USSR

UDC 621.383.292+621.383.52

BAZYLENKO, V. A., VORONIN, E. S., PROKOPENKO, V. Ye., STARKOV, G. S., Physics Department, Moscow State University

"On Selecting Photoreceivers for Reception of Weak Signals Against a Noisy Background"

Moscow, Pribory i Tekhnika Eksperimenta, No 4, Jul/Aug 71, pp 109-192

Abstract: The paper deals with the registration capacity of photoreceivers, which is defined as the minimum ratio of the signal power to the background power when the background is predetermined and the signal-to-noise ratio is equal to unity. Experimental data are given on the registration capacity of photomultipliers and photodiodes on wavelengths of 0.63 and 1.15 u. Three types of photomultipliers with oxygen-silver-cesium cathodes (FEU-22, -62, and -83) and four types of germanium photodiodes (FD-1, -3, -3A and -6G) were studied. It was assumed that the photoreceivers have only shot noise. The emission source was a 170 W DC incandescent lamp. Curves are given for registration capacity as a function of operating conditions and quantum yield. It is found that the registration capacity of photodiodes on a wavelength of 0.63 u at an emission power of 10 uW is about 20 times as high as the registration capacity of a photomultiplier, the factor increasing to 100 for a

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BAZYLENKO, V. A., et al., Pribory i Tekhnika Eksperimenta, No 4, Jul/Aug 71, pp 190-192

wavelength of 1.15 μ. In conclusion, the authors thank Yu. A. Il'inskiy and V. S. Solomatin for constructive criticism and constant interest in the work.

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1/2 021 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--THE AURORAL OVAL AND THE BOUNDARY OF CLOSED FIELD LINES OF GEOMAGNETIC FIELD -U-

AUTHOR-(02)-FELDSTEIN, Y.I., STARKOV, G.V.

COUNTRY OF INFO--USSR

SOURCE--PLANETARY AND SPACE SCIENCE, VOL. 18, APR. 1970, P 501-509

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--AURORA, GEOMAGNETIC FIELD, GEOMAGNETIC ACTIVITY, UNIVERSAL TIME/(U)ALOUETTE SCIENTIFIC SATELLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/0056 STEP NO--UR/0000/70/018/000/0501/0509

CIRC ACCESSION NO--AP0114462

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--020CT70

2/2 021

CIRC ACCESSION NO--AP0114452

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A COMPARISON OF THE POSITION OF THE AURORAL OVAL WITH THE BOUNDARY OF THE STABLE TRAPPING REGION PHI SUB S AND THE LIMIT OF CLOSED GEOMAGNETIC FIELD LINES PHI SUB C HAS BEEN CARRIED OUT; ALOUETTE-2 DATA ARE USED TO OBTAIN THE TRAPPING BOUNDARY. IN THE MIDNIGHT HOURS PHI SUB S COINCIDES WITH EQUATORWARD BOUNDARY OF THE AURORAL OVAL, AND IN THE MIDDAY HOURS PHI SUB C IS SITUATED WITHIN THE OVAL. THE EQUATORWARD BOUNDARY OF THE AURORAL OVAL IS CLOSELY CONNECTED WITH THE POSITION OF THE REGION, IN WHICH THE GEOMAGNETIC FIELD LINES ARE CLOSED, REGARDLESS OF THE DEGREE OF MAGNETIC ACTIVITY. THE VALUES OF PHI SUB C ON THE DAY OF THE EARTH CHANGES WITH UNIVERSAL TIME. IT IS SUGGESTED THAT THE CHANGE IS CAUSED BY THE VARIATION OF THE ORIENTATION OF GEOMAGNETIC AXIS WITH RESPECT TO THE STREAMING SOLAR WIND AROUND THE MAGNETOSPHERE.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--02OCT70

1/2 022

TITLE--INSTANTANEOUS DISTRIBUTION OF AURORA AND THE POLAR MAGNETIC DISTURBANCES -U-

AUTHOR-(02)-STARKOV, G.V., FELDSHTEYN, YA.I.

COUNTRY OF INFO--USSR

SOURCE--RAZDEL IV, POLYARNYYE SIYANIYA, 1970, VOL 19, PP 32-41

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--AURORA, GEOMAGNETIC DISTURBANCE, POLAR AREA, MAGNETIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/3307/70/000/019/0032/0041

PROXY REEL/FRAME--1994/0119

CIRC ACCESSION NO--AP0114515

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--02OCT70

2/2 022
CIRC ACCESSION NO--AP0114515
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER ANALYSES THE SPATIAL DISTRIBUTION OF AURORA AT THE GIVEN MOMENTS OF TIME ACCORDING TO THE DATA OF PHOTOGRAPHS OF THE NETWORK OF ALL SKY CAMERAS TAKEN DURING THE PERIOD OF TWO BAY LIKE DISTURBANCES OF THE MAGNETIC FIELD ON DECEMBER 19, 1957, AND DECEMBER 8, 1958. THE PAPER ALSO SHOWS THAT THE INSTATANEOUS DISTRIBUTION OF AURORA CORRELATES WELL WITH THE POSITION OF THE AURORAL OVAL ZONE WHICH IS DETERMINED STATISTICALLY. THE COMPARISON OF THE INSTANTANEOUS DISTRIBUTION OF AURORA AND THE CURRENTS OF THE POLAR MAGNETIC DISTRUBANCES SUGGEST THAT THE ACTIVE AURORA ARE LOCATED ALONG THE BOUNDARY OF THE REGION WHERE THE CURRENT RUNS IN THE WESTERN DIRECTION.

UNCLASSIFIED

Acc. Nr.: AP0042361

Ref. Code: UR0203

JPRS 50162

Zone of Pulsating Auroras

(Abstract: "The Zone of Pulsating Auroras," by V. K. Roldugin and G. V. Starkov, Polar Geophysical Institute, Kola Affiliate Academy of Sciences USSR; Moscow, Geomagnetizm i Aeronomiya, Vol X, No 1, 1970, pp 97-100)

Pulsating auroras are insignificant in intensity; sometimes pulsations are observed against the background of the night sky and constitute periodic brightness changes with T ~ 5-10 sec. The diurnal variation of pulsations differs from the diurnal variation of auroral intensity. At the latitudes of the Fritz zone pulsations are almost never observed prior to midnight; their frequency maximum falls at 0400-0700 local geomagnetic time. During an auroral substorm pulsating auroras are observed in the morning hours on the equatorial side of the zone. The authors made a detailed study of the relative position of the oval zone in the region of pulsating auroras. The investigation was made using the results of photometric observations at Loparskaya ($\Phi' = 64.3°$, $\Lambda' = 115°$) and at Kem' ($\Phi' = 60.6°$, $\Lambda = 118°$) for January - March 1967. These stations are situated on almost the same corrected geomagnetic longitude and are adequately spaced in latitude. Observations were made with identical photometers directed to the zenith. FEU-19 photomultipliers with antimony-

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Reel/Frame
19760306

cesium photocathodes were used as detectors. The photometric observations were compared with the position of the auroral band relative to the observation points at specific times. It was found that the region where pulsations occur is broadened primarily eastward with an increase in magnetic activity. The zone of pulsating auroras is situated primarily in the region of the equatorial boundary of the oval zone.

19760307

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Acc. Nr: AP0044040 Ref. Code: UR 0240

PRIMARY SOURCE: Gigiyena i Sanitariya, 1970, Nr 2, pp 38-41

PATHOMORPHOLOGICAL CHANGES IN THE CARDIOVASCULAR SYSTEM OF ALBINO RATS WITH EXPERIMENTAL METHEMOGLOBINEMIA

Ye. A. Soboleva, M. V. Starkov

Investigations showed an increased methhemoglobin level in the blood of animals, lagging of their weight gain and marked pathomorphological changes in the cardiovascular system following alimentary ingestion together with vegetables of potassium and ammoniacal saltpeter in amounts of 10, 100, 1000 mg/kg for a period of 4 months. Control rats receiving with vegetables physiological amonts of nitrates (1.5 mg/kg) demonstrated none of the described changes.

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2 Tbl

REEL/FRAME
19770486

UDC 669.15

USSR

LUK'YANOVA, I. N., NEVZOROV, B. A., and STARKOV, O. V.

"Mechanical Properties of 1Kh16N15MZB and 1KH18N10T Austenitic Steels Carburized in Liquid Metal Sodium"

Moscow, Atomnaya Energiya, Vol 33, No 4, Oct 72, p 852

Abstract: Thin plates of 1Kh18N10T and 1Kh16N15MZB austenitic steels, which after carburization in sodium at 500-800°C for 1-100 hrs had a different content of C (from 0.1 to 1 wt %), were tested after carburization and also after isothermal aging in argon at 650°C for 500 and 1000 hrs. Their C-content dependent change of mechanical properties was determined by computing coefficients of a polynomial by the method of least squares for 30-45 experimental points. The ultimate strength was found to increase somewhat with increasing C-content, the yield limit increased with increasing C-content up to the value of ultimate strength, the microhardness increased during carburization from 250 kgf/mm^2 (initial steels) to 800 kgf/mm^2 (steels with 1 at wt% of C), and the specific elongation was found to be most sensitive to changes in C-content. Derived empirical functions characterizing the changes in ultimate strength and specific elongation make it possible not only to rate the mechanical properties by given C-content and the allowable C-content by the given complex of mechanical

USSR

LUK'YANOVA, I. N., et al., Atomnaya Energiya, Vol 33, No 4, Oct 72, p 852

properties, but also to determine the susceptibility of mechanical properties of steels to the change in C-content during the carburization process in sodium. Nine formulas, two bibliographic references.

USSR

UDC 615.616.24-003.
656.6

ARONOVA, G. V., VELICHKOVSKIY, B. T., RAGOL'SKAYA, F. S., STARKOV, P. S.

"Problem of Inverse Development of Silicosis Experimentally"

Nauch. tr. Irkutsk. med. in-t (Scientific Works of the Irkutsk Medical Institute), 1972, vyp 110, pp 35-36 (from RZh--Farmakologiya, Khimioterapevticheskiye Sredstva, Toksikologiya, No 3, Mar 73, Abstract No 3.54.875)

Translation: The histologic and biochemical alterations in the lungs of animals subject to the effect of quartz (I) or silica sublimate (II) combined with polyvinoxide (III) were compared. Under the effect of I after three months, expressed silicotic alterations were detected in the lungs which built up subsequently. Under the effect of II, the silicotic alterations were more intense after 15 days than under the effect of I, but after three months, an active process of inverse development of fibrosis was detected which ended by the 17th month. For animals receiving II plus III, the dynamics of the inverse development of silicotic alterations were still more expressed. The dynamics of silicotic alterations in animals receiving I plus III were the same as for those receiving II plus III.

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UDC 622.24.053.6

USSR

MEL'NIKOV, V. I., ZHIDOVTSEV, N. A., LEVCHENKO, A. T., STARKOV, V. N., DEMCHUK, M. M., KOVAL'CHUK, P. P., and PODOBANYY, I. F.

"Test Results of a Wave Reflector"

Moscow, Bureniye -- Referativnyy Nauchno-Tekhnicheskiy Sbornik (Drilling -- Scientific and Technical Reference Collection of Works), No 1, 1973, pp 7-11

Abstract: Results are presented of tests conducted on a special arrangement of the bottom part of a drilling column, which possesses the capacity of reflecting the vibratory energy generated by the cutting bit. This arrangement, which constitutes an independent structure, is called a superbit wave reflector. The basic configurations of the design and operation of the reflector are described. The existence of the theoretically calculated resonance regime and entiresonance regime was confirmed experimentally. Results of operational tests demonstrated an improvement of drilling parameters in hard rock as a result of application of the reflector. 3 figures, 1 table, 2 references.

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USSR UDC: 537.312.62

SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A., ARKUSHA, T. I., OSIPOV, V. N., SERDYUKOV, Yu. K.

"Electron-Beam Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting Materials--collection of works), Moscow, "Nauka", 1970, pp 187-192 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D554)

Translation: Cycles for smelting ingots 90 mm in diameter weighing up to 45 kg in an electron-beam furnace by the method of double vacuum remelting, and schedules for hot-pressing the ingots into bars 50 mm in diameter and for forging the pressed bars to a diameter of 18-20 mm are worked out under industrial conditions for niobium-zirconium alloys. Wire 0.2 mm in diameter is made from the bars produced by the methods of electron-beam melting, hot-pressing and forging, and the mechanical and superconducting properties of this wire are measured. Two illustrations, bibliography of sixteen titles. Resumé.

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UDC 669.293.5.296.537.312.62.539.374

USSR

SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A. ARKUSHA, T. I., OSIPOV, V. N., SERDYUKOV, Yu. A.

"Cathode-Ray Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

Probl. Sverkhprovodyashch. Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp.187-192. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I785 by the authors).

Translation: Industrial modes of melting ingots 90 mm in diameter and weighing up to 45 kg in a cathode ray furnace by the method of double vacuum remelting, and modes of hot pressing of ingots into bars 50 mm in diameter and forging of pressed bars to 18-22 mm in diameter are developed for alloys of Nb with Zr. Bars produced by cathode ray melting, hot pressing,and forging are used to produce wire 0.2 mm in diameter, the mechanical and superconducting properties of which are measured. 2 figs; 16 biblio refs.

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UDC 669.018.4.537.312.62

USSR

SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A., ARKUSHA, T. I., OSIPOV, V. N., and SERDYUKOV, Yu. A.

"Cathode Ray Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

Problemy Sverkhprovodyashchikh Materialov [Problem of Superconducting Materials — Collection of Works], Moscow, Nauka Press, 1970, pp 187-192

Translation: Modes for production of ingots 90 mm in diameter weighing up to 45 kg in a cathode ray furnace by double vacuum remelting, and modes of hot pressing of ingots into bars 50 mm in diameter and forging of the pressed bars to diameters of 18-20 mm have been developed under industrial conditions for alloys of niobium with zirconium. Wire 0.2 mm in diameter has been produced from the bars manufactured by cathode ray melting, hot pressing, and forging; the mechanical and superconducting properties of the wires are measured.

2 figures, 16 biblio. refs.

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UNCLASSIFIED PROCESSING DATE--09DEC70

1/2 021

TITLE--EQUILIBRIUM REACTIONS OF DIBROMOETHANE -U-

AUTHOR-(05)-LEVANOVA, S.V., ROZHNOV, A.M., SEDOV, S.M., STAKKOV, V.YA., MANZHOS, V.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(1), 62-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION RATE, BROMINATED ORGANIC COMPOUND, ETHANE, ISOMERIZATION, THERMODYNAMIC FUNCTION, SPECTRUM, HYDROGENATION, BROMINATION, ENTROPY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0153/70/013/001/0062/0065

PROXY REEL/FRAME--1992/1922

CIRC ACCESSION NO--AT0112894

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--09OCT70

2/2 021

CIRC ACCESSION NO--AT0112894

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RATE CONST. (K SUBR TIMES 10 PRIME3) FOR THE DEHYDROBROMINATION OF MECHBR SUB2 (I) IS 2.01 AT 413DEGREES, 5.13 AT 157DEGREES, 13.8 AT 176DEGREES, AND 65.0 AT 121GDEGREES. SIMILAR DATA FOR BRCH SUB2 CH SUB2 BR (II) ARE 2.6 AT 131DEGREES, 52.1 AT 140DEGREES, 106.1 AT 156DEGREES, AND 209 AT 174DEGREES. IN STUDIES OF THE ISOMERIZATION OF II TO I, THE PERCENT I IN THE EQUIL. MIXT. (INITIALLY PURE II) IS 1.94 AT 176DEGREES, 2.30 AT 196DEGREES, 2.50 AT 211DEGREES, 2.74 AT 225DEGREES, AND 3.05 AT 245DEGREES. THERMODYNAMIC FUNCTIONS OF II ARE CALCD. FROM BOND LENGTHS AND SPECTRAL DATA AT 25-727DEGREES. VALUES AT 127DEGREES AND 227DEGREES ARE S SUBT, 84.77 AND 90.10 CAL-(DEGREES MOLE), C SUBP, 22.49 AND 25.33 CAL-(DEGREES MOLE), (H SUBT DEGREES H SUB0 DEGREES) T, 15.18 AND 16.79 KCAL-MOLE, AND MINUS (Z SUBT DEGREES, H SUBT DEGREES) T, 69.59 AND 73.31 CAL-MOLE. THE REACTION RATE DATA ARE USED TO CALC. THERMODYNAMIC FUNCTIONS FOR THE DEHYDROGENATION AND ISOMERIZATION REACTIONS, AND THE CALCD. ENTROPY CHANGES AGREE WELL WITH LITERATURE DATA.

FACILITY: KUIBYSHEV. POLITEKH. INST. IM. KUIBYSHEVA, KUIBYSHEV, USSR.

UNCLASSIFIED

UDC 677.4:54-171:539.16.04

USSR

STARKOVA, A. N., KIRILENKO, YU. K., SHAPIRO, YE. I., YEOS, A. I., VOL'F, L. A., VISHNYAKOVA, T. P., VLASOVA, I. D., PANCHENKOV, G. M., and KAUCHANSKIY, D. A.

"Radiation Resistant Polyamide Fiber"

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 785-786

Abstract: An attempt was made to increase the resistance of polyamide fiber towards γ-radiation by treating it with ferrocene containing compounds. Caprone cord fiber was treated with ferrocenealdehyde (FCA) under following conditions: FCA - 3%; catalyst - 6.5% H_3PO_4; temperature - 75°C; duration - 2 hrs; solvent - ethanol. The fiber obtained was more resistant to thermooxidative destruction than the starting material: after heating for 2 hrs at 200°, the modified fiber retained 60-70% of the initial strength, while the starting material dropped down to 25%. The modified fiber was found to posses high adhesiveness towards the resin; it can be used in production of hoses, conveyor belts, driving belts, etc, performing under radiation.

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UDC 678.675:542.949

USSR

STARKOVA, A. N., SHAPIRO, Ye. I., KIRILENKO, Yu. K., MEOS, A. I., VOL'F, L. A., VISHNYAKOVA, T. P., and ZUMMEKOV, S. R., Leningrad Institute of the Textile and Light Industries imeni S. M. Kirov, and Moscow Institute of the Petrochemical and Gas Industries imeni I. M. Gubkin

"Modification of Capron Fiber With Ferrocenaldehyde"

Leningrad, Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972, pp 447-449

Abstract: One of the basic weaknesses of polyamide fibers is low heat-resistance. Chemical methods for remedying this weakness (based mostly on processing with bifunctional compounds and formaldehyde to form intermolecular cross-links in the polymer), but almost nothing has been published on the use of other monoaldehydes which might act as modifying agents to strengthen the resistance of polyamides to thermo-oxidative destruction. The authors studied ferrocenaldehyde (FCA) as a modifier, in the case of the fiber Capron. Phosphoric acid was used to increase reactivity of the aldehyde groups; this acid reacts only slightly with Capron, and not at all with ferrocenaldehyde. Ethanol was the solvent used. It was found that treatment of Capron with FCA substantially increases the heat-resistance of this fiber. This is explained

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USSR

STARKOVA, A. N., et al., Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972, pp 447-449

on the basis of decreased concentration of free terminal amino groups during their blocking by an aromatic compound of FCA type, as is suggested by other published data. Graphic data are given on the strength, elongation and thermal properties of Capron, as these are affected by concentrations of FCA and H_3PO_4, and by heating.

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UDC 577.1:615.7/9

USSR

SIDORKIN, V. I., STARKOVA, Z. A., NOVIKOVA, F. I., KAPITUL'SKAYA, T. S.

"Toxicology of the Flotation Agent IMD-10"

Tr. Tsentr. n.-i. i proyekt.-konstrukt. in-ta profilakt. pnevmokoniozov i tekhn. bezopasn. (Works of the Central Research and Design and Construction Institute for the Prevention of Pneumonconiosis and Accidents), 1972, No 7, pp 75-77 (from RZh-Biologicheskaya Khimiya, No 17, Sep 73, Abstract No 17 F1932)

Translation: The new flotation agent IMD-10 is a highly toxic local irritant. After entering the bloodstream it attacks the viscera. It has cumulative properties.

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USSR

KAPITUL'SKAYA, T. S., SIDORKIN, V. I., NOVIKOVA, F. I., STARKOVA, Z. A.

"Toxicity of Allylisothiuronium Chloride"

Tr. Tsentr. n.-i. i proyekt.-konstrukt. in-ta profilakt. pnevmokoniozov. i tekhn. bezopasn. (Works of the Scientific Research and Project Design Center of the Institute for Prevention of Pneumokonioses and Technical Safety), 1972, vyp. 7, pp 65-67 (from Referativnyy Zhurnal, 30F, Biologicheskaya Khimiya, No 18, 25 September 1973, abstract No 18F1728)

Translation: A new fluorine-containing reagent, allylisothiouronium chloride, has a low toxicity but has a local irritating effect, and when introduced into the organism over a long period of time, even in small doses, results in a general poisoning.

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UDC: 51:155.001.57:681.3.06

USSR

LEVITAN, E. G., STARKUS, K. K.

"Method of Recognizing Figures and Symbols in the 'OCR-A' Font"

V sb. Avtomatika i vychisl. tekhn. (Automation and Computer Technology--collection of works), No 3, Vil'nyus, "Mintis", 1971, pp 101-111 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V1019)

Translation: A method is given for machine recognition of figures and symbols in the OCR-A font. The procedure is insensitive to considerable variations in the thickness of the outline of a symbol and to imperfections in printing. The results of an experimental check of the method are presented. Authors' abstract.

UDC: 51:155.001.57:681.3.06

USSR

STARKUS, K. K.

"Improving the Effectiveness of Features for Pattern Recognition"

V sb. Avtomatika i vychisl. tekhn. (Automation and Computer Technology--collection of works), No 3, Vil'nyus, "Mintis", 1971, pp 113-116 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V1008)

Translation: This paper discusses the problem of improving the effectiveness of distinguishing features through transformation of the space of measurable features by coding which accounts for statistical relations between the measured features. Author's abstract.

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Alkaloids

UDC 615.31:547.94].074

USSR

PESHKO, D. E., and STARCBINETS, G. L., Belorussian State University Imeni V. I. Lenin, Minsk

"The Substoichiometric Variant of the Extraction-Photometric Method for Determination of Alkaloids With Methyl Orange"

Moscow, Farmatsiya, Vol 19, No 6, Nov-Dec 70, pp 60-63

Abstract: Studying the systems aqueous solution of alkaloids and methyl orange - chloroform it has been shown that substoichiometric determination of alkaloids evercomes the main defficiency of the stoichiometric method -- its lack of specificity. The substoichiometric method offers clear differentiation of individual alkaloids. Statistical treatment of the results obtained on model compounds shows that the precision of this method increases with the alkaloid-dye complexing constant.

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USSR

UDC 541.183.12

STAROBINETS, G. L., and KUL'KINA, S. D., Minsk State Medical Institute, Byelorussian State University imeni V. I. Lenin

"Ionexchange Activity of Pharmacologically Active Substances"

Minsk, Izvestiya Akademii Nauk BSSR, No 2, 1971, pp 46-50

Abstract: The ability of several compounds, with anesthetic properties, to accept protons from hydrogenated thiopolystyrene was measured. It was determined that the exchange was occurring at the primary and secondary amine groups of the anesthetic. It was pointed out that the compounds which most readily accepted the proton were also those most pharmacologically active. The compounds investigated were: novocaine, Benkain, Dikain, Novokainamid, Sovkain, Trimekain, and Psevdokokain.

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECT OF DIPOLAR SOLVATING AGENTS ON THE EXTRACTION OF ALKALOIDS BY CHLOROFORM -U-

AUTHOR-(03)-PETRASHKEVICH, S.F., STAROBINETS, G.L., RAKHMANKO, YE.M.

COUNTRY OF INFO--USSR

SOURCE--VESTI AKAD. NAVUK BELARUS. SSR, SER. KHIM. NAVUK 1970, 1, 20-3

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SOLVENT EXTRACTION, ALKALOID, CHLOROFORM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/0110 STEP NO--UR/0419/70/000/001/0020/0023

CIRC ACCESSION NO--AP0114506

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 009

CIRC ACCESSION NO--AP0114506

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF DIPOLAR SOLVATING AGENTS (PHENOL, M AND P,CRESOL, P,CHLOROCRESOL, O,BROMOCRESOL, O AND P,DIBROMOPHENOL, AND BUTANOL) ON THE EXTN. OF ALKALOIDS (HYDROCHLORIDES OF DIONINE, QUININE, DIMEDROL, SALSOLIDINE, AND NOVOCAINE AND PLATYPHYLLINE BITARTRATE) BY CHCL SUB3 FROM AQ. SOLNS. CONTG. UNIVERSAL BUFFER (PH 3) WAS STUDIED AT 20 PLUS OR MINUS 2DEGREES, VOL. PHASE RATIO 1 TO 1, THE ALKALOID CONCN. 5 TIMES 10 NEGATIVE PRIME4 EQUIV., AND THE SOLVATING AGENT CONCN. 0.1-2.5 MOLE,L. AT A CONST. ANION CONCN. IN THE AQ. PHASE, THE LOG OF THE ALKALOID DISTRIBUTION COEFF. IS A LINEAR FUNCTION OF THE LOG OF THE SOLVATING AGENT CONCN. THE VALUE OF THE EXTN. CONST. IS DETD. BY THE ABILITY OF THE SOLVATING AGENT MOL. TO ACT AS A PROTON DONOR AND BY THE RATIO OF THE HYDROPHOBIC AND POLAR GROUPS IN THE ORG. CATION. THE EFFECTIVE SOLVATION NO. FOR THE SAME IONIC PAIR INCREASES WITH DECREASING PK OF THE SOLVATING AGENT. FACILITY: BELORUSS. GOS. UNIV. IM. LENINA, MINSK, USSR.

UNCLASSIFIED

UDC 542.61

USSR

STAROBINETS, G. L., and RAKHMAN'KO, YE. M., Belorussian State Institute imeni V. I. Lenin

"The Extraction of Alkaloids as Complexes with Aromatic Acids"

Minsk, Izvestiya Akademii Nauk BSSR Seriya Khimicheskikh Nauk, No 2, 1972, pp 22-24

Abstract: A study was made of the influence of the nature of the acid on the extraction constant of an aromatic acid-alkaloid complex extracted with toluene. Dimedrol, dionine, Novacaine, papaverine, and salsolidine were the alkaloids used. The acids considered were picric, benzoic and nitrobenzoic. The distribution of alkaloids, acids, and picric acid complexes between phases was determined spectrophotometrically, directly or using the dyes methyl orange and acridine yellow. Due to the similarity of the spectra of the complexes of the various alkaloids with picric acid in toluene and the spectrum of sodium picrate in water in the 300 to 500 nm region, where the alkaloids do not absorb, it was concluded that the complexes are either ion pairs or ions. The considerably different spectrum of picric acid in toluene supports this view. The low electrical conductivity of the complexes in toluol implies that they are ion pairs. It was not possible to establish the nature of

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STAROBINETS, G. L., and RAKHMAN'KO, YE. M., Izvestiya Akademii Nauk BSSR Seriya Khimicheskikh Nauk, No 2, 1972, pp 22-24

the complexes with benzoic or nitrobenzoic acid. A correspondence between the extraction constant of the complex and the strength of the acid was also found.

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USSR

UDC 621.371.332.1

STAROBINETS, I.A. [Institute Of Atmospheric Physics, AS, USSR]

"Mean Illumination And Intensity Fluctuations At The Focus Of A Light Beam Focused In A Turbulent Atmosphere"

Izv. VUZ: Radiofizika, Vol XV, No 5, May 72, pp 738-742

Abstract: A method is proposed for measurement of the intensity of turbulence which is based on the results of measurements of the mean illumination in a focused light beam. The measurements of the mean illumination were made near the earth at three horizontal courses, 250, 650, and 1750 m long. It is found that under conditions of strong turbulence, the diameter of the focused light beam in the focal plane of the focusing system does not depend on the effective aperture of the focusing optic. The results are shown of measurements of the dispersion $\sigma^2_{\ln I}$ of the logarithm of the intensity of the light at the focus of a light beam focused in a turbulent atmosphere, with a large range of changes of the parameters of the beam and the turbulence at the course. The author thanks A.S. Gurvich for consultations and constant assistance in the work. 3 fig. 6 ref. Received by editors, 29 June 1971.

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UNCLASSIFIED PROCESSING DATE--23OCT70

1/2 -017

TITLE--GAS CHROMATOGRAPHIC DETERMINATION OF HEATS OF ADSORPTION -U-

AUTHOR-(05)-BEREZKIN, V.G., NIKITINA, N.S., FATEYEVA, V.M., STAROSTINA, N.G., STAROBINETS, L.L.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 19-21

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GAS CHROMATOGRAPHY, ALKANE, UNSATURATED HYDROCARBON, ADSORPTION, HEAT OF SOLUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0062/70/000/001/0019/0021

PROXY REEL/FRAME--1997/0642

CIRC ACCESSION NO--AP0119554

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

IRC ACCESSION NO--AP0119554

STRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIRECT GAS LIQ. CHROMATOGRAPHIC METHOD MAY BE USED TO DET. THE HEAT OF ADSORPTION FROM AN IMMOBILE LIQ. PHASE TO A SOLID CARRIER SURFACE. THE HEAT OF SOLN. AND ADSORPTION OF ALKANES AND ALKYNES ON APEIZON K SUPPORTED BY THE CARRIER INZ-600 WAS DETD. ALKYNES GAVE HEATS OF ADSORPTION THAT ARE 5-8 KCAL-MOLE GREATER THAN THOSE FOR ALKANES, EXPLAINED BY SPECIFIC INTERACTION OF THE TRIPLE BOND WITH THE SUPPORT SURFACE. THE RESULTS FOR HEXANE, 1,HEXYNE, HEPTANE, AND 2,HEPTYNE ARE TABULATED. THE METHOD IS BASED ON THE DETN. OF THE RETENTION VOL. RELATIVE TO THE AMT. OF DEPOSITED LIQ. PHASE, FROM WHICH THE DISTRIBUTION COEFF. AT VARIOUS TEMPS. MAY BE CALCD.; THE CONTRIBUTION OF ADSORPTION TO THE RETENTION VOL. IS THEN ESTD. FACILITY: INST. NEFTEKHIM. SIN. IM. TOPCHIEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 612.815./816-08

STAROBINETS, M. Kh., Chair of the Physiology of Man and Animals, Petrozavodsk University imeni O. V. Kuusinen, Petrozavodsk

"Determination on Humans of the Fraction of the Motoneuron Pool That is Required to Produce a Monosynaptic Reflex"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 72, No 11, Nov 71, pp 5-8

Abstract: Quantitative determinations of the fraction of the motoneuron pool that participates in a monosynaptic reaction were carried out on healthy persons and patients with neurological disturbances who exhibited a depression of supraspinal impulsation and a lowered stimulability of spinal motoneurons by reason of cervico-thoracic syringomyelia, vascular cervical myelopathy, or the spinal form of diffuse sclerosis. Two methods of determination were applied, one based on the percentage ratio of the maximum amplitudes of the N- and M-response and the other based on values of the amount of refractory motor units obtained by the method of paired stimuli for the time of H-reflex discharges. Both methods yielded as a rule the same values for the fraction of motoneuron pool participating in the monosynaptic reaction. The correspondence of the two values was equally good for healthy subjects and the patients tested - i.e., both methods are equally satisfactory for diagnostic purposes when applied either on healthy persons or patients.

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1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--PROPAGATION OF MAGNETOELASTIC WAVES IN A HOMOGENEOUS MAGNETIC FIELD -U-

AUTHOR-(03)-GUREVICH, A.G., STAROBINETS, S.S., SURIKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(3), 951-3

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--HOMOGENEOUS MAGNETIC FIELD, MAGNETOSTRICTION, SINGLE CRYSTAL PROPERTY, GARNET, CRYSTAL ORIENTATION, PHASE SHIFT, MAGNETIC POLARIZATION, MAGNETIC SUSCEPTIBILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1981 STEP NO--UR/0181/70/012/003/0951/0953

CIRC ACCESSION NO--AP0105055

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--23OCT70

2/2 026

CIRC ACCESSION NO--AP0105055

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS ARE GIVEN OF THE INVESTIGATION OF MAGNETOELASTIC WAVES IN A HOMOGENEOUS INTERNAL FIELD, PARALLEL TO THE (110) AZIS OF SINGLE CRYSTAL Y GARNET. ALONG THE CUBIC (110) AXIS, 2 TRANSVERSE ELASTIC NORMAL WAVES CAN PROPAGATE, POLARIZED IN THE DIRECTIONS (001) AND (110), RESP. A LINEARLY POLARIZED ELASTIC WAVE WAS EXCITED AND DETECTED WITH THE AID OF AN AC CUT QUARTZ PLATE ATTACHED TO 1 OF THE SURFACES OF THE SPECIMEN. THE DEPENDENCE IS GIVEN OF THE AMPLITUDE OF MAGNETOELASTIC IMPULSES ON THE EXTERNAL MAGNETIC FIELD. THE DISTANCE BETWEEN THE MAX. AND MIN. CORRESPONDS TO THE PHASE SHIFT BETWEEN THE WAVES, DELTA PHI EQUALS PI, WHICH IS EQUIV. TO THE ROTATION OF POLARIZATION OF THE TOTAL WAVE BY 90DEGREES ON PASSAGE THROUGH AND OUT OF THE CRYSTAL. A SHARP INCREASE IN THE VELOCITY OR ROTATION OF POLARIZATION IS OBSD. AS THE REGION OF FERROACOUSTIC RESONANCE IS APPROACHED WHEN THE FREQUENCY OF EXCITING ELASTIC WAVES COINCIDES WITH THE FREQUENCY OF MAGNETIC WAVES. FROM THE EXPTL. DATA, THE DEPENDENCE OF THE PHASE SHIFT ON THE MAGNETIC SUSCEPTIBILITY (CHI) WAS OBTAINED. WITH INCREASED CHI, A DEVIATION IS OBSD. FROM A LINEAR DEPENDENCE. FACILITY: INST. POLUPROV., LENINGRAD, USSR.

UNCLASSIFIED

equations of motion of the sublattice moments are discussed in the case of anisotropic g factors when the lengths of mech. moments are conserved, or are not conserved. Exptl. data on magnetic resonance in hexagonal ferrimagnet $RbNiF_3$ and orthorhombic canted antiferromagnet $NaNiF_3$ are interpreted on the basis of such equations with the suggestion that the lengths of mech. moments are conserved. For both crystals, the g-factor anisotropy must be taken into account.

RCJ

AP9034667 CHEMICAL ABST. 9-69 UR0181

54941s Parallel pumping in $RbNiF_3$. Starobinets, S. S.; Gurevich, A. G.; Zautkin, V. V. (Inst. poluprov., Leningrad, USSR). *Fiz. Tverd. Tela* 1969, 11(5), 1239–41 (Russ). Results are given of the exptl. investigation of parametric excitation of spin waves in parallel pumping in the hexagonal ferrimagnet $RbNiF_3$ at $0.5\ T_c < T < T_c$ (T_c is the Curie temp., 142°K.). Measured temp. dependence of the relaxation time of the spin waves is linear: $\tau_k = 2.5 \times 10^{-10}(T_c - T)$ sec. The threshold phenomena were observed in a broad interval of fields which exceed by 500 oe. the limits of max. field at which parametric spin waves can still exist.

A. Libackyi

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USSR

UDC 615.372:576.851.555

KALINICHENKO, N. F., STAROBINETS, Z. G., PODGORNAYA, L. G., and BIRYUKOVA, S. V., Kharkov Institute of Microbiology, Vaccines and Sera imeni Mechnikov

"Sensitizing Properties of Purified Concentrated Clostridium perfringens Toxoids"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971, pp 113-116

Abstract: Subcutaneous injection of mice and guinea pigs with sorbed (on aluminum hydroxide) or nonsorbed Cl. perfringens toxoids produced the typical severe symptoms of anaphylactic shock. The effect of the sorbed toxoid was more severe. The animals' reaction was the same whether the toxoids were prepared on casein or bouillon culture media. The sensitizing activity of the Cl. perfringens toxoid was caused by the protein of this antigen and not by an admixture of proteins from the nutrient media.

USSR

UDC 616-058.13-022.7(CL.PERFRINGENS)

KALINICHENKO, N. F., BIRYUKOVA, S. V., PODGORNAYA, L. G., and STAROBINETS, Z. G., Kharkov Institute of Microbiology, Vaccines, and Sera imeni Mechnikov

"Delayed Hypersensitivity in Guinea Pigs Sensitized Against Cl. perfringens and Other Microorganisms"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, p 148

Abstract: Investigations were conducted on 300-350 g guinea pigs to determine whether Cl. perfringens would induce delayed hypersensitivity cross-reacting with allergens from other genera of bacteria. The animals were sensitized by subcutaneous injection of 1 ml of a formalin treated culture of one of the following: Cl. perfringens type A 28, E. coli Moscow, S. aureus 209, Ps. pyocyanea, and proteus No 132. Thirty days later the animals were tested with the respective allergens prepared by the method of Runova (1970). Each animal responded with a specific delayed hypersensitivity against the allergen derived from the bacterium with which it was immunized. Reaction against Cl. perfringens allergen in animals not sensitized with Cl. perfringens was not specific. Subsequently, animals sensitized against Cl. perfringens were tested with allergens derived from the

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USSR

KALINICHENKO, N. F., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, p 148

other bacteria. A typical cutaneous reaction indicating delayed hypersensitivity was obtained with each heterologous allergen, and was most pronounced with the E. coli allergen. After 60 days the reaction against the homologous Cl. perfringens allergen was found to wane, the reaction with the E. coli and staphylococcal allergens grew more intense, and that with the other allergens remained unchanged.

USSR

UDC 621.314.1:621.382.3

STAROBINSKIY, N.M., LIBERZON, K.SH., KAPITONOVA, L.M.

"Magnetic-Amplifier Inverters"

Nauch. tr. vuzov Povolzh'ya (Scientific Works Of Higher Educational Institutions Of Povolzh'ye [Land Along The Volga]), 1971, Issue 6, pp 71-80 (from RZh:Elektronika i yeyo primeneniye, No 7, July 1972, Abstract No 7B574)

Translation: The circuits of a magnetic amplifier (MA) with an inverter transistorized power supply (MAI) are considered. A classification is presented of MAI circuits with respect to the form of the MA, which makes it possible to obtain the characteristics: load current, frequency--current controls, which reveal new possibilities for the use of MA making it possible to change from ordinary control characteristics in an analogous form to discrete control characteristics. Circuits are considered of MAI on the base of an ordinary MA with an exterior feedback, with self-saturation, in an auto-modulation regime. Analytical expressions are derived for the control characteristics (dependence of frequency on input signal), and an analysis is made of the operation of MAI in a circuit with exterior feedback with various feedback factors. During an analysis of MAI with self-saturation, recommendations are made for a shunting semiconductor diode MA with effective resistances. In order to assure a stable relay regime, the introduction of a supplementary feedback is recommended. As a result of experimental

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STAROBINSKIY, N.M., et al. Nauch. tr. vuzov Povolzh'ya, 1971, Issue 6, pp 71-80

studies of MAI operating in an auto-modulation regime, the effective frequency range of the given type of circuits (0.5--100) kHz is determined. An expression is derived for determination of the percentage modulation as a function of the magnitude of the capacitance and control current. Oscillograms are presented of voltage curves at the output of the inverter and at the output of the frequency discriminator. It is shown that the MAI makes it possible to obtain in discrete form, in the form of frequency dependence, the control current of practically all functional dependences characteristic of MA. 8 ill. 6 ref. A.M.

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USSR

UDC: 8.74

STARODETKO, Ye. A.

"Some Principles of Synthesis of the INKANEL-3A Geometric Language"

Tr. N.-i. i proyekt. in-ta mekhaniz. i avtomatiz. upr. proiz--vom v avtomob. prom-sti (Works of the Scientific Research and Design Institute of Mechanizing and Automating Production Control in the Motor Vehicle Industry), 1971, vyp. 2, pp 131-138 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V616)

Translation: The paper describes principles of construction of the INKANEL-3A geometric language designed for description of piecewise-analytical surfaces comprised of pieces of second--order surfaces, and for solution of geometric problems on the described objects. The principal regions of application of the language are: computer calculation of the effective dimensions of parts; determination of geometric characteristics (area, volume, moment of inertia, etc.); compilation of machining programs on machine tools with preset control; automated machine design. Author's abstract.

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USSR

UDC: 8.74

STARODETKO, Ye. A., SHMELEVA, Z. P.

"The INKANEL-2B Geometric Language"

Tr. N.-i. i proyekt. in-ta mekhaniz. i avtomatiz. upr. prciz--vom v avtomob. prom-sti (Works of the Scientific Research and Design Institute of Mechanizing and Automating Production Control in the Motor Vehicle Industry), 1971, vyp. 2, pp 114-130 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V615)

Translation: The paper presents the basic principles of construction of the INKANEL-2B geometric language designed for describing plane figures (parts) bounded by outlines made up of straight line segments and arcs of second-order curves. The proposed language is an extension of the INKANEL-2A language thanks to the introduction of new linguistic means of describing objects and expansion of the class of objects describable in the language. The INKANEL-2B language is designed for solving various geometric problems on flat contours. Authors' abstract.

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UDC: 8.74

STARODETKO, Ye. A.

"On a Method of Reducing Sorting in Solving the Problem of Enumerating One-Dimensional Chains"

Vychisl. tekhn. i mashinostr. Nauch.-tekhn. sb. (Computer Technology and Machine Building. Scientific and Technical Collection), 1970, Sep, pp 62-69 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V537)

Translation: In the process of solving geometric problems, the need often arises for the coordinates of points of enumeration of chains comprised of analytical lines such as straight lines and circles. A method is described which appreciably shortens sorting of pairs of elements which are part of intersecting chains. A chain is understood to mean a linearly ordered sequence of straight line segments and arcs of circles. It is assumed that for the straight line segments the coordinates of the beginning and end points are known, and that for the arc of a circle the center, radius and coordinates of the bounding points are known. The structure of a chain is represented by a sequence of identifiers of elements which are enumerated in the order in which the chain is traversed. An algorithm is presented

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STARODETKO, Ye. A., Vychisl. tekhn. i mashinostr. Nauch.-tekhn. sb., 1970, Sep, pp 62-69

for determining the upper and lower bounds of variation of the x and y coordinates on the arc of a circle and a straight line segment. The algorithm utilizes orientation of the boundary points relative to the x and y axes. A boundary point is considered positively oriented to the x axis if a transition from T to internal points of an element involves an increase in x. This fact is described by the function Sign (T/x) = +1. If a transition from a boundary point to inner points involves a decrease in x, then Sign (T/x) = -1. The orientation of point T to the y axis is analogously defined and described by the function Sign (T/y) = +1 or Sign (T/y) = -1. V. Mikheyev.

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USSR

STARODETKO, Ye. A., SHMELEVA, Z. P., SNISAR', L. A.

"Translator for the INKANEL-2A Geometric Language"

Tr. N.-i. i Proekt. In-ta ,ekhaniz. i Avtomatiz. upr Proiz-vom v Avtomob. Prom-sti [Works of Scientific Research and Planning Institute for Mechanization and Automation of Production Control in the Motor Vehicle Industry], No 1, 1971, pp 57-68, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V529 by the author's).

Translation: A translator with a geometric language, designed for description of flat figures limited by straight lines and circular arcs is described. The language can be used in systems for automatic construction and technological planning, in particular in programming systems for machine tools with programmed control.

USSR UDC 591.1.15

SHUR'YAN, I. M., STARODUB, N. F., and REKUN, G. M.

"Peroxidase Activity of Hemoglobin and Individual Fractions Thereof During X-Ray and Fast-Neutron-Irradiation of Animals"

V sb. Biofizika i radiobiol. (Biophysics and Radiobiology -- Collection of Works), Vyp. 3, Kiev, "Nauk. dumka," 1972, pp 20-26 (from RZh-Biologicheskaya Khimiya, No 10, 25 May 1972, Abstract No 10F1407 from summary)

Translation: It was shown that during the acute period of radiation sickness (8th to 12th day) there is a reliable increase in the peroxidase activity of whole Hb. The change in enzyme properties for individual Hb fractions obtained by column chromatography on aluminum oxide is not uniform. The greatest increase in peroxidase activity is found in the third and fourth fractions. Methemoglobin exhibits catalytic activity as peroxidase to a significantly greater degree than oxy-, carboxy- and nitroxyhemoglobin.

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1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--THERMAL STRENGTHENING OF ROLLED METALS -U-

AUTHOR-(05)-STARODUBOV, K.F., UZLOV, I.G., SAVENKOV, V.YA., POLYAKOV, S.N., BORKOVSKIY, YU.Z.
COUNTRY OF INFO--USSR

SOURCE--(TERMICHESKOYE UPROCHNENIYE PROKATA) MOSCOW, METALLURGIYA, 1970. 367 PP
DATE PUBLISHED--------70

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

TOPIC TAGS--CHEMICAL COMPOSITION, METAL ROLLING, METAL HEAT TREATMENT, STEEL HARDENING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/1462 STEP NO--UR/0000/70/000/000/0001/0367

CIRC ACCESSION NO--AM0121908
UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AM0121908

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: INTRODUCTION 7. CHAPTER I THERMAL STRENGTHENING OF ROLLED METALS (THE THERMOMECHANICAL AND THERMAL MACHINING OF ROLLED METALS UNDER CONDITIONS OF MASS PRODUCTION) 14. II THE TECHNOLOGY OF THERMAL STRENGTHENING OF ROLLED METALS 37. III THE CHEMICAL COMPOSITION OF STEEL FOR THERMAL STRENGTHENING 190. IV THE STRUCTURE OF THERMALLY STRENGTHENED STEEL ?. V THE PROPERTIES OF THERMALLY STRENGTHENED STEEL 248. LITERATURE 356. INFORMATION IS GIVEN ON THE THEORY OF THERMAL AND THERMOMECHANICAL TREATMENT APPLICABLE TO STRENGTHENING ROLLED METALS FROM LOW CARBON, MEDIUM CARBON AND ALSO LOW ALLOY STEEL. THE BOOK IS DESIGNED FOR A WIDE RANGE OF TECHNICAL ENGINEERS AT INSTITUTES, METALLURGY PLANTS, ENTERPRISES OF THE BUILDING INDUSTRY, MACHINE CONSTRUCTION.

UNCLASSIFIED

USSR

UDC 669.15-196:621.787

STARODUBOV, K. F., KASILOV, A. N., and MAKSIMENKO, V. Ya., Dnepropetrovsk Metallurgical Institute

"Mechanical Properties of Some High-Strength Steels After Thermal and High-Temperature Thermomechanical Treatment"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 10, 1972, pp 132-136

Abstract: Comparative tests were made of the mechanical properties of steel brands 5KhNV (5KhNM), 5KhV2S, 60S2KhFA, 90KhS, ShKh15SG, 50S2KhFa type with cerium, 55KhGSNMF, and 70S2NDKM, oil hardened from optimum temperature and tempered in the 150-700°C temperature interval. The possibility is demonstrated of obtaining high-strength properties (endurance limit > 260 kg/mm^2) for low-alloy steel by applying hardening with medium-temperature tempering and of increasing resistance to rupture of low-alloy steel (015-019%C) from 200 to 220 kg/mm^2 with adequate plasticity. High-temperature thermomechanical treatment is expedient for steel with 0.5-0.6% C and has little effect on steel with a carbon content > 0.6%. At higher C-content, decreased embrittlement and static strength occur with low- and medium-temperature tempering. Specific thermomechanical processing conditions of 5KhV2S, 5KhNV (5KhNM),
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USSR

STARODUBOV, K. F., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 10, 1972, pp 132-136

55KhGSNMF, 50S2KhFA (with cerium), and 60S2KhFA steels and the obtainable hardening effects are indicated. Four figures, four bibliographic references.

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USSR

UDC 621.785:666.152.001.4

STARODUBOV, K. F., SAVENKOV, V. YA., SPIVAKOV, V. I., STOLPAKOV, M. A., GORBATOV, V. I., and RUSETSKAYA, M. I.

"Heat Treatment of Steel Plates"

Dnepropetrovsk, Metallurgicheskaya i Gornorudnaya Promyshlennost', No 4, (70), Jul-Aug 71, pp 41-43

Abstract: Workers of the Institute of Ferrous Metallurgy and the Zhdanov Metallurgical Institute have developed a method and facility for a new type of heat treatment of steel plates guaranteeing high rates and uniformity of cooling. Results of investigations carried out under laboratory and industrial conditions on steel plates of different thicknesses (3-28 mm) and brands (3, 20sp, 3 sp, and 14G2SAF) are discussed. An experimental-industrial lot of 10-mm-thick plates of 14G2SAF steel was heat-treated up to the yield point of σ = 60-65 kg/mm^2. Welded joints of 14G2SAF steel showed a loss of strength of 1-3% after welding. Four illustrations, two tables, two biblio. refs.

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UR9013

AUTHOR-- AKHMATOV, S., CORRESPONDENT

NEWSPAPER-- PRAVDA UKRAINY, JANUARY 10, 1970, P 1, COLS 1-4, AND P 2, COLS 2-4

ABSTRACT-- THE ARTICLE IS A BRIEF BIOGRAPHICAL PROFILE OF ZOT IL,ICH NEKRASOV, DIRECTOR OF THE DNEPROPETROVSK INSTITUTE OF FERROUS METALLURGY /APPOINTED IN 1952/, LAUREATE OF THE LENIN AND STATE PRIZES, HERO OF THE SOVIET UNION AND MEMBER OF THE UKRAINIAN ACADEMY OF SCIENCES. HE WAS ELECTED CORRESPONDING MEMBER OF THE UKRAINIAN ACADEMY OF SCIENCES IN 1951. IT WAS ON HIS SUGGESTION THAT THE INSTITUTE OF FERROUS METALLURGY WAS RELOCATED FROM KIYEV TO DNEPROPETROVSK WHERE ITS STAFF GREW TO 1,200 PEOPLE. IN ADDITION TO BEING DIRECTOR OF THE INSTITUTE, NEKRASOV HEADS THE DEPARTMENT OF IRON METALLURGY. A. P. CHEKMAREV, K. F. STARODUBOV, V. D. CHEKHRANOV, I. G. UZLOV, A. V. PRAZDNIKOV, AND YU. N. TARAN ARE MENTIONED AS HIS COLLEAGUES.

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USSR

UDC 621.789:669.15-194.2

STARODUBOV, K. F.

"Increasing the Structural Strength of Rolled Products by Heat Treatment"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1972, pp 8-11.

Abstract: Contrary to earlier beliefs, the increased strength and ductility of steels produced by high temperature thermomechanical treatment are observed when steel rolled products with low carbon content are quenched immediately after rolling, utilizing the heat remaining in the products from hot rolling for hardening. In a modern rolling mill, with products moving smoothly and at high speeds, the temperature of the steel at the end of the rolling process remains quite constant, so that the heat of rolling can be utilized easily for hardening. One additional requirement is that the cooling process be even and rapid, to allow the cooling units to be reasonably short and to prevent warping of the rolled products.

USSR

UDC 539.385

GINDIN, I. A., STARODUBOV, YA. D., and STAROLAT, M. P.

"Change of the Structure of Nickel in the Process of Low-Temperature Plastic Deformation in the Presence of Alternating Loading"

Khar'kov Fiz. Mekhanizmy Plastich. Deform. pri Nizkikh Temperaturakh -- Sbornik (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works), 1971, pp 63-64 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1382, Authors' Abstract)

Translation: An investigation is made of the influence of fatigue-test temperature upon the cyclical duration of polycrystalline nickel (99.996%) and the change of its dislocation structure in relation to the amplitude of alternating stresses. Fatigue tests were conducted with symmetrical flexure of cantilever samples with a frequence of 50Hz at 300, 77, 20, and 4.2°K. It was shown that decreasing the temperature of fatigue tests brings about an increase of cyclical durability. Research on the dislocation structure of the samples, after cyclical loadings with varied stress amplitude, showed that the minimal amplitude of alternating stresses, at which the formation of accumulations of dislocation loops and dipoles takes place, increases as the fatigue-test temperature is diminished. There is a corresponding increase of stresses accompanied by the formation of fatigue slip bands.

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USSR

GINDIN, I. A., STARODUBOV, YA. D., STAROLAT, M. P.

"Device for Fatigue Testing at Temperatures of 1.5-300°K"

Moscow, Zavodskaya Laboratoriya, Vol XXXVII, No 4, 1971, pp 488-489

Abstract: A fatigue testing device developed at the Physicotechnical Institute of the Ukrainian SSR Academy of Sciences is described. The device is simple and convenient to operate, and it permits testing for sign-variable console bending and also torsion of the sample with a frequency of 50 hertz at temperatures of 1.5-200°K. For low temperature testing the sample is put in a coolant (liquid helium, hydrogen, nitrogen, oxygen) which in practice excludes heating of it during the test process. The device is designed to permit testing of samples made of various materials (metals, alloys, plastics, and so on). It can also be used to test samples in different gas and liquid media at room and elevated temperatures. During low temperature testing, the consumption of compressed gas is low -- 0.3, 0.5 and 0.9 liters/hour of nitrogen, hydrogen and helium, respectively.

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1/2 041 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF THE SUPERCONDUCTING STATE ON THE CREEP OF METALS -U-

AUTHOR-(04)-GINDIN, I.A., LAZAREV, B.G., LEBEDEV, V.P., STARODUBOV, YA.D.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(6), 288-90

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--METAL CREEP, INDIUM ALLOY, THALLIUM ALLOY, MERCURY, MECHANICAL PROPERTY, SUPERCONDUCTING ALLOY, SUPERCONDUCTIVITY, CRYSTAL DISLOCATION, TIN, LOW TEMPERATURE EFFECT

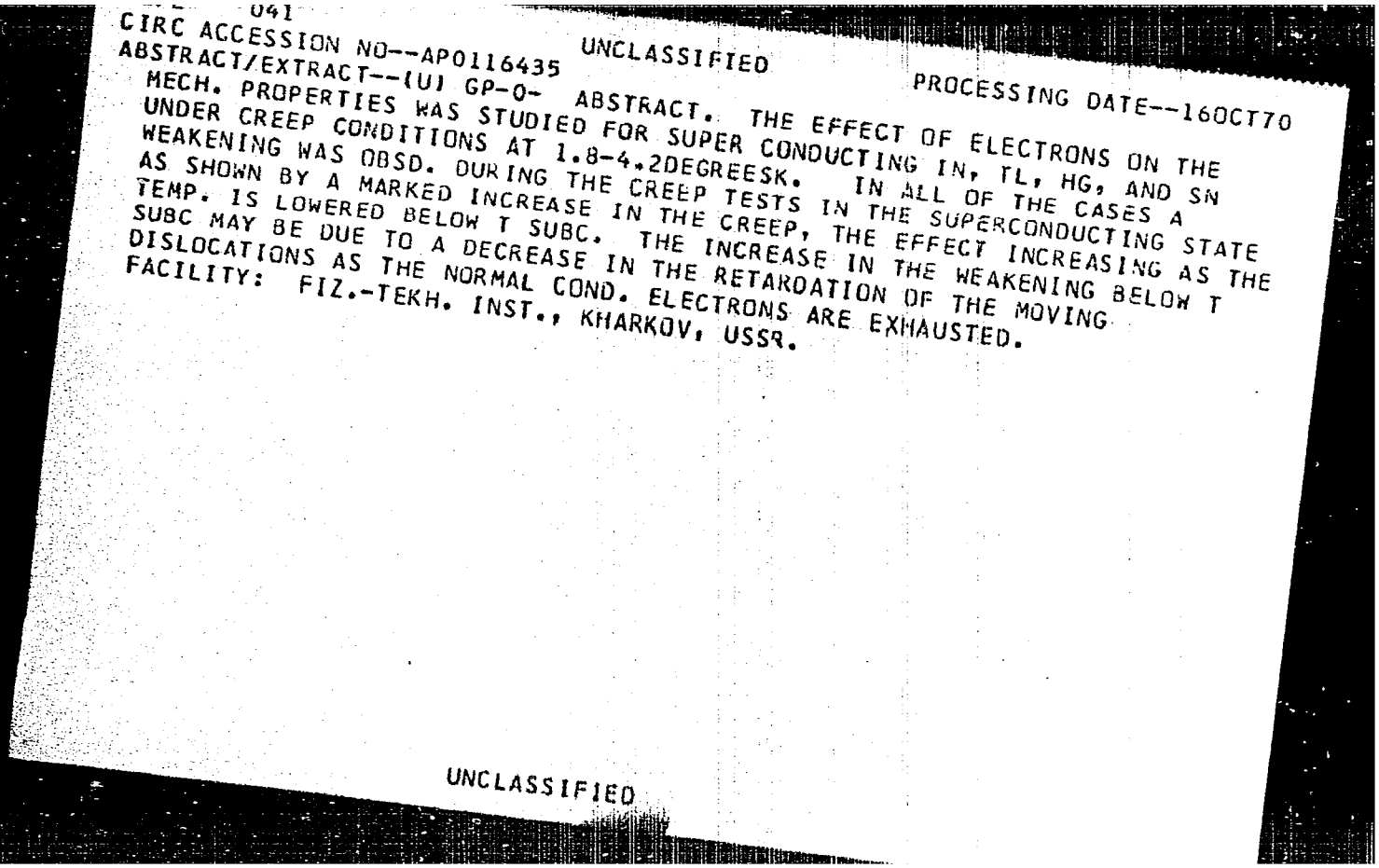
CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0925 STEP NO--UR/0396/70/011/006/0288/0290

CIRC ACCESSION NO--AP0116435

UNCLASSIFIED



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UNCLASSIFIED

CIRC ACCESSION NO--AP0116435 PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ELECTRONS ON THE MECH. PROPERTIES WAS STUDIED FOR SUPER CONDUCTING IN, TL, HG, AND SN UNDER CREEP CONDITIONS AT 1.8-4.2DEGREESK. IN ALL OF THE CASES A WEAKENING WAS OBSD. DURING THE CREEP TESTS IN THE SUPERCONDUCTING STATE AS SHOWN BY A MARKED INCREASE IN THE CREEP, THE EFFECT INCREASING AS THE TEMP. IS LOWERED BELOW T SUBC. THE INCREASE IN THE WEAKENING BELOW T SUBC MAY BE DUE TO A DECREASE IN THE RETARDATION OF THE MOVING DISLOCATIONS AS THE NORMAL COND. ELECTRONS ARE EXHAUSTED.

FACILITY: FIZ.-TEKH. INST., KHARKOV, USSR.

UNCLASSIFIED

USSR

STARODUBROVSKIY, R. K.

UDC: 621.372.832(088.8)

"A 3-DB Coaxial Directional Coupler"

USSR Author's Certificate No 263008, filed 14 Jun 67, published 8 Jun 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B139 P)

Translation: This Author's Certificate introduces a directional coupler in which the strong coupling section is made up of the two halves of circular conductors with their flat surfaces turned toward each other. This simplifies connection to the tape connections in the end sections. The distance between the grounded surfaces of the strong coupling section is greater than that between the grounded surfaces of the end coupling sections. To ensure matching in a wider frequency band, the central conductors of rectangular cross section in the end sections are shifted toward the strong coupling section, and the central conductors of the strong coupling section are shifted in turn toward the end coupling sections. This forms an additional shunting capacitance which compensates for the appreciable inductive reactance inherent in the connection of conductors with sharply different coupling. Three illustrations. A. K.

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USSR

SMETANINA, L. B., LESHCHENKO, S. S., YEGOROVA, Z. S., STARODUBTSEV, B. S., KLINSHPONT, E. R., KAPLUNOV, M. Ya., and KARPOV, V. L., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov

"Radiation Structuralization of Ethylenepropylene Rubber in Presence of N-Phenylmaleimide Sensitizer"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 12, No 11, Nov 70, pp 2,401-2,407

Abstract: The process of radiation structuralization of ethylenepropylene rubber [SKEP] and its mixtures with N-phenylmaleimide [NPMI] was studied. It was determined that NPMI is a sensitizer for radiation crosslinking of SKEP, the rate of gel-formation being directly proportional to the quantity of NPMI added. The effect is neither ionic nor radical; addition of NPMI does not affect the production of free radicals and the recombination of the radicals is identical with or without NPMI; liberation of charges trapped in the traps shows also no effect on the process. It has been proposed that NPMI acts as an acceptor of hydrogen during the γ-irradiation, being reduced to N-phenyl-succinimide in the process. Thus it aids in production of more vinylidene bonds in SKEP and accelerates the crosslinking of SKEP.

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Acc. Nr.: AT0046511

Ref. Code: UR 0146

S

USSR

UDC 681.14

LI SI KEN, STARODUBTSEV, E.V.

"Fixed Associative Memory for Pattern Recognition"

Postoyannoye assotsiativnoye zapominayushcheye ustroystvo dlya raspoznavaniya obrazov (cf. English above), Leningrad, Izvestiya Vysshikh Uchebnykh Zavedeniy, Priborostroyeniye, 1970, No 1, pp 80-84

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Reel/Frame
19781767

AT0046511

Translation:

The article examines the problems of synthesis of a device intended for the realization of a deterministic principle of pattern recognition based on the prototype method. It is shown that with regard to organizational principle this device must be a fixed associative memory. The mathematical logic expressions characterizing the operation of the fixed associative memory are presented. Also presented are specific functional and schematic diagrams of the device, obtained on the basis of analysis of the mathematical logic expressions.

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19781768

USSR

UDC: 621.375.82

STARODUBTSEV, G. P., NADEZHKIN, Yu. M., VALITOV, R. A.

"Heat Effects in Unevacuated Ponderomotive Laser Emission Meters"

Radiotekhnika. Resp. mezhved. temat. nauch.-tekhn. sb. (Radio Engineering. Republic Interdepartmental Thematic Scientific and Technical Collection), 1973, vyp. 25, pp 14-17 (from RZh-Fizika, No 8, Aug 73, abstract No 8D1142 by the authors)

Translation: The thermal effects caused by convection of the air contained in a ponderomotive meter are considered. The effects which contribute most to the error in measuring the mechanical action of emission are singled out and investigated. Heat effects are studied over a broad dynamic range and as a function of the angle between the receiving element and the vertical, the location of the receiving element between the input windows, and the volume of the reception chamber of the meter.

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USSR

UDC 612.833.81

KOZAROVITSKIY, L. B., PETROV, O. P., and STAROSIETSEV, Yu. D., Department of Physiology of Higher Nervous Activity, Moscow State University

"Formation of a Food-Obtaining Reflex to a Chain Stimulus in the Dolphin and Some of Its Behavioral Characteristics"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, No 4, 1971, pp 700-704

Abstract: Report on the dynamics of formation of a conditioned reflex to a chain acoustic stimulus (3 tones each sounded for 2 sec) in an unrestrained adult female Black Sea dolphin (Tursiops truncatus Mont). At the signal the animal swam to a lever and was immediately rewarded with a fish if it pressed the lever correctly. The reflex was formed to the complex stimulus as quickly as to a similar simple reflex and the process was approximately the same as in other higher animals. The location of the dolphin at the time the stimulus was presented and especially the position that it took under the lever served as unique signals that had an effect on the animal's conditioned activity. Experiments were performed with another dolphin to study the reciprocal influence of food and play reactions, competitive relations, and capacity for imitation.

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USSR

UDC 550.834:553.982(471.6)

MIRONOV, V. Ya. and STARODVORSKIY, V. S., Krasnodar Trust for Petroleum and Geophysical Prospecting

"The Directional-Reception Method as a Basis for the Summation of Kinematically Corrected Multiple-Tracing Observations"

Moscow, Neftegazovaya Geologiya i Geofizika, No 5, 1972, pp 31-36

Abstract: The article deals with theoretical questions pertaining to the linear nonsimultaneous summation of seismic multiple-tracing materials, with the introduction of kinematic corrections, and the results of such summation are described. Consideration is given to problems of interpretation, the resolving power, the errors, and the regions of application. The merits of such a method of processing are emphasized, and note is taken of its advantageous employment in combination with the common depth point method. 4 figures, 7 references.

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USSR

UDC 539.385

GINDIN, I. A., STARODUBOV, YA. D., and STAROLAT, M. P.

"Change of the Structure of Nickel in the Process of Low-Temperature Plastic Deformation in the Presence of Alternating Loading"

Khar'kov Fiz. Mekhanizmy Plastich. Deform. pri Nizkikh Temperaturakh -- Sbornik (Physical Mechanisms of Plastic Deformation at Low Temperatures -- Collection of Works), 1971, pp 63-64 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1382, Authors' Abstract)

Translation: An investigation is made of the influence of fatigue-test temperature upon the cyclical duration of polycrystalline nickel (99.996%) and the change of its dislocation structure in relation to the amplitude of alternating stresses. Fatigue tests were conducted with symmetrical flexure of cantilever samples with a frequence of 50Hz at 300, 77, 20, and 4.2°K. It was shown that decreasing the temperature of fatigue tests brings about an increase of cyclical durability. Research on the dislocation structure of the samples, after cyclical loadings with varied stress amplitude, showed that the minimal amplitude of alternating stresses, at which the formation of accumulations of dislocation loops and dipoles takes place, increases as the fatigue-test temperature is diminished. There is a corresponding increase of stresses accompanied by the formation of fatigue slip bands.

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USSR

UDC 539.5

GINDIN, I. A., NEKLYUDOV, I. M., NETESOV, V. M., STAROLAT, M. P., Khar'kov

"Structure and Properties of Type 1Kh18N9T Austenitic Steel Following Programmed Loading"

Problemy Prochnosti, No 11, 1971, pp 28-31.

ABSTRACT: A study is presented of the influence of annealing and programmed loading of 1Kh18N9T steel on the structure and mechanical properties. It is demonstrated that programmed loading of hardened austenitic steel at 400 and 600°C causes an increase in the strength characteristics over a broad temperature interval in subsequent tests. The basic mechanism of hardening at 400°C is formation of a dislocation structure with high density of triple points, dislocation loops and helicoidal dislocations. Programmed hardening at this temperature also causes a reduction in packing defect energy. Hardening at 600°C is achieved by development of evenly distributed, finely dispersed carbide inclusions.

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USSR

GINDIN, I. A., STARODUBOV, YA. D., STAROLAT, M. P.

"Device for Fatigue Testing at Temperatures of 1.5-300°K"

Moscow, Zavodskaya Laboratoriya, Vol XXXVII, No 4, 1971, pp 488-489

Abstract: A fatigue testing device developed at the Physicotechnical Institute of the Ukrainian SSR Academy of Sciences is described. The device is simple and convenient to operate, and it permits testing for sign-variable console bending and also torsion of the sample with a frequency of 50 hertz at temperatures of 1.5-200°K. For low temperature testing the sample is put in a coolant (liquid helium, hydrogen, nitrogen, oxygen) which in practice excludes heating of it during the test process. The device is designed to permit testing of samples made of various materials (metals, alloys, plastics, and so on). It can also be used to test samples in different gas and liquid media at room and elevated temperatures. During low temperature testing, the consumption of compressed gas is low -- 0.3, 0.5 and 0.9 liters/hour of nitrogen, hydrogen and helium, respectively.

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USSR

UDC 681.32.001

STAROS, F. G., and MARINGULOV, K. A.

"Electric Contact Set"

USSR Author's Certificate No 270038, Filed 20/11/67, Published 13/08/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B156P)

Translation: This contact set is designed to connect micromodules, assemblies, and units in computers. Electric contact sets are known which operate according to the principle of multiple mechanical contacting of each rod by inserting into the jack a coil spring with an oval cross section. The diameter of the rod is somewhat greater than the smallest diameter of the oval, providing 2 contact points for each turn of the spring. The contact set suggested differs as follows: In addition to the multiple mechanical contact, the jack contains an element allowing an additional soldered contact for each contact pair. A device is introduced which deforms the contact spring when the plugs are inserted and removed. The contact coil spring (oval in cross section) contacts the plug through spaces in the metal cylinder of the jack. This provides the following advantages: the reliability of the contact set is increased by the additional soldering of the contact pair;

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STAROS, F. G., and MARINGULOV, K. A., USSR Author's Certificate No 270038, Filed 20/11/67, Published 13/08/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B156P)

the deforming device eliminates wear of the coatings on the springs and plugs, which increases the stability of the contact resistance; the soldering is removed from the contacts without drawing off the solder; the spacing of the contact pairs is reduced, as is required for micro-miniaturized structures, since the contact spring is placed in the area occupied by the walls of the jack cylinder: i.e., in slits. 10 figs.

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USSR

UDC 681.327

STAROS, F. G.

"Microelectronic Memories"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Engineering. Scientific and Technical Collection. Microelectronics), 1970, vyp. 5 (26), pp 3-11 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, (No 6, Jun 71, Abstract No 6 B289).

Translation: The state-of-the-art and trends in the development of small data storage elements for memories are analyzed. It is noted that the creation of integral ferrite memory elements with optimal microgeometry and topology of the cells and the application of group methods of manufacturing them are a unique means of miniaturizing memory elements which has been justified in practice. Some areas in the creation of memory elements are investigated: the construction of devices based on orthoferrites and ferrite films. A number of prospective technological methods of creating magnetic storage elements based on ferrites are presented.

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USSR

UDC: 621.396.6-181.5

KRESIN, O. M., STAROS, F. G., YAKOVLEV, A. S.

"A Method of Determining the Temperature Fields of Planar Systems"

Elektron. tekhnika. Nauchn.-tekhn. sb., Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1970, vyp. 5(26), pp 105-113 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V216)

Translation: Methods are developed for calculating and analyzing the temperature fields of fuel elements and groups of elements of arbitrary topology. The proposed method is applicable to calculations in thin-film and integrated microcircuits and mosaic circuit assemblies, as well as in designs which utilize ferrite films. Resumé.

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USSR

UDC 661.143:620.179.05(088.8)

MALKES, L. YA., OL'GINSKIY, A. G., KRASOVITSKIY, B. M., MCHEDLOV-PETROSYAN, O. P., STAROSEL'SKIY, A. A., and MEL'NICHENKO, P. A.

" A Luminescent Paste for Flaw Detection on Porous Materials"

USSR Author's Certificate No 329191, filed 24 Jul 70, published 20 Mar 72 (from RZh-Khimiya, No 22, Nov 72, Abstract No 22L152P)

Translation: A luminescent paste for flaw detection on porous materials has been developed which reveals flaws over a wide range of dimensions. Example. Preparation of the luminescent past, and technique for using it: 0.075 g 1,8-napthoylene-1',2'-benzimidazole is dissolved with heating to 80°C in 100 g of mineral oil, the solution is cooled and thoroughly mixed in a mortar with 100 g of MgO. The resultant paste is applied to the surface of the material (refractories, porous glass, artifical stone) and thoroughly rubbed in. The excess is removed and the material is observed in ultraviolet light; glowing defects are clearly visible on the surface. When detecting flaws in concrete and ceramics, the materials to be tested are soaked in water before application of the paste; this prevents penetration of the luminescent paste into the fine pores (less than one micron) inherent in the nature of the material, and as a consequence prevents fluorescence of the

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USSR

MALKES, L. YA., et al., USSR Author's Certificate No 329191, filed 24 Jul 70, published 20 Mar 72

entire surface under ultraviolet light which would make it impossible to pick out the flaws against the overall glow of the background. MgO adsorbs the luminescent oil, which then gradually flows into the defects, enables thorough washing of the luminescent paste from the surface of large defects (bigger than 1000 microns). The proposed paste can be used for quality control of raw material and finished goods on various stages of the technological process and in use, and does not require complicated special equipment. The composition of the proposed paste (in wt.%): 1,8-naphthoylene-1',2'-benzimidazole 0.04, mineral oil 49.98, mercuric oxide 49.98. N. Sh.

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USSR

UDC: 621.396.6.019.3

STAROSEL'SKIY, M. V.

"Use of the Boundary Test Method in Calculating Tolerances for Radio Equipment"

V sb. Metody razrab. radioelektron. apparatury, No 1 (Methods of Development of Radio Equipment, No 1--collection of works), Moscow, 1970, pp 120-122 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7V266)

Translation: The method is theoretically analyzed. Bibliography of one title.
N. S.

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USSR

STAROSEL'SKIY, V. A., DEKHTYARENKO, V. A.

"Use of Heuristic Methods in Modeling and Optimization of Complex Systems"

Kibernetika i vuz [Cybernetics and the University -- Collection of Works], No 4, Tomsk University Press, Tomsk, 1971, pp 116-122, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V640 from the Resume).

Translation: Various approaches are discussed to the problem of finding an adequate mathematical description for complex systems, the area of application of heuristic methods in combination with statistical modeling.

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STAROSEL'SKIY, V.I.

Microelectronics:

JPRS 57333

25 October 1972

MICROELECTRONICS

Excerpts from Russian-language book edited by F. V. Lukin; Mikroelektronika, No 5, 1972, Sovetskoye Radio Publishing House, Moscow, UDC 621.382:621.396.6-181.5.

CONTENTS

recording and readout. The memory element consists of two four-electrode Gunn instruments, the first of which serves for recording and storage, the second of which serves for readout of the stored information. The time of the recording-readout cycle is about 0.5 msec. The time of the recording and storage mode 1 is about 100 mks; in storage mode 0 it is about 115 mk.

The article contains 4 figures and 3 bibliographic references.

UDC 681.142 → 621.374.3

Diode-Transistor Logic Circuit With Feedback. Naumov, Yu.Ye. and Puchkov, I.F. In the Collection Mikroelektronika, edited by F.V. Lukin, No 5, p 166, Sovetskoye Radio Publishing House, 1972.

The article gives a theoretical analysis of the electrical parameters of a circuit with feedback; its advantages are analyzed in comparison to the diode-transistor circuit without feedback. It is shown that the use of a feedback circuit is especially effective in designing micropower circuits. An experimental investigation is given for the circuit with feedback in the microcircuit "Mikrovatt-1".

The article contains 11 figures, 1 table, and 6 bibliographic references.

UDC 621.382.029.64

Logic Elements on Gunn Diodes. Voronkova, G.M., Orlova, L.K., Starosel'skiy, V.I., and Sanel', Yu.N. In the Collection "Mikroelektronika", edited by F.V. Lukin, No 5, p 182, Sovetskoye Radio Publishing House, 1972.

The article describes the properties of experimental samples of planar Gunn diodes. On 200-μm long samples the authors make a current impulse shaper and memory elements of two types.

The article contains 6 figures, 1 table, and 5 bibliographic references.

UDC 621.375.001.24:621.382.32

Static Analysis of the Simplest Differential Cascade on MDP Transistors. Stepanenko, I.P. In the Collection Mikroelektronika, edited by F.V. Lukin, No 5, p 190, Sovetskoye Radio Publishing House, 1972.

UDC: 621.380

USSR

STAROSEL'SKIY, V. I.

"Analysis of Gunn Diode Operation with a Capacitive Probe"

Kiev, Izvestiya VUZ--Radioelektronika, Vol 14, No 1, 1971, pp 85-88

Abstract: This paper deals with the problem of analyzing the passage of a domain along the capacitive probe for an arbitrary initial charge on the domain-probe capacitor, with the change in voltage on the domain taken into account. These terms relate to functional elements based on the Gunn diode in which a capacitive probe on the side surface of the diode plays an important part, the purpose of the probe being to signal the passage of a strong field domain near it. The analysis made in this paper is based on the following assumptions: that the current in the domain is independent of the voltage across it; that the thickness of the domain is much less than the length of the probe; and that the length of the probe is much less than the length of the diode. Since analysis of the electrical processes for an arbitrary impedance in the probe circuit involves a great deal of mathematical difficulties, the computations given are confined to the two limiting cases of zero and infinite impedance.

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USSR

SAPEL'NIKOV, A. N. and STAROSEL'SKIY, V. I. UDC: 621.380

"Electronic Model of a Gunn Diode"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 14, No 1, 1971, pp 105-106

Abstract: Dissatisfied with the deficiencies of the devices simulating Gunn diodes described in earlier papers, the authors of this brief communication list those deficiencies and propose their own model. A block diagram of the setup as well as a complete schematic is given, and a plot is made of the characteristic curves for the block modeling the volt-ampere characteristic of the domain. The authors caution that this model, like those of the earlier papers, does not take into account the nonlinearity of the domain capacitance because of the complexities involved in the simulation of a nonlinear capacitance.

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USSR

STAROSEL'SKIY, V.I., SAPEL'NIKOV, A.N., Moscow Engineering and Physics Institute

UDC 621.374.335.2

"Gunn Diode Comparison Circuit"

USSR Author's Certificate No 304701, filed 25 February 1970, published 24 May 1971 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1971, No H 03k 19/24)

Translation: A Gunn diode comparison circuit with one output and two or more input diodes connected in parallel and loaded by a common resistor is introduced. It is distinguished by the fact that in order to increase the operating range, to reduce the requirements on the tolerances on the diode parameters and improve the speed, part of the surface of the input diodes is coated with a dielectric with a high dielectric constant, for example, $BaTiO_3$.

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USSR

STAROSEL'SKIY, V. I.

UDC 621.382

"Gunn Diode Memory Element"

Kiev, Izvestiya VUZ -- Radioelektronika, Vol 13, No 8, 1970, pp 1031-1032

Abstract: Referring to an earlier paper on the use of the Gunn diode as a memory element (Copeland, J. A., et al., "Logic and Memory Elements Using Two-Valley Semiconductors," PIEEE, 1967, 55, No 4, p 584) the author of this brief communication offers the criticism that the article does not indicate how the flip-flop operation of the diode is maintained. He shows that the flip-flop operation can be obtained through a simple circuit in which the triggering condition is achieved by using the volt-ampere characteristic of the stationary domain, and derives expressions for the conditions under which the "0" and "1" bits can be produced by the bistable circuit.

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USSR

UDC 621.373.5

STAROSEL'SKIY, V. I., SUETINOV, V. I.

"Formation of a Gate Signal in a Gunn Diode"

Kiev, Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 1051-1052

Abstract: A study was made of the possibility of using a Gunn diode as a gate signal shaper. The schematic of the shaper is presented where the Gunn diode is included in series with the gate oscillograph mixer which is a short circuit line with the wave impedance R ≈ 50 ohms as the diode load. The input signal is a bell-shaped voltage pulse the duration of which at the threshold voltage level of the Gunn diode U_m does not exceed the drift time of the domain T. When $U_{inp} = U_m$, a strong field domain is formed in the gun diode, and the diode current decreases from the threshold value I_m to αI_m. The current pulse is differentiated in the mixer as a result of which a short voltage pulse is generated which is the gate signal. The maximum amplitude of the signal is $U_{sig} = R_m (1 - \alpha)R$, and the duration is defined by the length of the short circuit line and can be decreased to the domain formation time T without decreasing the amplitude. Oscillograms are presented for the electrical processes in the shaper. The gate signal had an amplitude of 320 millivolts and

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USSR

STAROSEL'SKIY, et al., Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 1051-1052

a halfwidth of about 0.4 nanoseconds. The signal was obtained on a diode not especially designed for this purpose. If a diode 100 microns long with the parameters U_m = 30 volts, I_m = 200 milliamps and T = 1 nanosecond were used it is possible to expect that the gate signal would have an amplitude of several volts and a halfwidth of about 30 nanoseconds. The input signal of the required amplitude and duration can be formed by an avalanche transistor. The negative voltage blip following the gate signal can be reduced significantly by giving the Gunn diode a trapezoidal shape with expansion from the cathode to the anode. In this case, during the domain drift time the diode current increases smoothly and on disappearance of the domain the current drop is decreased significantly.

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Ref. Code: UR 0056

Acc. Nr: AP0038035

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 1, pp 130-132

IDENTIFICATION OF HIGH ENERGY PARTICLES IN A STREAMER CHAMBER

Davidenko, V. A.; Dolgoshein, B. A.; Somov, S. V.; Starosel'tsev, I. N.

Relativistic growth of the specific primary ionization is measured in the following mixtures: 50 torrs Ne + 50 torrs He + 2 torrs H_2O and 320 torrs Ne + 320 torrs He. The accuracy of the measurements is 2.5%. The possibility of employing a streamer chamber for separation with respect to mass of particles with momenta up to 200 GeV/c is discussed.

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REEL/FRAME 19731077

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68

UDC 536.531

USSR

KULOV, V. S., STAROSEL'TSEVA, S. P., and METREVELI, S. G.

"High-Resistance Indium Phosphide Thermistors"

Leningrad, Izvestiya VUZ -- Priborostroyeniye, No. 7, 1971, pp 135-136

Abstract: The authors, associated with the North Osset University, present the results of tests made on thermistors they synthesized and for which they claim characteristics better than the ST1-18 cobalt-manganese thermistors thought to be the best in the Soviet Union. The high-resistance material they used was made by introducing a compensating impurity, copper, into the InP melt; it has a resistivity of about 10^7 ohm·cm and has n-type conductivity. The ohmic contacts are made of lead. Curves are given for the thermistor resistance as a function of the temperature, and for the static volt-ampere characteristic of the thermistor in undisturbed air. The device can be used with reliability at temperatures above 100° C.

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UDC 621.315.592.3:669.872'779

USSR

STAROSEL'TSEVA, S. P., METREVELI S. G., KULOV, V. S.

"Technological Process for Obtaining p-Type Indium Phosphide"

Tr. Sev.-Kavkaz. gornometallurg. in-ta (Works of the Northern Caucasus Mining and Metallurgical Institute), 1970, vyp. 28, pp 59-60 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G502)

Translation: Alloying the initial InP with n-type conductivity by admixtures of Zn, Cd, and Mg was carried out both in the process of crystal growth by the zone melting method and by diffusion. The crystal growth rate was 10 mm/hour. Large-block ingots with a hole concentration up to $8 \cdot 10^{18}$ cm^{-3} are obtained by crystallizing a melt of InP of stoichiometric composition. By diffusion of radioactive Zn^{65} it is demonstrated that the solubility of the Zn in InP reaches 10^{20}-10^{21} cm^{-3}. Part of the Zn is present in the form of neutral atoms. This leads to an anomalously low value of the mobility of the charge carriers in strongly alloyed InP (10-20 cm^2/volt-second at 77° K). Moderately alloyed samples of InP ($6 \cdot 10^{16}$-$8 \cdot 10^{18}$ cm^{-3}) have high hole mobility of 1,200 cm^2/volt-second at 77° K. It is demonstrated by the method of x-ray spectral analysis that InP crystals grown from a melt are stoichiometric.

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STAROSHCHUK, L. V.

Magnetic Fields
Electromechanics

JPRS 58448

12 March 1973

UDC: 621.3.013.2.001.24

CALCULATION OF THE MAGNETIC FIELD IN THE UNIFORM AIR GAP OF ELECTRIC MACHINES

[Article by L. V. Staroshchuk; Novocherkassk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, Russian, No 2, 1971, submitted to press 27 December 1969, pp 135-139]

The magnetic field intensity of ac electrical machinery with a uniform air gap must be calculated for electrical machinery with symmetric and asymmetric windings. Various methods are employed for this purpose [1, 2].

Presented below is one possible calculation method. The following assumptions are used: the magnetic permeability of steel is infinite, the field in the gap is plane parallel, the length of the air gap is established with consideration of the air gap coefficient, and the total slot current is concentrated on the slot axis.

The mirror image method is used for calculating the magnetic field in the gap. We will examine the case when the axis with the current is located in the gap between two cylindrical concentric ferromagnetic surfaces. The surface of the ferromagnetic medium ($\mu_1 \gg \mu_0$) is a surface of equal magnetic potential. This case can be expanded into two simpler cases [3]. In the first case (Figure 1a) the axis with the current is located inside the cylinder in medium μ_0. The field inside the cylinder is calculated in accordance with the diagram in Figure 1b, whereby the magnetic constant of the ambient medium is assumed μ_0 and current i_x passes through the point inverse in relation to the point of current i (since the field is plane parallel, the calculation diagram is viewed on a plane). The current is

$$i_x = \frac{\mu_1 - \mu_0}{\mu_1 + \mu_0} i.$$

For $\mu_1 \gg \mu_0$ we obtain $i_x = i$.

In the second case (figure 1b) the axis with the current is located outside the cylinder in the medium μ_0. Calculation of the field outside the cylinder is done in accordance with the diagram in figure 2b, according to which the magnetic constant of the medium is μ_0. The theoretical current i_y passes through the point inverse in relation to the point with current i. The theoretical current i_z passes through the axis of the cylinder

$$i_y = -i_z \cdot \frac{\mu_1 - \mu_2}{\mu_1 + \mu_2}.$$

For $\mu_1 \gg \mu_0$ we obtain $i_y = -i_z = i$.

By combining both cases we obtain a calculation diagram with an infinite series of theoretical currents i_x, i_y, i_z.

Figure 2.

Considering that two axes with different and opposite currents can be placed inside the gap, currents i_z need not be taken into account in the calculation of the magnetic field intensity (from the currents of these two axes), since the number of positive and negative currents at point O is identical.

The magnetic field intensity at an arbitrary point between the cylinders, produced by each theoretical current, is found by using the total current law. The calculation is done in appendix 1. The expression for magnetic field intensity in the gap on the surface of the inside cylinder produced by the currents of two axes with forward and back current, located on the surface of the inner cylinder, is

$$H(\varphi) = \frac{2i}{\pi R_1}\sum_{n=1}^{\infty}\left[\frac{1}{\left(\frac{R_1}{R_2}\right)^{2n}-1}+\frac{1}{n}\right]\cos n\varphi - \frac{2i}{\pi R_1}\sum_{n=1}^{\infty}\left[\frac{1}{\left(\frac{R_1}{R_2}\right)^{2n}-1}+\frac{1}{n}\right]\cos n(\varphi - \varphi_1).$$

It follows from the formula thus derived that the magnetic field intensity in the gap between the cylinders is the sum of an infinite series of harmonics with diminishing amplitudes. The method also makes it

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UDC 547.821.792'759.32:542.97

YAKHONTOV, L. N., SUVOROV, N. N., KANTEROV, V. YA., RODIKHALYUZINA, N. YA., PRONINA, YE. V., STAROSTENKO, N. YE., and SHKIL'KOVA, V. N., All-Union Research Institute of Chemical Pharmaceutics imeni S. Ordzhonikidze, and the Moscow Institute of Chemical Engineering imeni D. I. Mendeleyev

"The Heterogenous Fischer Catalytic Reaction. IV. Catalytic Synthesis of 7-Azaindole and 2-Methyl-7-azaindole in the Presence of γ-Al_2O_3"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 5, 1972, pp 656-658

Abstract: This is the first report of the synthesis of 7-azaindole (I) and 2-methyl-7-azaindole (II) by cyclization, respectively, of acetaldehyde pyridyl-2-hydrazone (III) or acetone pyridyl-2-hydrazone (IV) over γ-Al_2O_3 or γ-Al_2O_3 (2.6% F) at high temperatures. Both reactions, in addition to I or II, also yielded 2-amidopyridine and 3-methyl-s-triazolo[3,4-a]-pyridine. Prior to the experiments the catalysts were activated by exposure to a flow of dry air for 6 hr. at 600°C for γ-Al_2O_3 and at 500°C for γ-Al_2O_3(2.6% F); III and IV were purified by recrystallization from hexane. For the reaction, 7% benzene solutions of III or IV were passed over one or the other of the catalysts at temperatures ranging from 250° to 500°C. The products of the reaction were separated

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YAKHONTOV, L. N., Khimiya Geterotsiklicheskikh Soyedineniy, No 5, 1972, pp 656-658

either by partition chromatography on an aluminum oxide column or, in the case of I, by gas-liquid chromatography. Evaluation of the results showed that the fluorinated catalyst functioned more efficiently; with this catalyst the maximum yield of I was obtained at 420°C and amounted to 15%, while that of II approached 50% at 315°C.

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STAROSTENKO, N.N.

JPRS 60560

16 November 1973

DISSOCIATING GASES AS COOLANTS AND WORKING SUBSTANCES AT ATOMIC POWER PLANTS

Translation of Russian-language materials presented at the Third All-Union Conference by A.K. Krzsin, et al., Dissotsiiruyushchiye Gazy kak Teplonositeli i Rabochiye Tela Energeticheskikh Ustanovok, 1973, Minsk, UDC: 621.311.672.987, signed to press 12 April 1973

CONTENTS

UDC 621.039.51

USSR

TOPYRIN, L. S., and STAROSTENKO, N. N.

"Analysis of Effectiveness of Heat Engineering Installations with Dissociating Working Fluid"

Dissotsiiruyushch. Gazy kak Teplonositeli i Rab. Tela Energ. Ustanovok (Dissociating gasses as heat-transfer media and working fluids in power installations -- collection of works), Minsk Nauka i Tekhn. Press, 1970, pp 61-68 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.74)

Translation: The principles of construction of a mathematical model and certain results of investigation of the effectiveness of a gas-liquid atomic power plant cycle with a dissociating gas as the working fluid in the secondary loop are presented. The studies performed have demonstrated the high effectiveness of using a mathematical model of an atomic power plant with dissociating gas as the working fluid and have confirmed the necessity of a combined approach to solution of the problems of optimization of parameters and the profile of modern thermal power plants. 5 figures, 5 biblio. refs.

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USSR

UDC 621.311.25:621.039.003

POPYRIN, L. S., STAROSTENKO, N. N.

"Analysis of the Efficiency of Thermoelectric Plants with a Dissociating Working Medium"

Dissotsiiruyushch. gazy kak teplonositeli i rab. tela energ. ustanovok -- V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i tekhn. Press, 1970, pp 61-68 (from RZh-Elektrotekhnika i Energetika, No 5, May 1971, Abstract No 5U188)

Translation: The principles of constructing a mathematical model and some results of studying the efficiency of the gas-liquid cycle of atomic electric power plants with a dissociating gas as the working medium of the second loop are discussed. The research performed demonstrated high efficiency of utilizing a mathematical model of the atomic electric power plants with a dissociating gas as the working medium and confirmed the necessity for an all-around approach when studying the problems of optimizing the parameters and the profile of modern heat and power plants. There are 5 illustration and a 5-entry bibliography.

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UDC 621.039.51

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TOPYRIN, L. S., and STAROSTENKO, N. N.

"Analysis of Effectiveness of Heat Engineering Installations with Dissociating Working Fluid"

Dissotsiiruyushch. Gazy kak Teplonositeli i Rab. Tela Energ. Ustanovok (Dissociating gasses as heat-transfer media and working fluids in power installations -- collection of works), Minsk Nauka i Tekhn. Press, 1970, pp 61-68 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.74)

Translation: The principles of construction of a mathematical model and certain results of investigation of the effectiveness of a gas-liquid atomic power plant cycle with a dissociating gas as the working fluid in the secondary loop are presented. The studies performed have demonstrated the high effectiveness of using a mathematical model of an atomic power plant with dissociating gas as the working fluid and have confirmed the necessity of a combined approach to solution of the problems of optimization of parameters and the profile of modern thermal power plants. 5 figures, 5 biblio. refs.

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UDC 621.385.6

USSR

ZHDANOV, N.N., STAROSTENKO, V.V.

"Study Of Dispersion And The Amplitude Spectrum Of Space Harmonics Of A Hetero-Resonator Comb Delay System"

Radiotekhnika. Resp. mezhved. temat. nauch.-tekhn.sb (Radio Engineering. Republic Interdepartmental Thematic Scientific-Technical Collection), 1971, Issue 17, pp 22-27 (from RZh--Elektronika i yeye primeneniya, No 3, March 1972, Abstract No 3A10)

Translation: The problem of propagation of electromagnetic waves in a hetero-resonator infinitely wide comb is solved by the electrodynamic method. The effect is studied of the geometrical parameters on the dispersion and the amplitude spectrum of space harmonics. It is shown that the greatest effect on the characteristic of the comb proves to be the parameters of the hetero-resonanceness, the choice of which is very important during construction of microwave electron devices. Summary.

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USSR UDC: 621.382

PLASKIY, V. T., ZAKHAROV, A. P., SVETLICHNYY, V. M., [redacted]

"High-Frequency Noises of a Metal-Semimetal Point Contact"

Kiev, IVUZ Radioelektronika, Vol 15, No 5, May 72, pp 657-659

Abstract: The relative noise temperature of the point contact formed by a tungsten point with rounding radius of a few microns and a single crystal specimen of bismuth antimonide is experimentally determined by measurements in the 3-cm band by using P5-10 low-level power meters. Analysis of the results shows that possible noise sources may be thermal noises of the internal resistance of the semimetal and of the contact itself, noises due to fluctuations in the thermoelectric voltage, and also noises due to non-uniform passage of the charge carriers through the potential barrier at the metal-semimetal interface.

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