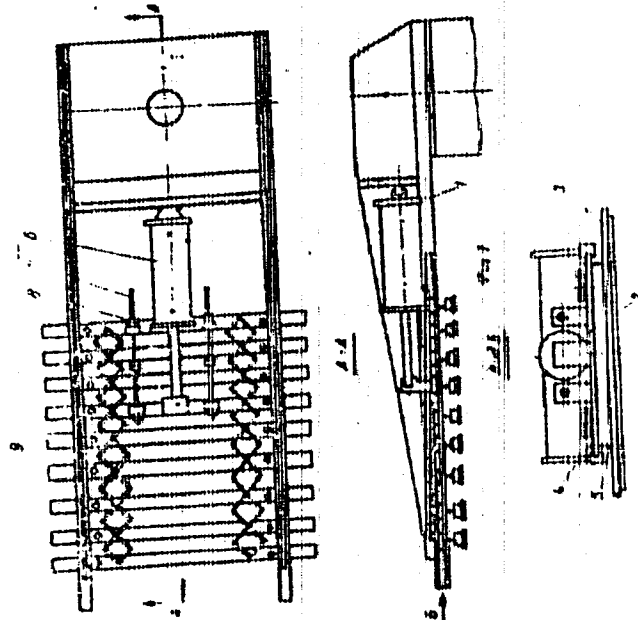
11.3.68 as 1226096/22-1. KUZNETSOV, V.S., Y.P. RYNDIN, A. A. ZANDER et al. ULYANOVSK ENGINEERING RES. INST. (10.10.69) Bul 18/28.5.69. Class 18c. Int.Cl. C 21 d.

18

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REEL/FRA
19900414

Acc. Nr.: AAO 108630



REEL/FRAME

19900415

B 5

AA0108690

AUTHORS: Kuznetsov, V. S.; Ryndin, G. P.; Zander, A. A.; Vavilin,
V. A.

Ul'yanovskiy Nauchno-Issledovatel'skiy i Proyektno-Tekhnologicheskiy
Institut Mashinostroyeniya

3/3

19900416

Foundry

USSR

UDC 669.71.042.62

KUZNETSOV, V. S., YUNISOV, S. Ya., PETUKHOVA, T. A.

"Calculation of the Process of Formation of a Casting During Casting in a Roller Crystallizer"

Tr. N.-i. i Proekt. In-ta Splavov i Obrabotki Tsvet. Met. [Works of Scientific Research and Planning Institute for Alloys and Processing of Nonferrous Metals], No 35, 1971, pp 80-89, (Translated from Referativny Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G210 by the author(s)).

Translation: The process of formation of a thin flat casting of Al of great length in a roller crystallizer with a stable process is studied. An analytic study of the process of solidification of the casting is presented. 3 Figures; 6 Biblio. Refs.

USSR

UDC 669.71.042.62

KUROCHIKIN, P. D., KUZNETSOV, V. S., BORISOV, V. G.

"Solidification of Aluminum Sheet During Continuous Casting in a Roll Crystallizer"

V sb. Novoye v protsessakh goryachey obrabotki met. (What's New in the Processes of Hot Working of Metals -- collection of works), Moscow, Mashinostroyeniye Press, 1971, pp 33-43 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4G170)

Translation: The effect of the thermophysical properties of the metal and the forms and conditions of deformation of the crystallizing metal on the process of forming an Al casting in a roll crystallizer is demonstrated. Five illustrations and a 7-entry bibliography.

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USSR

UDC 669.71.042.62

KUROCHKIN, P. D., KUZNETSOV, V. S., BOGATYREV, V. A.

"Production of Cast Aluminum Strip"

V sb. Novoye v protsessakh gorvachey obrabotki met. (What's New in the Processes of Hot Working of Metals -- collection of works), Moscow, Mashinostro-yeniye Press, 1971, pp 44-47 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4G171)

Translation: A study was made of the problem of producing aluminum strip by the method of casting in a roll crystallizer and the possibility of controlling the aluminum crystallization process. Four illustrations.

1/1

1/2 039 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--PROBLEM OF NORMALIZING HIGH INTENSITY NOISES -U-
AUTHOR--(03)-YUGANDV, YE.M., KRYLOV, YU.V., KUZNETSOV, V.S.
COUNTRY OF INFO--USSR
SOURCE--KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL. 4, JAN.-FEB. 1970, P.
38-41
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--WHITE NOISE, AUDITION, BLOOD PRESSURE, SPACE FLIGHT

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0288 STEP NO--UR/0453/70/004/000/0038/0041
CIRC ACCESSION NO--AP0120977
UNCLASSIFIED

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039

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0120977

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

ABSTRACT.

STUDY OF THE EFFECTS OF 500 HZ

114-116 AND 125-126 DB NOISE ON THE AUDITORY THRESHOLDS, BLOOD PRESSURE

AND THE TIME OF RESPONSE TO LIGHT STIMULI IN A GROUP OF 64 MALE

SUBJECTS, COVERING A TOTAL OF 152 TESTS. UNFAVORABLE EFFECTS OF 125-126

DB NOISE ON THE CARDIOVASCULAR SYSTEM AND AUDITORY AND VISUAL ANALYSORS

ARE ESTABLISHED. NOISE LEVELS OF 114-116 DB ARE ACCEPTED AS PERMISSIBLE

DURING THE ACTIVE PHASES OF SPACE FLIGHTS.

UNCLASSIFIED

Stress Analysis and Stability Studies

USSR

UDC:539.50

KUZNETSOV, V. V.

"Elastic-Plastic State of a Thick Plate with an Elliptical Aperture Under the Influence of Internal Pressure"

Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 11, Nov 73, pp 12-17

Abstract: This work studies the elastic-plastic stress and strain state of an infinite plate with an elliptical aperture under conditions of planar deformation, with even pressure p acting around the contour of the aperture. With a sufficiently high value of pressure, an area of plastic deformations arises by the aperture. It is assumed that at the moment of appearance of the plastic area, it coincides with the contour of the aperture, while under further loading, at any moment the plastic zone fully contains the plastic zone from any previous moment of loading. The work uses the method of the small parameter for approximate solution of elastic-plastic problems. Two approximations are found for stresses and strains in the elastic and plastic areas, as well as two approximations for the boundary separating the elastic and plastic areas.

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USSR

UDC: 772.99

AVRORIN, A. V., KOPYLOV, Ye. A., KUZNETSOV, V. Y., LAZAKOV, V. N., Novosibirsk

"Optical Production of Images by Means of SHF Holograms"

Novosibirsk, Avtometriya, No 5, Sep-Oct 73, pp 78-79.

Abstract: This article presents the results of experiments on SHF holography in the centimeter waveband, in which an improvement is achieved in the quality of images produced by some improvements in the circuit for electronic processing of the signals received, to achieve linearity of recording of the signals on the photographic material. The maximum Rayleigh resolution, defined by the geometry of the equipment was 2.7 cm. Indeed, bands separated by 30 mm are clearly shown as separate bands in the photographs presented with the article.

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USSR

UDC 532.593:532.529

KUTATELADZE, S. S., Associate Member of the Academy of Sciences of the USSR, BURDUKOV, A. P., KUZNETSOV, V. V., NAKORYAKOV, V. Ye., FORUSAYEV, B. G., SHREYBER, I. R., Institute of Thermal Physics, Siberian Department of the Academy of Sciences of the USSR, Novosibirsk

"Concerning the Structure of a Weak Shock Wave in a Gas-Liquid Medium"

Moscow, Doklady Akademii Nauk SSSR, Vol 207, No 2, 1972, pp 313-315

Abstract: Experiments were done as a qualitative check on theoretical concepts of a shock wave propagating in a liquid containing gas bubbles. The piezoelectric method of measurement was used to investigate the structure of the shock wave front. The LKh609 pressure gauge was used with frequency independence from 20 to 50 kHz and sensitivity of 6.3 V/bar. Nitrogen was blown into the liquid through a porous plate at the lower end of a transparent plastic tube 6 cm in diameter and 100 cm long. Signals from pressure gauges on the inner walls of the tube were sent to a cathode-ray oscilloscope. It was found that increasing the intensity of the shock wave increases the frequency and relative amplitude of oscillations in the shock wave front. Reducing the bubble diameter increases the frequency and reduces the ampli-

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USSR

KUTATELADZE, S. S. et al., Doklady Akademii Nauk SSSR, Vol 207, No 2, 1972, pp 313-315

tude of oscillations in the shock wave front. Pressure oscillograms of the shock wave front in a gas-liquid mixture with artificially increased viscosity show a monotonic pressure profile, which confirms the theoretical conclusion of a nonoscillating process in this case.

2/2

1/2 043 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--POSSIBLE CREATION OF A CARBON DIOXIDE LASER WITH ELECTRON BEAM
PUMPING -U-
AUTHOR-(04)-DOLGOVSAVELYEV, G.G., KUZNETSOV, V.V., KOZMINYKH, YU.L.,
ORISHICH, A.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(4), 737-9
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--CARBON DIOXIDE LASER, ELECTRON BEAM, LASER PUMPING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0094 STEP NO--UR/0358/70/012/004/0737/0739
CIRC ACCESSION NO--AP0127721
UNCLASSIFIED

2/2 043

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127721

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF A TRANSVERSE ELECTRON BEAM ON THE OUTPUT POWER W OF A CO SUB2 PULSED LASER WAS STUDIED BY MEASURING W OF THE LASER AS A FUNCTION OF CO SUB2 PRESSURE AT A CONST. DISCHARGE VOLTAGE (2 KV) AND THE PULSE DURATION ((1-2) TIMES 10^{-6} NEGATIVE SEC) WITH AND WITHOUT THE ELECTRON BEAM (0.5 MEV, SIMILAR TO 5 A, AND 2 TIMES 10^{-6} NEGATIVE SEC PULSE DURATION) APPLICATION AND WITH AND WITHOUT THE ADDN. OF KE, AG, NE, HE, AND N. IN PURE CO SUB2 AND DISCHARGE WITH AND WITHOUT THE APPLICATION OF THE ELECTRON BEAM, A STABLE GENERATION WAS OBSD. AT LESS THAN OR EQUAL TO 30 TORR. AT GREATER THAN 30 TORR, THE GENERATION WAS UNSTABLE. A MAX. W WAS OBSD. AT 8-10 TORR. IN BOTH CASES (WITH AND WITHOUT ELECTRON BEAM APPLICATION) W INCREASES LINEARLY WITH CO SUB2 PRESSURE, BUT THE INCREASE WAS MARKEDLY HIGHER IN THE PRESENCE OF THE ELECTRON BEAM. THE RATION OF W WITHOUT THE ELECTRON BEAM TO W WITH THE ELECTRON BEAM INCREASES WITH PRESSURE FROM 1 TO 2.5-3. THIS RATIO WAS MARKEDLY HIGHER IN THE PRESENCE OF XE OR AG. THE ADDN. OF NE, HE, OR N HAVE PRACTICALLY NO EFFECT ON THE LASER GENERATION. THE MARKED INCREASE IN THE OUTPUT POWER OF THE CO SUB2 LASER WITH THE APPLICATION OF AN ELECTRON BEAM IS ATTRIBUTED TO THE EFFECT OF THE ELECTRON BEAM ON THE ELECTRON ENERGY DISTRIBUTION FUNCTION.

UNCLASSIFIED

USSR

K
UDC 621.371

TSYDPOV, Ch. Ts., KUZNETSOV, V. V.

"Effect of Steepness of the Peak of an Obstacle on the Diffraction Attenuation"

Tr. Buryatsk. in-ta estestv. nauk. Buryatsk. fil. Sib. otd. AN SSSR (Works of Buryatsk Institute of Natural Sciences. Buryatsk Branch of the Siberian Division of the USSR Academy of Sciences), 1970, vyp. 6, 1970, pp 84-91 (from RZh-Radio-tehnika, No 8, Aug 70, Abstract No 8A276)

Translation: It is demonstrated in the Kirchhoff approximation that the effect of steepness of a diffracting peak is exhibited in the form of the functions $f_1(a\theta^3/\lambda) \cdot f_2(a\theta^3/\lambda)$ which are multiplied by the attenuation factor of an opaque halfplane with an effective height of enclosure equal to the height of enclosure of the obstacle. Analysis of the limit of applicability of the approximate formula obtained showed that it is suitable for calculating mountain routes in the meter and decimeter ranges of microwaves. There are two illustrations, one table and a three-entry bibliography.

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USSR

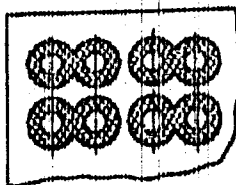
UDC: 681.327.66

BEKKER, YA. M., BERG, I. V., KUZNETSOV, Y. YA., LASHEVSKIY, R. A., SHEVLEV, YU. V.

"A Memory Plate"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzyy, Tovarnyye Znaki, No 6,
1970, p 36, patent No 262175, filed 3 Oct 68

Abstract: This Author's Certificate introduces a memory plate based on a ceramic slab with apertures. As a distinguishing feature of the patent, manufacture of the plates is simplified and their properties are improved by applying a ferrite film on both sides of the slab covering the apertures by pairs.



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USSR

UDC 669.35.71.1.24.6.782.71.620.193.27(088.8)

VOL, A. Ye., GAYDAY, P. I., GORYNIN, I. V., KAPYRIN, G. I., KUTNETSOV, Ya. Ya.,
PROKOF'YEV, S. N., SUMINOV, N. S., CHIZHIKOV, G. I., SHUMSKY, V. A.

"Copper-Based Alloy"

USSR Author's Certificate, No. 276417, Filed 27/10/67, Published 16/10/70. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 1715P).

Translation: An alloy with increased corrosion-fatigue strength in sea water is suggested. The composition of the alloy (%) is: Al 7-9, Mn 8-12, Fe 2-4, Ni 1.5 - 4, Sn 0.1-0.5, Si 0.1-0.5, remainder - Cu. The technological properties of the alloy can be improved by introducing up to 0.5 % Mg and up to 0.2 % Be. These additions decrease the tendency of the alloy toward film formation. The alloy has (in kg/mm²) $\sigma_b > 65$, $\sigma_{0.2} > 30$, HB 180-210, $\sigma_{-1} > 17$ at $10 \cdot 10^6$ cycles and is a promising shipbuilding material.

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USSR

UDC: 539.3:534.1

SHALASHILIN, V. I., KULAKOV, N. A., KUZNETSOV, Ye. B., YEFANOV, V. V.

"Concerning Some Peculiarities of the Behavior of Elastic Systems With Cracking Under the Effect of Dynamic Loads"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1971, vyp. 237, pp 3-24 (from RZh-Mekhanika, No 7, Jul 72, Abstract No VVR67)

Translation: Solutions are found for problems on determination of critical loads for a Mises girder and a mildly sloping elastic arch under various types of dynamic loading. In this connection, the Mises girder is treated as a system with one degree of freedom, and the arch is treated as a system with two degrees of freedom. The critical load is taken as that external force which puts the system into motion such that it reaches deflections corresponding to an unstable trajectory on the phase plane at zero velocity. On this basis, the value of the critical load P_{cr} is determined from the condition of equality between the work of external forces and the potential energy of deformation of the system. A graphic method is used to find P_{cr} . Numerical integration of the equation of motion confirmed the admissibility of the proposed approach to solution of problems of this kind. V. B. Silkin.

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USSR

UDC: 621.438

BELITSKIY, M. Ye., and KUZNETSOV, Ye. I.

"Method and Some Results of the Investigation of UMB-4c Packing Material in the Products of Combustion of Aviation Fuel"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol. 7, No. 5, 1971, pp 68-71

Abstract: It was observed that the heat resistance of the UMB-4c packing material operating in gas turbines is higher than under laboratory conditions in air. This is believed to be due to the more corrosive action of air which contains more oxygen than the products of combustion of aviation fuel.

In order to simulate the actual conditions in the gas turbine an apparatus was used where the material was tested in the atmosphere of gas having essentially the same chemical composition as the products of combustion of aviation fuel.

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USSR

BELITSKIY, M. Ye., et al, Fiziko-Khimicheskaya Mekhanika Materialov,
Vol 7, No 5, 1971, pp 68-71

The tests showed that the increase in weight due to corrosion was higher, Brinell hardness and bending strength lower in air than in the gas simulating the products of combustion.

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USSR

UDC: 621.375.82

KOZEL, S. M. and KUZNETSOV, Ye. P.

"Effects of Spontaneous Radiation in High-Amplification Lasers
With Wavelength of 3.39 Microns"

Tr. Mosk. fiz.-tekhn. in-ta (Transactions of the Moscow Physico-
Technical Institute) 1971(1972), pp 82-91 (from RZh---Fizika, No 4,
1973, Abstract No 4D1234)

Translation: The effect of spontaneous radiation on the characteristics of a
coherent light amplifier with a high amplification factor is considered. It
is shown that the linear mode of amplification is determined by the condition
of smallness of the external signal compared with the amplified spontaneous
radiation in each point of the amplifier. A computation is made of the distri-
bution of the characteristics of the active medium for the case of the compar-
able quantities of uniform and nonuniform broadening of spectral lines. Rela-
tionships are given for the amplification factor along the tube length for
various lengths of the amplifier and for the amplification spectrum. Results
of the computation are compared with the experimental data obtained for a He-Ne
laser (3.39 μ). Ye. A.

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USSR

UDC: 621.378.525

KOZEL, S. M. and KUZNETSOV, Ye. P.

"Nonlinear Interaction of a Spontaneous Radiation Field With the Active Medium of a Gas Laser With High Amplification"

Gor'kiy, Izvestiya VUZ--Radiotekhnika, No 10, 1972, pp 1486-1492

Abstract: The spontaneous radiation of laser quantum amplifiers, abnormally high where the amplification is high, is explained by its nonlinear interaction with the active medium. The result is nonuniform density distribution of the inverse population and thus a reduction in the amplification factor and distortion of the frequency characteristic. The purpose of the present paper is to investigate theoretically the phenomenon of the spontaneous radiation field interacting with the laser medium on the basis of the semi-classical method. The results of a numerical calculation of the problem on the computer for a laser using a He-Ne mixture and operating at a wavelength of 3.39 microns are also presented. The analysis begins with a system of equations describing the parameter distribution of the laser, using a simple model of the device in which the spontaneous radiation field is considered as a set of

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USSR

KOZEL, S. M., et al, Izvestiya VUZ--Radiotekhnika, No 10, 1972,
pp 1486-1492

noncorrelated plane waves propagated along the laser axis, with an attenuation factor to account for the angular dispersion of the field and the multiple reflections from the walls. It is noted that neglecting this interaction between the spontaneous radiation and the medium may lead to substantial errors in computing the laser characteristics and in the treatment of experimental results. The authors express their thanks to A. S. Gorinov for the computations and to I. P. Mazan'ko and A. V. Shelagin for their useful comments.

2/2

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USSR

UDC 547.26'118

GERASIMOVA, S. S., BAKHITOV, M. I., and KUZNETSOV, YE. V.

"Addition of Dialkylphosphorous Acids to 3,5-Dibromo-2,4-toluylene Diisocyanate and 2,4,6-Trichloro-1,3-phenylene Diisocyanate"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 5, May 73, pp 1027-1028

Abstract: Dialkylphosphorous acids react easily with 3,5-dibromo-2,4-toluylene diisocyanate and 2,4,6-trichloro-1,3-phenylene diisocyanate in benzene or petroleum ether, triethylamine serving as a catalyst. The products are viscous liquids which crystallize on standing.

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USSR

UDC 678.35.03

FAIZULLIN, I. M., KASIMOV, T. M., ISUPOVA, A. I., FAIZULLINA, D. A.,
ROMANOVA, T. I., and ~~ILYUSOV, YE. V.~~

"Allyl-Aryl Esters of Phosphorus Acids"

Moscow, *Plasticheskiye Massy*, No 2, Feb 72, pp 60-63

Abstract: A number of organophosphorus polymers are commonly obtained by polymerization of the allyl esters of the phosphorus acids. Since these polymers possess valuable properties, the synthesis of new phosphorus-containing monomers is a matter of practical interest.

Seven allyl-aryl esters of the phosphorus acids, having the general

formula
$$\begin{array}{c} \text{R}-\text{P} \begin{array}{l} \nearrow \text{OR}^1 \\ \parallel \\ \text{O} \end{array} \searrow \text{OCH}_2-\text{CH}=\text{CH}_2 \end{array}, \text{ were synthesized, and their physico-chemical}$$

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USSR

FAIZULLIN, I. N., et al., *Plasticheskiye Massy*, No 2, Feb 72, pp 60-63

characteristics (boiling point, phosphorus content, etc.) were determined. The esters were obtained from a two-stage reaction: 1) dichloroanhydride of phenylphosphoric acid with the corresponding alcohol, and 2) the corresponding acid chlorides of the esters with allyl alcohol in the presence of triethylamine in an ether medium.

USSR

UDC 678.049.91

VLASOVA, L. A., and KUZNETSOV, YE. V.

"Bis-(tri- β , β' , β'' -chloromethyl)-ethyl Ester of Methylphosphonic Acid --
a New Additive for Obtaining Fireproof Polymers"

Moscow, Plasticheskiye Massy, No 11, 1971, pp 26-27

Abstract: The authors synthesized bis-(tri- β , β' , β'' -chloromethyl)-ethyl ester of methylphosphonic acid, which contains a hydrolysis- and oxidation-resistant P-C bond, by the interaction of methylphosphonic acid dichloride with 3,3-di-(chloromethyl)-oxacyclobutane during heating. The resultant compound can be used as an additive for making polymeric materials fireproof.

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USSR

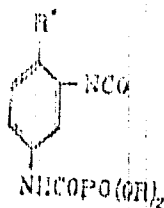
UDC: 547.241.07

BAKHITOV, M. I., ~~NIKOLAYEV, M. K.~~, NIKOLAYENKO, R. A., Leningrad Institute of Chemical Technology named S. M. Kirov

"A Method of Producing Phosphorus-Containing Isocyanates"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratny, Sovetskoye Soyuza, No 26, 1970, Soviet Patent No 270090, Class 12, Filed 2 Jun 69, 1969.

Abstract: This Author's Certificate introduces: 1. A method of producing phosphorus-containing isocyanates of the general formula



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USSR

BAKHITOV, M. I., et al, Otkrytiya, Izobreteniya, Promyshlennyye
Obratzy. Sovetskoye Znani, No 26, 1970, Soviet Patent No 276855,
Class 12, filed 2 Jun 69, p 2;

where R and R' are alkyls by interacting organophosphorus compounds with isocyanates in an organic solvent with subsequent isolation of the final product by conventional methods. As a distinguishing feature of the patent, the product yield is increased by using dialkylphosphonic acids as the organophosphorus compounds and tertiary diisocyanate as the isocyanates, and carrying out the process in the presence of a catalyst. 2. A modification of this method distinguished by the fact that metallic sodium is used as the catalyst. 3. A modification of this method in which the process is carried out with the application of heat to 50-60°C.

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USSR

UDC 547.201

KOMISSAROVA, S. L., VALETENOV, R. K., and KUZNETSOV, Ye. V., Kazan',
Chemical-Technological Institute imeni S. M. Kirov

"Reaction of Alkyl-di(hydroxymethyl) phosphines With Acrylonitrile"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 2, Feb 71, pp 322-324

Abstract: The reaction of alkyl-di(hydroxymethyl) phosphines with acrylonitrile leads to the formation of alkylbis(β -cyanoethyl)phosphines provided that the reaction temperature is kept below +20°C. A sample of 10.8 g of acrylonitrile inhibited with hydroquinone was added dropwise to 10.8 g of methyl-di(hydroxymethyl)phosphine under nitrogen, with stirring, keeping the reaction-mixture temperature below +20°C. After the completion of addition the reaction mixture was subjected to a vacuum and the product was distilled under vacuum. The reaction was not possible with methacrylonitrile even with heating.

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USSR

UDC: 678.03:547.558.1

FAYZULLIN, I. N., MAKSEDOVA, T. M., NABIYEVA, D. I., and KUZNETSOV, YE. V.
"Synthesis of Diallyl Ethers of Arylphosphoric Acids"

Moscow, Plasticheskiye Massy, No 10, 1970, pp 16-17

Abstract: The synthesis was carried out in two stages. First phosphorus oxychloride was reacted with substituted phenols to yield phenylphosphoric acyl dichlorides. Next these dichlorides were condensed with allyl alcohol. The acyldichlorides were obtained at refluxing temperature, with continuous stirring. The temperature was elevated to 150°C after 4 hrs and kept there for one hour. A double distillation gave final products in 54-63% yield. Next step was carried out by mixing the dichlorides with allyl alcohol and pyridine at 0°C. The reaction was carried out at the refluxing temperature. A triple redistillation gave the products in 18-54% yield -- colorless or yellowish liquids rapidly darkening on storage in light; they were soluble in many organic solvents.

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FAYZULLIN, I. N., FAYZULLINA, D. A., KUZNETSOV, Ye. V., GEFTER, Ye. L.,
ISUPOVA, A. I., MAKSUDOVA, T. M., Kazan' Chemical Scientific Research Insti-
tute

"Some Asymmetric Alkyl-Aryl Esters of Alkylphosphonic Acids (abstract of the
article)"

Leningrad, Zhurnal Obshchey Khimii, Vol 40 (102), No 11, Nov 70, p 2530

Abstract: The authors describe synthesis of chloride and allylaryl esters of
methyl-, chloromethyl- and β -chloroethylphosphonic acids. The synthesis was
done in two stages. In the first stage, methyl-, chloromethyl- and β -chloro-
ethylphosphonyl dichlorides are interacted with phenols to produce the corres-
ponding acid chloride esters. The second stage is interaction of the acid
chloride esters with allyl alcohol in the presence of pyridine. The synthe-
sized substances are colorless liquids which dissolve in organic solvents.

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1/2 019
UNCLASSIFIED
PROCESSING DATE--020CT70
TITLE--USE OF POLYPHOSPHORIC ACID IN THE SYNTHESIS OF OMEGA, OMEGA,
DIARYL, SUBSTITUTED ACETOPHENONES; 3,4-DIARYL, SUBSTITUTED 2-BENZOPYRYLIUM
AUTHOR--(U2)--KUZNETSOV, YE.V.; DOROFYENKO, G.N.
COUNTRY OF INFO--USSR
SOURCE--ZH. ORG. KHIM. 1970, 6(3) 578-81
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--PHOSPHORIC ACID, CHEMICAL SYNTHESIS, ACETOPHENONE, QUINOLINE,
PERCHLORATE, BENZENE DERIVATIVE, AMMONIA
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REF/NAME--1992/1530
STEP NO--UR/0366/70/000/008/0578/0531
CIRC ACCESSION NO--AP0112524
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--020CT70

2/2 019
CIRC ACCESSION NO--AP0112524
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONDENSATION OF VERATRIDE WITH
3ZCH(OH)PH, PHCH(OH)CO SUB2 H, OR BZCHO IN POLYPHOSPHORIC ACID GAVE
62-8PERCENT 3,4-(MEQ) SUB2 C SUB6 H SUB3-CHRCOR PRIME1 (1) (R, R PRIME1
GIVEN): PH, PH; PH, 3,4-(MEQ) SUB2 C SUB6 H SUB3; 3,4-(MEQ) SUB2 C SUB6
H SUB3, PH; RESP. HEATING 1 (R EQUALS R PRIME1 EQUALS PH) WITH AC SUB2
O AND HCLU SUB4 GAVE 6,7-DIMETHOXY,3,4-DIPHENYL,1-METHYL,2-BENZO,
PYRYLIUM PERCHLORATE. SIMILARLY, 6,7-DIMETHOXY,1,3,4-TRIPHENYL,
2-BENZOPYRYLIUM AND 6,7-DIMETHOXY,1-BENZYL,3,4-DIPHENYL,2, BENZOPYRYLIUM
PERCHLORATES WERE PREPD. 6,7-DIMETHOXY,3,4,
DIPHENYL,1-METHYLISQUINOLIEN, AND 1-BENZYL,6,7-DIMETHOXY,3,4,
DIPHENYLISQUINOLIEN WERE PREPD. FROM NH SUB3 AND THE RESP. PERCHLORATE.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--ADDITION OF DIALKYL PHOSPHONIC ACID TO
TRIS,P,ISOCYANATOPHENYL, METHANE -U-
AUTHOR-(03)-BAKHITOV, M.I., KUZNETSOV, YE.V., KOKINA, G.I.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(5), 570-1
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--IR SPECTRUM, ORGANIC ISOCYANATE, PHOSPHONIC ACID, BENZENE
DERIVATIVE, ORGANIC PHOSPHORUS COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--2000/0939
CIRC ACCESSION NO--AP0124599
STEP NO--UR/0079/70/040/003/0570/0571
UNCLASSIFIED

2/2 026
 CIRC ACCESSION NO--AP0124599
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO A 20PERCENT SOLN. OF (P, DMC
 SUB6 H SUB4) SUB3 CH IN C SUB2 H SUB4 CL SUB2 WAS ADDED SLOWLY 0.042
 MOLE (RO) SUB2 PHD CONTG. ITS NA SALT WAS CATALYST. (EXOTHERM) AND THE
 MIXT. HEATED 1 HR AT 60DEGREES TO GIVE GN ADDN. OF DRY ET SUB2 O HC(C
 SUB6 H SUB4 NHCCPG(OR) SUB2) SUB3 (R SHOWN): ME, M. 138-9DEGREES; ET,
 M. 148-9DEGREES; PR, M. 141-2DEGREES; ISO-PR, M. 144-50DEGREES; BUT M.
 150-10DEGREES; AND ISO-BU, M. 151DEGREES. THE IR SPECTRUM WAS SHOWN FOR
 THE ET MEMBER.
 FACILITY: KAZAN. KHIM.-TEKHNOL. INST. IR.
 KIROVA, KAZAN, USSR.

PROCESSING DATE--13NOV70

UNCLASSIFIED

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USSR

KUZNETSOV, YU. A. [Editor]

"Machine Graphing and Its Applications"

Mashinnaya Grafika i yeye Primeneniye [English version above], Novosibirsk, 1973, 123 pp (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V709K)

Translation: This collection is dedicated to problems of the utilization of computer plotters in problems of automation of scientific and planning-design studies. The term "machine graphing" here refers to the complex of mathematical methods, algorithms and programs used to process and subsequently output information on computer graphic devices. The most common such devices at the present time are graph constructors (frequently called plotters) and devices which output information onto cathode ray tube screens (photoconstructors, displays, etc.).

All articles published in the collection were based on works performed at the Laboratory of Machine Graphics of the Computer Center, Siberian Affiliate, Acad. Sci. USSR in 1969-1972. These works can be arbitrarily divided into three groups as to their content, corresponding to the order of placement of articles in the collection.

The first trend consists in the development of universal software, which is to allow programmers to use graphic devices at the level of the

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KUZNETSOV, YU. A., Mashinnaya Grafika i yeye Primeneniye, Novosibirsk, 1973, 123 pp

qualified mechanical draftsman. The second trend is related to the creation of various specialized programs for the representation of various specific types of graphic information.

The third supplementary trend is the development of mathematical methods of processing and preparation of data for subsequent graphic representation.

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Antennas

USSR

UDC 621.396.677.001.24

AZAROV, Yu. Ye., KUZNETSOV, Yu. A., and PATEYUK, G. N.

"Synthesis of an Impedance Realizing a Specified Directional Diagram"

Dnepropetrovsk, V sb. Vopr. teorii i tekhn. avtomat. sistem (Problems in the Theory and Technology of Automatic Systems--collection of works) 1971, pp 97-105 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10B6)

Translation: The plane problem is considered of synthesizing an impedance which, for a known directional diagram of a primary radiator, permits obtaining the specified diagram in the presence of a metal body. An expression is obtained for the distribution of the impedance along the antenna. Results are given of the computation of the impedance distribution. Two illustrations, bibliography of three. V. S.

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