USSR

KATALYMOV, L. D., et al., Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, No 1, 1970, pp 26-31

stimuli was identical (leveling stage). When the interval was shortened further, the response to the weak stimulus was more significant (paradoxical stage). Finally, after a very short interval, neither the strong nor the weak stimulus elicited any response at all (inhibitory stage).

2/2

Acc. Nr: AP0044202   K   Ref. Code: UR 0239

ON THE PARABIOTIC NATURE OF WAVE EXCITATION

By L. L. Katalymov

From the Departm. of Zoology, I. N. Ylyanov Pedagogical Institute, Ulyanovsk

Studies were performed on the dog n. ishiadicus-m. gastrocnemius preparation by means of a paired impulses stimulator. The response dynamics to violent and weak testing stimulation at various phases of excitability trace changes (absolute and relative refractory, super-normal, subnormal) has been stated to closely resemble the picture of parabiosis development. Namely, with larger intervals between the stimulations the testing stimulation response corresponds to its strength (norm); at certain somewhat shorter interval the amplitude of the response to a violent stimulation increases, the weak one being vice versa decreased (prodromal stage); in further shortening of the interval the amplitude of responses to a weak and violent stimulation becomes equal (levelling stage); when the interval is still shorter a weak stimulation produces a more significant response than the violent one (paradoxal stage), and, at last, with very short intervals both weak and violent stimulations fail to evoke any response (inhibition stage). The authors opinion is that these data confirm N. E. Vvedenskyi's view concerning the parabiotic origin of wave excitation.

1/1

inT 2

3

USSR

ARSENISHVILI, A. YU., DZHAPARIDZE, N. V., DZIDZISHVILI, R. N., KATAMADZE, N. P.,
TSKITISHVILI, A. A., CHOLOKAVA, M. V., CHKHENDZE, E. A.

"Mastery of Industrial Preparation of the Silicon-Manganese-Calcium Alloy"

Translation: Results of three series of experiments in making Mn alloy with
Si and Ca in 2,500 and 11,150 kilovolt ampere electric   furnaces are dis-
cussed. The initial charge comprised a mixture of slag obtained when making
medium carbon FeMn with quartzite, lime, and coke breeze. The necessary condi-
tions for normal conduct of the alloy-making process are the following: exact
weighing of the charge components and observation of the schedule for discharge
of the alloy from the electric arc furnace. The following extraction in the
alloy was obtained: 91% Mn, 73.38% Si, 32.93% Ca, 41.1% Al, 29.9% Mg, and 54.2%
P with an alloy composition of 23.01% Mn, 54.13% Si, 9.7% Ca, 1.58% Al, 0.79%
Mg, and 0.015% P. The consumption of electric power per ton of alloy was 13,195
kilowatt-hours. There are 6 tables.
1/1

USSR

GUREVICH, L. E., and KATANOV, A. A., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences USSR, Leningrad; Institute of Physics, Academy of Sciences AzSSR, Baku

"Generation of Transverse Waves in the Presence of a Strong Current and a Magnetic Field Parallel to It"

Abstract: The excitation of transverse waves in a conductor with the same concentration of electrons and holes is considered for the case in which a strong electric current J_z flows in it parallel to an external magnetic field H which is strong for carriers of both signs. The intrinsic magnetic field of the current is also considered strong. Under these conditions spontaneous excitations of intensifying transverse waves are possible. The ratio β of the outgoing flow of the energy of excited waves to the incident energy flow is calculated and it was found that $\beta \sim 4\sqrt{\omega H}/4\pi mec$. The fact that reflected waves are also amplified inside the medium before they are reflected from the opposite surface is not taken into account. Multiple scattering will occur as a result of this, and the yield coefficient will increase sharply.

1/1

USSR

GASYMOV, T. M., KATANOV, A. A., Institute of Physics, AzerbSSR Academy of
Sciences, Baku

"Influence of Phonon Heating on Propagation of a High-Frequency Electro-
magnetic Wave"

Abstract: The paper examines propagation of a strong, high-frequency elec-
tromagnetic wave in nondegenerate semiconductors under conditions of heating
of electrons and of long-wave phonons interacting with them. In this con-
nection consideration is given to the case in which there is no "heat reser-
voir" of phonons in the lattice and therefore the long-wave phonons trans-
fer the energy derived from the electrons to the medium surrounding the
specimen through the crystal boundaries. The case of the normal skin effect
is studied. It is shown that heating of phonons leads to an appreciably
nonlinear problem. In the region of weak attenuation the laws of attenu-
ation of the field and temperatures of the electrons and phonons are found,
and it is shown that the depth of penetration is strongly dependent on the
amplitude of the incident electromagnetic wave. In the region of strong

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12

USSR

GASYMOV, T. M., KATANOV, A. A., Fizika Tverdogo Tela, Vol 15, No 9, Sep
73, pp 2644-2646

attenuation of the wave (close to the cyclotron resonance) the authors
compute the surface impedance of the semiconductor, which rises with an
increase in the amplitude of the incident electromagnetic wave. The depth
of penetration of the wave into the semiconductor is found.

2/2

USSR

GASYMOV, T. M., and KATANOV, A. A. (Institute of Physics, Azerbaydzhan Academy of Sciences)

"A Nonlinear Theory of Electromagnetic Wave Propagation in Semiconductors"

Abstract: This paper deals with the propagation of strong, high-frequency electromagnetic waves in nondegenerate semiconductors under conditions of heating of the electrons and long-wave phonons interacting with them. In this respect the authors considered the case in which the lattice lacks a "thermal reservoir" of short-wave phonons. Phonon heating was shown to lead to an essentially nonlinear problem. The laws of field damping and temperature damping of T_e electrons and T_f phonons were established. In the region of intense damping (near a cyclotron resonance) the impedance of a semiconductor was calculated, the latter increasing with increasing amplitude of the incident electromagnetic wave.

The article includes 33 equations. There are four references.

1/1

Acc. Nr: AP0043691   Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
                  Fiziki, 1970, Vol 58, Nr 3, pp 1007-1011

ON EXCITATION OF TRANSVERSE WAVES IN INDIUM ANTIMONIDE
IN AN EXTERNAL MAGNETIC FIELD BY A STRONG CURRENT

I. D. Vagner, I. V. Ioffe, A. A. Katanov

It is shown that a strong current flowing through indium antimonide located in a strong magnetic field excites Cherenkov emission of helikoidal waves. The magnitudes of the currents and fields required for excitation to occur are found. The magnetic field strength of the current is found to be much smaller than that of the external field. For a cylindrical sample with a radius much smaller than its length, the frequency and critical current values are close to those found experimentally.

REEL/FRAME
19770095

USSR

UDC: 681.2.083.8.082.7:681.121:531.751.3

DEMENT'YEV, A. M., KATANOVA, M. D., SUCHKOV, Yu. S.

"Use of Vibration-Frequency Force-Measurement Pickups to Determine Mass Flow"

V sb. Vibratsionno-chastotn. preobrazovateli. Ch. 2 (Vibration-Frequency Transducers--collection of works. Part 2), Moscow, "Energiya", 1970, pp 36-42 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 9, Sep 70, Abstract No 9.32.728)

Translation: The weight method is most accurate for measuring mass flow of liquids. In contrast to volume methods, this procedure is independent of the change in density of the liquid, and consists in measuring the difference in weight of a flow tank mounted on a balnce or installed in a force-measuring device. It is advisable to use force-measurement pickups which have fairly high accuracy and a low time constant as the force-measuring device. Two cases are considered: measurement of the rate of flow over a constant time interval, and with a constant change in weight. The second case gives less error in measuring rates of flow over a wide range. Analysis shows that adequate precision can be achieved only when the change in weight of the flow tank is constant or nearly so. The extensive computations make it difficult to design self-contained flowmeters, but are no obstacle to the

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USSR

DEMENT'YEV, A. M., et al, Vibratsionno-chastotn. preobrazovateli. Ch. 2, "Energiya", 1970, pp 36-42

operation of flowmeters based on vibration-frequency pickups in automatic measurement systems with computers. Three illustrations, Bibliography of one title.

2/2

BIOLOGY
Agriculture

USSR

UDC 631.46

KATAR'YAN, B. T., Institute of Microbiology, Academy of Sciences, Armenian SSR

"Microscopic Fungi With Herbicidal Action"

Abstract: Microbial phytotoxins, especially from fungi of the genera Helminthosporium and Fusarium, possess high activity and narrow specificity. These characteristics, plus rapid inactivation in soil, make them suitable herbicides. Tests of 30 fungi on 19 species of weeds (herbaceous, leguminous, cruciferous, etc.) showed that Amaranthus paniculatus is a good indicator plant for preliminary screening of microscopic fungi with herbidical action in terms of the germination rate and vigor of the seeds, resistance to infection by laboratory microflora, and sensitivity to inhibition by fungi. Eight of the fungi (Aspergillus niger, Verticillium albo-atrum, Fusarium moniliforms, Penicillium martensii, Paecilomyces varioti, Cladosporium sp., mucro racemosus, and Penicillium galucum) inhibited the germination of Amaranthus paniculatus seeds by 30% or more.

1/1

UDC 551.510.535.4

WIND IN THE IONOSPHERE AND THE FORMATION OF THE SPORADIC E LAYER

[Article by Candidate of Physical and Mathematical Sciences L. A. Andreyeva, Doctor of Physical and Mathematical Sciences L. A. Katasev, V. P. Nesterov, Candidates of Physical and Mathematical Sciences D...... and Yu. K. Chasovitin, Institute of Experimental Meteorology; Moscow, Meteorologiya, Gidrologiya, Russian, No 2, 1972, submitted 17 December 1970, pp 3-7]

Three profiles of the wind velocity and direction in the lower thermosphere obtained by observation data on the noctilucent clouds on 16, 25 and 26 July 1966 at the Volgograd station are presented in this article. Some results of experimental checking of the theory of formation of the middle latitude E_s atmospheric layer under the effect of wind shear are discussed.

An MR-12 rocket with containers filled with a special mixture containing sodium was launched in the summer of 1966 in Volgograd to study the wind in the lower thermosphere. The experiments were performed on 16, 25 and 26 July at 2040 hours and 0330 hours Moscow time, respectively.

The elongated noctilucent clouds formed were photographed synchronously from two points. The successive positions of the cloud photographed on 16 July are shown in the photograph in Figure 1. The procedure for processing these photographs is described in reference [3].

By the data obtained only the horizontal components of the wind velocity were determined. Obviously, the vertical components are small, and they could not be reliably established.

In Figure 2a we have the profiles of the horizontal wind velocity obtained in three experiments. The profiles on 16 and 25 July, have much in common with the characteristics of the wind conditions of the upper atmosphere obtained by Kochanski (?) and Blamont (?) by the data from numerous observations from artificial noctilucent clouds. The profile for 26 July has some differ-

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Acc. Nr.: AP0028771

PRIMARY SOURCE: Meteorologiya i Gidrologiya, 1970, Nr 1,
pp 35-41

Ref. Code: UR 0050

MEASUREMENTS OF WIND VELOCITY AND DIFFUSION COEFFICIENT BY MEANS OF ARTIFICIAL LUMINOUS CLOUDS

L. A. Andreyeva, L. N. Kalasev, D. B. Uvarov

Results of measurements of wind velocity and direction and diffusion coefficients are given in the article, based on the observations of artificial luminous clouds. Experiments were made in autumn of 1967 and in spring of 1968 over the island Haise by means of injecting appropriate reagents from rockets at a height ranging from 121 to 172 km.

REEL/FRAME

19680208

USSR

UDC: 621.762.2+539.67

BERKOVICH, I. I., VINOGRADOV, G. A. and KATASHINSKIY, V. P., Kalinin
Polytechnic Institute; Institute of Problems of Material Science
Academy of Sciences Ukrainian SSR

"Study of the Friction and Shearing Strength of Iron and Aluminum Powders"

Kiev, Poroshkovaya metallurgiya, No 11, Nov 71, pp 84-88

Abstract: Described are tests on the physical and mechanical properties of
PZhlM-2 iron and AP-1 aluminum powders conducted on a RT-1 ring-shaped
tribometer at pressures ranging from 0 to 500 kg/cm². Both the testing
equipment and procedure are detailed. The kinetic curves of both internal
and external frictions and shearing strength of the iron and aluminum
powders are shown as a function of normal pressures. It was found that the
value of the cohesion coefficient responsible for the structural strength of
the material, increases with an increase in normal pressure while the internal
friction coefficient remains almost constant. The friction and shear strength
measurement results of both iron and aluminum powders at various pressures
are presented in a table. (4 illustrations, 1 table, 4 bibliographic
references).
1/1

Information Theory & Pattern Recognition

USSR

UDC 389.0:62-501.2

AVERBUKH, G. YU., KATASHKOV, E. S., and ROZOV, YU. L.

"Determination of Minimum Interrogation Rate in Analog-Digital Conversion of Random Signals"

Moscow, Izmeritel'naya Tekhnika, No 3, Mar 73, pp 15-17

Abstract: The article considers the problem of selecting the quantization interval in the generation of random processes on the basis of statistical characteristics determined from a limited sample length. Results are obtained relating the quantization step to the length of a processed sample with a given reproduction fidelity. The results show that in problems of random signal generation from digital data, the accuracy of the statistical quick analysis can be comparatively low, and the samples selected to be processed in a number of practical cases should have a length of no more than 10-20 correlation intervals.

1/1

USSR

ALEKSANDROV, A. P. and KATAYEV, D. I.

UDC: 539.194

"Using Statistical Methods and the Electronic Computer to Analyze the Rotatory Structure of Diatomic and Linear Polyatomic Molecular Spectra"

Leningrad, Optika i Spektroskopiya, December 1972, pp 1079-1084

Abstract: Although calculations of molecular constants from the rotating structure of spectra by the method of least squares as made on computers have become common, few statistical evaluations of the errors in the results have been made, and the literature is practically devoid of statistical criteria for determining the optimal number of constants that can be computed and for checking the compatibility of heterogeneous data. The purpose of this paper is to fill these gaps. It explains the principles the authors used to compute rotational-oscillatory molecular constants of HCl^{35}, and gives the results of these computations in the form of two tables. The question of the real accuracy of the computed data is considered. Appreciation is expressed to V. T. Aleksanyan, M. R. Aliyev, V. M. Tatevskiy, and A. A. Mal'tsev for their comments.

1/1

USSR

UDC: 621.396.6.002:621.793

KATAYEV, G. A.

"Factors Which Determine the Moisture Resistance of VMS Films Used for Protecting Semiconductor Equipment"

V sb. Arsenid galliya. Vyp. 3 (Gallium Arsenide--collection of works. Vol. 3), Tomsk, Tomsk University, 1970, pp 246-254 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2V348)

Translation: The author discusses the mechanism of protective action of lacquer and enamel films with respect to water vapor. An equation is derived on the basis of the proposed model which establishes the relationship between the amount of water adsorbed on the surface and the parameters which characterize the sorption properties of the surface of the material and the protective film. Ye. M.

1/1

USSR

UDC 538.221+538.245

BELOV, K. P., YELYUTIN, O. P., KATAYEV, G. I., NIKITIN, S. A., PSHECHENKOVA, G. V., TARATYNOV, V. P., and SHUL'TE, L. A., Moscow State University imeni M. V. Lomonosov, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Study of Magnetic Properties of Rare-Earth Dysprosium-Holmium-Erbium Alloys at a Temperature of 4.2° K"

Abstract: The absence of systematic research on saturation magnetization for polycrystalline samples of rare-earth metals and their alloys makes it impossible to establish whether, in practice, they can be used as high-induction materials in fields up to 50 kOe at low temperatures. The purpose of the present article was to attempt to fill this gap. Pure rare-earth metals (obtained from the State Scientific Research and Planning Institute of the Rare Metals Industry) were studied, as well as dysprosium-holmium-erbium system alloys. Their magnetization curves were measured in fields up to 50 kOe at 4.2° K, values for coercive force and remanence were determined, and hysteresis loops were taken.

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USSR

UDC 621.373

KATAYEV, I.G., LIPATOV, N.F., MESHKOV, A.N., ROZHKOV, I.I.

"Generator Of Nanosecond Pulse Power On Nonlinear Transmission Lines With Ferrite"

Moscow, Pribory i Tekhnika Eksperimenta, No 5, Sept-Oct 1971, pp 126-130

Abstract: The paper describes in detail the generator circuit and the construction, operation, and characteristics of a generator of nanosecond pulses for supply of injection lasers and other electron-optical devices. The power of output pulses as high as 500 kw permits operation with an unmatched load. The duration of pulses of every polarity is from 2 to 30 nanosecond. The amplitude of the current with a low-resistance load is as high as 800 a; the voltage with a capacitive load is as much as 10 kv. The generator is constructed on the principle of forming electromagnetic shock waves in a transmission line with a ferrite. Received by editors 15 March 71. 7 ref. 5 fig. 1 tab. [Gor'kiy Polytechnical Institute]

1/1

SAVITSKIY, Ye. M., MORGUNOVA, N. N., BURKHANOV, G. S., KATAYEV, R. S., Moscow

UDC: 669.28·849.620.178.2

"Influence of Iron-Group Metals on the Structure and Mechanical Properties of Vacuum-Melted Molybdenum"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 6, 1973, pp 145-149.

Abstract: The ductility of molybdenum can be increased by increasing the purity of the initial raw material, by deep purification to remove interstitial impurities, and by alloying with thermodynamically active elements and rhenium. Recently, the influence of metals of group VIII on the ductility of molybdenum has been extensively studied. This work studies the influence of iron, cobalt and nickel on the structure and technological ductility of vacuum-melted molybdenum. It is found that alloying with iron-group metals has a modifying influence on the structure, facilitating an increase in the solubility of carbon, the formation of a developed substructure and more even distribution of molybdenum carbides through the volume of the metal, increasing the technological ductility and reducing the cold-shortness threshold. Iron has the most effective influence on increasing ductility, cobalt has the least. Nickel occupies an intermediate position in this respect. Alloying

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of molybdenum with iron-group metals increases the recrystallization tempera-
ture of the molybdenum. The temperature of the beginning of recrystallization
of molybdenum alloys with 0.1% Fe, Co or Ni falls in the 1000-1100° C interval
(degree of deformation over 90%). Increasing the annealing temperature of
alloys of molybdenum with iron, cobalt and nickel facilitates an increase in
ductility and a decrease in strength and hardness by relieving internal
stresses. The maximum ductility is achieved after annealing at the recrystal-
lization level -- 1100° C.

2/2   - 25 -

UDC 669.018.1

USSR

SAVITSKIY, YE. M., ZAKHAROV, A. M., BURKHANOV, G. S., and KATAYEV, R. S., Institute of Metallurgy imeni A. A. Baykov

"Study of the Trinary System Molybdenum-Nickel-Carbon"

Abstract: Microscopic and X-ray phase analysis plus determinations of the solidus temperature and microhardness are used to study molybdenum-carbon in the trinary system Mo-Ni-C up to 0.5 and 3.5% Ni. Isothermal cross sections are constructed at 1800 and 1200° and polythermal cross sections are constructed with constant nickel content (0.35%) and carbon content (0.01%). At 1800°, a liquid phase and the carbide Mo_2 are in equilibrium with the molybdenum solution, while at 1200° the delta phase (solution based on MoNi) and Mo_2C are in equilibrium. The Mo-Ni-C system forms no complex carbides in the concentration range studied. Alloying of molybdenum with nickel increases the solubility of carbon in the molybdenum in the solid state at high temperatures: at 1800°, the solubility of carbon is increased from 0.04 to 0.07% by introduction of 0.8% Ni. Alloying of Mo-C with nickel decreases the solidus temperature and expands the temperature range of crystallization.   1/1

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USSR

UDC: 621.397.61

KATAYEV, S. I., MAKOVEYEV, V. G., ZUBAREV, Yu. B.

"On Some Technical Facilities for Enrichment of Television Programs"

V sb. Televizion. tekhnika (Television Technology--collection of works), Moscow, "Svyaz'", 1971, pp 253-265 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G193)

Translation: Data are given on a number of devices developed at the Moscow Electrical Engineering Institute of Communications for extending the possibilities of TV transmissions. Among these are: equipment for combining image and sound signals, a converter of TV standards, equipment for combining an actor's image with an artificial background, and a TV frame stopper. Five illustrations, bibliography of nineteen titles. N. S.

1/1

USSR

K

UDC: 621.397.238

KATAYEV, S. I., UL'YANOV, V. N., ZUBAREV, Yu. B., MAKAROV, V. V., KHITROVO, N. G.,
Moscow Electrical Engineering Institute of Communications

"A Device for Transmitting a Television Image and Accompanying Audio Signals"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 19,
1970, Author's Certificate No 272354, filed 19 Nov 68, p 39

Abstract: This author's certificate introduces a device for transmitting a tele-
vision image and accompanying audio signals within the limits of the video signal
frequency spectrum. The unit contains a sound signal source, a phase shifter,
two pulse modulators, a combined video signal shaper, a driven selsyn, and a
special synchromixture shaper. As a distinguishing feature of the device, combi-
nation distortions are reduced by inserting a series-connected electronic key and
memory element between the output of the sound signal source and the input of one
of the pulse modulators, as well as inserting the same combination (series-
connected electronic key and memory element) between the input of the other pulse
modulator and the phase shifter. Voltage from a cadence pulse generator is sent
to both electronic keys.

1/1

UDC 8.74

USSR

KATAYEVA, I. I., KATAYEV, V. A.

"Mathematical Simulation of the Mechanical Section of Single and Small-Series Types of Production"

Tr. NII upravl. mashin i sistem (Works of the Scientific Research Institute of Computer and Systems Control), 1972, vyp. 6, pp 94-99 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V652)

No abstract

1/1

USSR   UDC 669.187.26

BUSHMELEV, V. M., TYURIN, YE. I., DUMCHEV, YA. P., KATAYEV,
V. M., VOLKOV, S. YE., PUPYNINA, S. M., SHARAPOV, A. A.,
BAGLAY, V. M., MEDOVAR, B. I., LATASH, YU. V., Krasnyy Oktyabr'
Plant, Central Scientific Research Institute of Ferrous
Metallurgy and Institute of Electric Welding imeni Ye. O. Paton,
Academy of Sciences Ukrainian SSR

"Production of 4-Ton Ingots in a Bifilar Electroslag Remelting
Furnace"

Moscow, Stal', No 3, Mar 70, pp 236-238

Abstract: The article describes a bifilar electroslag remelt-
ing scheme developed at the Institute of Electric Welding imeni
Ye. O. Paton, which provides for the melting in one crystallizer
of two electrodes, isolated from each other, which are attached
to one electrode holder and connected to the ends of the sec-
ondary winding of a single-phase transformer with the same power
as in a single-electrode furnace. In order to obtain rectan-
gular 640X460 ingots weighing 4 tons, one of the electroslag
remelting furnaces of the Krasnyy Oktyabr' Plant, designed for

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USSR

BUSHMELEV, V. M., et al, Stal', No 3, Mar 70, pp 236-238

the production of 2-ton ingots according to the single-electrode scheme and equipped with a single-phase 1000-kva transformer, was remodeled for melting according to the bifilar scheme. Only the mechanical part of the furnace underwent alteration. Slag systems used for the melting included $CaF_2-Al_2O_3$, $CaF_2-CaF_2-CaO-Al_2O_3$, and $CaF_2-CaO-Al_2O_3-MgO$. It was found that the production of metal of satisfactory quality in the bifilar furnace requires the same degree of submersion of the electrodes in the slag bath, as well as keeping the electrode spacing unchanged during the melting. This was accomplished with the use of simple devices. The bifilar scheme approximately doubles furnace productivity and reduces electric energy consumption by 25-29 percent. Data are presented on the quality of 4-ton ingots of ball-bearing steel ShKh 15, structural steel 40KhNMA and stainless sheet steels 10Kh12NVMFA (EI962) and Kh23N18 obtained on the bifilar furnace.
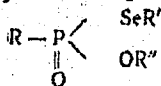
2/2

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USSR

KATAYEV, YE. G., MANNAFOV, T. G., Kazan' "Order of the Red Banner of Lobor" State University imeni V. I. Ul'yanov-Lenin, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR

"A Method of Producing O,Se-Dialkyl(aryl)alkylselenophosphonates"

Translation: This Author's Certificate introduces: 1.   A method of producing O,Se-dialkyl(aryl)alkylselenophosphonates of the general formula

$$R-P{\overset{\displaystyle SeR'}{\underset{\underset{O}{\|}}{\diagdown OR''}}}$$

where R, R', R" are an alkyl or aryl. The phosphonates are synthesized by interacting phosphonous acid esters with an organic derivative of selenium. A wider raw material base is provided by using an alkyl(aryl)selenyl halide as the organic selenium derivative and cooling the reagents during the process. 2. A modification of this method in which the process is carried out at a temperature of $0^\circ C$.

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1/2   013   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--METHOD FOR OBTAINING
   O,ALKYL,ARYL,SE,ALKYL,ARYL,ALKYLSELENOPHOSPHONATES -U-
AUTHOR-(02)-KATAYEV, YE.G., MANNAFOV, T.G.

COUNTRY OF INFO--USSR

SOURCE--AUTHOR CERTIFICATE NR 262903
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, NR 7,
DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOSELENIUM COMPOUND, ORGANIC PHOSPHORUS COMPOUND, CHEMICAL
   SYNTHESIS, PHOSPHONATE ESTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1773   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0137013
                            UNCLASSIFIED

CIRC ACCESSION NO--AA0137013

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS ANNOUNCED FOR
  OBTAINING O-ALKYL(ARYL)-SE-ALKYL(ARYL) ALKYLSELENOPHOSPHONATES OF THE
  GENERAL FORMULA: (FORMULA SHOWN ON MICRIFICHE). PHOSPHONOUS ESTERS ARE
  TREATED AT O C WITH AN ORGANOSELENIUM COMPOUND, SUCH AS
  ALKYL(ARYL)SELENYL HALIDE TO WIDEN THE SOURCES OF RAW MATERIALS.
  FACILITY: KAZANSKIY ORDENA TRUDOVOGO KRASNOGO ZNAMENI GOSUDARSTVENNYY
  UNIVERSITET IMENI V. I. UL'YANOVA-LENINA.

UNCLASSIFIED

KATAYEV, Yu.G.

AIV-6.   EFFECT OF THE CRYSTALLIZATION TEMPERATURE ON THE ELECTROPHYSICAL PROP-
ERTIES AND MORPHOLOGY OF EPITAXIAL GALLIUM ARSENIDE.

[Article by L. G. Lavrent'yeva, I. V. Ivonin, Yu. G. Katayev, L. M. Krasil'-
nikova, P. A. Kurmantayev, Yu. M. Rumyantsev, A. G. Shushkov, M. P. Yakubenya;
Kiev, Gosudarstvennyy Universitet, III Simpozium po Protsessam Rosta i Sinteza
Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 198]

Studies were made of the microcrystalstically and the distribution of the
admixture with respect to thickness of the autoepitaxial layers of gallium
arsenide with the (1,075; 1, 1) A orientation as a function of the crystalliza-
tion temperature in the GaAs-III-H₂ system. The enthalpy temperature varied
within the range of 650-750° C; here, the thermodynamic supersaturation was
kent constant.

For the stationary section, the optimal temperature range (675-760° C)
is observed at which the layers grow more perfect with respect to structure,
with the greatest clarity. Irregular system of growth stages on the surface,
and with maximum admixture concentration and maximum electron mobility. In the
case of a reduction in the crystallization temperature from optimal, the growth
stages are exhibited more weakly, the growth rate drops, and the alloying level
increases. The increase in temperature above optimal leads to local isolation
of the second phase, inhibition of the growth stages in these sections and des-
truction of the regularity. Here, the growth rate decreases, and the alloying
metal increases.

Thus, an analysis of the results shows that the clear correlation is
observed between the investigated characteristics. One of the important re-
gulators of contents of the admixture by the growing layer is the surface micro-
structure and the mechanism of its growth.

1/2   042   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--MECHANICAL PROPERTIES OF SHEET MARTENSITIC AGING STEEL N18K9M5T -U--

AUTHOR--BERESNEV, G.A., PILIKINA, L.G., KATAYEV, YU.I.

COUNTRY OF INFO--USSR

SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (2), 60-1

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MECHANICAL PROPERTY, SHEET METAL, METAL AGING, MARTENSITIC
  STEEL, ALLOY DESIGNATION, NICKEL STEEL, COBALT STEEL, MOLYBDENUM STEEL,
  TITANIUM STEEL, METAL CRACKING, IMPACT TEST, HIGH STRENGTH STEEL, CRACK
  PROPAGATION/(U)MS200 NICKEL COBALT MOLYBDENUM, (U)N18K9M5T NICKEL COBALT
  MOLYBDENUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1293   STEP NO--UR/0129/70/000/002/0060/0061

CIRC ACCESSION NO--AP0106074
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0106074
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COMPARATIVE TESTS WERE MADE ON 2
MM SHEETS OF HIGH STRENGTH MARTENSITIC AGED N18K9M5T (MS-200) AND HIGH
STRENGTH STEELS WITH 0.30 AND 0.43DEGREESC. VIBRATORY TESTS WERE MADE
ON NOTCHED IMPACT SPECIMENS WITH CRACKS ALONG ONE CUT AND ON TENSILE
SPECIMENS WITH SURFACE CRACKS. RESISTANCE TO CRACK PROPAGATION IS A
DETG. FACTOR IN THE REALIZATION OF HIGH STRENGTH STEELS IN RIGID
CONDITIONS OF LOADING. SHEETS OF HIGH STRENGTH MARTENSITIC AGED
N18K9M5T STEEL, DISPLAYING HIGH STRENGTH AND PLASTICITY, ARE RECOMMENDED
FOR MATERIALS OPERATING UNDER RIGID LOADING CONDITIONS.

UNCLASSIFIED

USSR

UDC 539.374

KATAYEV, Yu. P.

"Elastic-Plastic Twisting of Elements with Continuous Cross Section of True Geometric Shape"

Translation: Based on the exponential dependence of stresses on strain during plastic twisting and absence of warping of cross sections, this work produces relationships for determination of the stress-strain state, degree of springing and residual twisting angle in the active stage for solid elements of true geometric shape.

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KATAYEV, Yu. S.

COLEEN

69. USSR

ZINCHENKO, V. G. and KATAYEV, Yu. S.

UDC 002.6.002.5:651

"One Method of Retrieval for Discrete Carriers of Information"

Tr. NII Upravl. Mashin i Sistem (Works of the Scientific Research Institute of Control Machines and Systems), Vypusk 4, 1970, pp 45-48 (from R-Zh -- Informatika, No 4, Apr 71, Abstract No. 71.4.227 (71R--1128))

Translation: A composite type of device for retrieving discrete carriers of information is described. The search procedure is sequential, only in the given device, the entire carrier is not passed in front of the reading unit; instead, only the backs of carriers with an address code at the end are scanned by being turned over. The electromechanical part of the device has electronic control assemblies. A kinematic diagram of the device is presented. It is noted that the use of the given device makes it possible to decrease the time needed to retrieve frequently requested carriers and to reduce wear on the part of the carrier on which the information is recorded. It also makes it possible to use longer carriers, as the length of the carrier does not affect retrieval time in the given device.

KATAYEVA, I. I., KATAYEV, V. A.

"Mathematical Simulation of the Mechanical Section of Single and Small-Series Types of Production"

No abstract

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USSR

UDC: 547.341

FRIDLAND, S. V., ZYKOVA, T. V., CHIRKUNOVA, S. K., KATAYEVA, V. A. and
KAMAY, G. Kh. (deceased), Kazan Chemical-Technological Institute imeni
S. M. Kirov

"Reaction of Phosphorus Pentachloride with 2-Methyl-1,3-dioxycyclopentanes. II"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 1041-1044

Abstract: On the basis of NMR spectra, it was established that the reactions
of phosphorus pentachloride with 2-methyldioxolan, 2,4-dimethyl-dioxolan and
β-chloroethylvinyl ether are stereospecific. The acid dichloride of β-
(β-chloroalkoxy)vinylphosphonic acid is formed only as the trans-isomer.
This acid dichloride was further treated with alcohols to form a series of
esters, the physical constants of which are presented in the article.

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USSR   UDC 547.341

FRIDLAND, S. V., CHIRKUNOVA, S. K., KATAYEVA, V. A., and KAMAY, G. Kh.,
(Deceased), Kazan' Chemical-Technological Institute imeni S. M. Kirov

"Reaction of Phosphorus Pentachloride With 2-Methyl-1,3-dioxocyclopentanes-1"

Abstract: Reaction of phosphorus pentachloride with 2-methyl-1,3-dioxocyclo-
pentanes takes place with a break in the cyclopentyl ring to give dichloro-
anhydrides of β-(β-chloroalkoxo)vinylphosphonic acids. 200 g of phosphorus
pentachloride was added in portions to 28 g ethyleneacetal in 150 ml absolute
benzene with vigorous stirring, keeping the reaction temperature at 5°. Then
the mixture was heated for one hour at 30°. The complex formed was decomposed
after 12 hours with sulfur dioxide to give 40% of the dichloroanhydride of
β-(β-chloroethoxy)vinylphosphonic acid, b.p. 141-142°/5 mm, d_4^{20} 1.4868,
n_D^{20} 1.522. The dichlorides obtained react with secondary amines, alkaline
alcohols, and alkoxides to yield corresponding amides and esters.

1/1

TITLE--REFLECTION METHOD FOR A GENERALIZED HEAT CONDUCTION EQUATION -U-

AUTHOR--KATEKOV, YE.A.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK KAZAKHSKOI SSR, IZVESTIIA, SERIIA
FIZIKO-MATEMATICHESKAIA, VOL. 8, JAN.-FEB. 1970, P. 74-77

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CONDUCTIVE HEAT TRANSFER, BOUNDARY VALUE PROBLEM, DIFFERENTIAL
EQUATION SOLUTION, HEAT REFLECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1497   STEP NO--UR/0361/70/008/000/0074/0077

CIRC ACCESSION NO--AP0118484
UNCLASSIFIED

CIRC ACCESSION NO--AP0113484

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OUTLINE OF A REFLECTION METHOD
APPLICABLE TO THE SOLUTION OF ANY OF THE BOUNDARY VALUE PROBLEMS IN
REGIONS OF SPECIAL TYPE IN THE CASE OF BOTH ORDINARY AND GENERALIZED
HEAT CONDUCTION EQUATIONS. USING THE PROPOSED METHOD, THE FIRST,
SECOND, THIRD, AND MIXED BOUNDARY VALUE PROBLEMS FOR A GENERALIZED HEAT
CONDUCTION EQUATION ARE SOLVED IN A SINGLE CLASS OF REGIONS.

UNCLASSIFIED

Epidemiology

USSR

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DOBROKHOTOV, B. P., MESHCHERYAKOVA, I. S., DOLOTOVA, L. A., POMANSKAYA, L. A., ARSEN'YEV, V. P., LEVACHEVA, Z. A., PANINA, T. V., KATELINA, A. F. and MYASNIKOV, Yu. A., Institute of Epidemiology, and Microbiology imeni Gamaleya, Academy of Medical Sciences, and Tul'skaya Oblast Sanitary-Epidemiological Station

"Application of a New Method of Detecting Tularemia Epizootics Under Practical Conditions"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

The timely detection, study, and prognostication of tularemia epizootics occupy an important place in the work of divisions of especially dangerous infections of sanitary-epidemiological stations inasmuch as this makes it possible to plan and carry out prophylactic measures against this infection properly. However, methods employed at the present time for detecting epizootics in nature are extremely labor-consuming and require a great deal of time both for the collection of field material and for its laboratory examination. It is practically impossible to survey each year the entire territory serviced by the station; therefore it is expedient to conduct a detailed study of circumstances in localities only after an approximate determination of the

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probability of the presence of tularemia epizootics in any of their parts. For this preliminary estimate it was suggested that pellets of birds of prey be examined for the presence of the tularemia microbe antigen [1]. Results of the practical application of this method under the conditions of Tul'skaya Oblast are presented in this report.

On the given territory, located in the Central Russian highlands, foci of tularemia of the meadow-field type [2] are widely distributed, the principal carrier being the ordinary field mouse and the long-time preserver of the causative agent, the tick D. pictus. In spite of substantial changes which have taken place in the method of conducting agriculture, these foci continue to exist; although as a result of the mass vaccination of the population, instances of disease among the people are extremely rare [3].

During 1968 to 1971 regular organized zoologic-parasitological work was carried out in the Oblast. A total of 25,832 traps were set up in the fields by workers in the Division of Especially Dangerous Infections during the time indicated; 497 cubic meters of straw were displaced; 84 hectares of the control areas were dug up and as a result 2,199 ordinary field mice were caught.

In the autumn of 1968 a large number of ordinary field mice were observed in the southern rayons of the Oblast: more than 500 per hectare; and in the

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i
Immunobiologii, No 7, 1973, pp 105-108

north up to 1000-1500 in some places. This led to a concentration of small
animals in the stacks (19 to 25% falling into the traps) and to the occurrence
among them of tularemia epizootics. In December of 1968 and in January 1969
15 strains of the causative agent were isolated in Kurkinskiy and Shchekinskiy
rayons of the Oblast: 5 from the carcasses of the field mice and 10 from the
excrement. In the course of the entire year 1969 the number of field mice was
low and the next increase was not registered until in the autumn of 1970: on
isolated fields (clover) up to 2000, and in Shchekinskiy and Odoyevskiy rayons,
up to 5000 per hectare. In 1971 the number of ordinary field mice in the
entire Oblast was extremely low. During these years negative results were
obtained in bacteriological investigations of small animals; only one culture
of the tularemia microbe was isolated in June 1970 from the ticks D. pictus col-
lected from cows in Suvorovskiy Rayon. Thus from 1968 to 1971 during an inten-
sive inspection of the Oblast, the presence of tularemia was established by a
bacteriological method in only three rayons -- Kurkinskiy, Shchekinskiy, and
Suvorovskiy.

During 1969 to 1971, 1490 pellets of birds of prey were collected and
examined in the Oblast. Their collection took place primarily in the spring

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(April - May) at the time of three-to-four-day field trips by automobile; a certain number was collected incidentally while other zoological work was being carried out. The pellets were most frequently found near poles of electro-transmission and communications lines, on stacks, and near other structures on the landscape. During the entire time in the collection of pellets approximately 30 man-days were used which comprised an extremely insignificant part of the time expended by the division for inspecting the Oblast. Unfortunately in some of the 18 rayons covered by the collection, an insufficient number of pellets were found, which did not permit the positive determination of an epizootic condition of the rodent population in their territory (See Drawing). The number of pellets collected at any point was directly dependent on the number of ordinary field mice in a given locality: under an increased concentration of these rodents more birds of prey were observed and it was possible to find more pellets.

In the spring collections pellets (which had been preserved since autumn) of ordinary and rough-legged buzzards that winter in the territory predominated (more than 90%). A large portion of the pellets of the lesser falcons had dis-integrated by this time. In 88 to 96% of the pellets the remains of ordinary

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field mice were encountered; those of other kinds of mammals (mice of plowed
land, field mice, grey hamsters, gophers, weasels, shrews) and birds were rarely
encountered. During a selective examination in 1969, the remains of 128 small
animals were detected in 85 pellets; in 1970, in 232 pellets, the remains of
356 small animals; and in 1971, the remains of 200 small animals in 140 pellets,
giving an average of 1.5 small animal per pellet.
    In this manner the 1490 pellets collected contained more small animals than
those obtained in the fields during these years for investigation by all other
methods. One should also keep in view that by consuming in nature primarily
the weakened animals or their carcasses, birds of prey ensure the selection out
of the animal population of precisely those individuals which are desirable for
bacteriological investigation.
    The presence of an antigen in the pellets positively confirmed the fact of
an epizootic condition while through an analysis of the bone remains it was pos-
sible to determine the kinds of mammals involved in the epizootic process.
    For the purpose of detecting the antigen the antibody neutralization reac-
tion was employed. The material was prepared and the reaction carried out by
the method described earlier [1].
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Immunobiologii, No 7, 1973, pp 105-108

The antigen of the tularemia microbe was detected in 173 pellets col-
lected in the territory of 11 rayons of the Oblast. Only those results were
considered positive in which there was a sharp delay in hemagglutination which
was observed in titrations (from the initial dry weight of the pellet); 1:10 -
1:20 in 73 cases; 1:40 - 1:80 in 67 cases; 1:160 - 1:320 in 23 cases; 1:640 -
1:1280 in 12 cases (See Table).

The number of sites where pellets were found containing an antigen was
significantly greater than the number of sites where cultures were formed --
21 against 4. This made it possible to establish with far greater precision the
boundaries of epizootics that had transpired, and it testified to the fact
that an epizootic situation with respect to tularemia still exists in a signif-
icant part of the territory of Tul'skaya Oblast. Moreover, the presence of
epizootics was successfully established for the years having a smaller number
of ordinary field mice where it is impossible to detect the causative agent
of tularemia by the usually applied methods.

In such torpid epizootics the tularemia microbe antigen is detected only
in 1 to 1.5% of the pellets. Cultures of the tularemia microbe from rodents
can be isolated only at the time of sufficiently intensive epizootics, and in
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USSR

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobio-
logii, No 7, 1973, pp 105-108

such places more than 20% of the collected pellets contained the tularemia
microbe antigen.

In this way, results of an examination of pellets (by the antibody
neutralization reaction) collected in early spring in meadow-field foci of
tularemia can serve as a precise indication of the existence during the past
winter of epizootic tularemia in the territory being surveyed and its magnitude.
The revelation of this fact is extremely important in determining the enzootic-
ity of the territory for the purpose of conducting prophylactic measures, the
first and foremost being systematic vaccinations. Necessarily in a suspect
territory a more thorough collection of material must be achieved for the pur-
pose of isolating the causative agent of tularemia by ordinary bacteriological
methods.

Conclusions

1. Examination of pellets of birds of prey collected in springtime in
meadow-field foci of tularemia for the presence of the tularemia microbe
antigen makes it possible quickly and with a small expenditure of work to
establish the past winter's epizootics of this infection and their intensity
over extensive areas.

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobio-
logii, No 7, 1973, pp 105-108

2. In the course of the years 1969 to 1971, tularemia enzooticity was
established by the indicated method in 11 rayons of Tul'skaya Oblast; whereas
by the bacteriological method the causative agent was detected in only 3 rayons.
3. With a sufficient amount of research material (100 to 200 pellets from
each point) it will be possible to successfully detect each year even torpid
tularemia epizootics, given a reduced number of ordinary field mice per focus.
4. The suggested method is completely suitable for use in work of divi-
sions of especially dangerous infections of sanitary-epidemiological stations.

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Microbiology], 1969, No 12, p 38.
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ikh Epidemiologicheskiye Osobennosti i Profilaktika [Natural Tularemia
Sites of Central Russian Highlands, Their Epidemiological Features and
Prophylactics], Thesis for Doctor of M., 1963.
4. Olsuf'yev, N. G., Dobrokhotov, B. P. et al., Zh. Mikrobiol., 1971, No 6,
p 117.

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USSR

DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

NUMBER OF PELLETS BY YEAR

RAYON	1969 Total	1969 With Antigen	1970 Total	1970 With Antigen	1971 Total	1971 With Antigen
Kurkinskiy	149	33	24	--	22	1
Yefremovskiy	58	23	40	--	14	--
Kamenskiy	--	--	14	--	40	1
Chernskiy	--	--	8	--	117	--
Teplo-Ogarevskiy	27	4	24	--	--	--
Kireyevskiy	--	--	30	--	166	2
Odoyevskiy	--	--	2	--	98	42
Dubenskiy	--	--	--	--	185	55
Leninskiy	--	--	22	--	168	5
Venevskiy	2	--	67	2	--	--
Yasnogorskiy	--	--	23	3	--	--
Zaokskiy	--	--	4	--	46	2
Aleksinskiy	--	--	12	--	36	--
Prochiye	8	--	50	--	32	--
Total	244	60	320	5	932	108

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Drawing

EXAMINATION OF PELLETS OF BIRDS OF PREY FOR
TULAREMIA MICROBE ANTIGEN CONTENT IN MEADOW-
FIELD FOCI OF TUL'SKAYA OBLAST

1. Sites of Formation of Cultures of Tularemia Microbe From the
Smaller Mammals, From Their Excrement and Ixodic Ticks
2. Collection Point of Pellets in 1969
3. Collection Point of Pellets in 1970
4. Collection Point of Pellets in 1971
Crosshatched symbols are points where the tularemia microbe antigen was
found in pellets; dotted symbols are points at which more than 5 pellets
were collected.

Key:
1. Yasnogorsk
2. Venev
3. Tula
4. Dubna
5. Suvorov
6. Shchekino

7. Kireyevsk
8. Odoyev
9. Teploye
10. Kurkino
11. Yefremov

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USSR

UDC 535.37

KAS'KOV, B. N., KATIBNIKOV, M. A. and STARTSEV, YU. V.

"Spectral-Luminescence Study of the Interaction of Compounds of High Molecular Weight With Dyes. 1. Interaction of Acridine Orange and Acridine Yellow with Polymethacrylic Acid"

Vestn. Belorus. un-ta (Herald of Belorussian University), 1971, Series 1, No 1, pp 30-33 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D758)

Translation: The effect of additions of various concentrations of poly-methacrylic acid on the absorption and fluorescence spectra and also on the degree of polarization of the fluorescence of aqueous solutions of acridine orange and acridine yellow were studied. A comparative study of the spectral characteristics and vector characteristics of the emission showed the role of individual centers in the mechanism for the complex formation of dyes with a polyelectrolyte. It was shown that the optical effects observed in the adsorption and fluorescence spectra and the degrees of polarization of the fluorescence are associated with the formation of joint aggregates of the dye with polymers of various structures. 12 ref. Authors abstract.

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USSR   UDC: 539.4

BUKATIN, O. V., KATIKHIN, V. D., LOZINSKIY, M. G., PASHKOV, P. O., TANANOV, A. I.

"Microstructural Study of Fatigue Destruction of a Multilayered Composition Made by Using High-Velocity Deformation"

Translation: Methods of high-temperature metallography are used to study plastic deformation and fracture under conditions of a bending load on a sandwich panel made up of EI435 + 42Kh2GSNM + EI435. The experiments were done on the IMASh-10-68 machine in the temperature range from 20-800°C. An investigation was made of the effect of longitudinal and transverse bending loads on the rate and nature of fatigue crack propagation. It is shown that destruction of a layer of high-strength steel takes place with insignificant development of the deformation microrelief. The microrelief of the cladding is characterized by the formation of nonuniform and interrupted slip bands.
1/1

USSR

KAZARINOV, YU.M., ~~KARIKOV V.M.~~

"Statistical Characteristics Of Optimum Detector Of Randomly Absent Pulse Signals"

Abstract: The paper considers the optimum algorithm of the detection of a non-coherent pulse sequence with the condition that each pulse of this sequence is present in the mixture which is received of signal and noise with a known a priori probability p, different in the general case from one. The effect is studied of the absence of separate pulse signals on the statistical character-istics of the detector, which includes in itself an envelope detector with amp-litude characteristics, optimized for the binary law of signal fluctuations. The results are shown in graphical form of numerical calculations based on various formulas. 4 fig. 6 ref. Received by editors, 10 May 1971.

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USSR

UDC   621.396.96.01

KATIKOV, V. M.

"On Optimum Separation of an Observation Interval for Signal Detection in a Radio Line With Active Response"

Izv. Leningr. elektrotekhn. in-ta (News of the Leningrad Electrical Engineering Institute), 1971, vyp. 98, pp 33-35 (from RZh-Radiotekhnika, No 12, Dec 71, Abstract No 12G13)

Translation: A theoretical basis is given for the method of rational separation of a limited overall observation interval for radars with an active response into two intervals -- an interval of detection of interrogation signals by the responder, and an interval of detection of response signals. An expression is derived for optimum partition of a sample of signals of predetermined volume between an airborne detector and a responder. Bibliography of one title. N. S.

1/1

USSR   UDC: 621.375.4(088.8)

KATIKOV, V. M., KUSHPIL', V. I., PETROVA, L. F.

"A Device for Amplification of Electric Signals"

USSR Author's Certificate No 265957, filed 8 Dec 68, published 7 Jul 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D76 P)

Translation: This Author's Certificate introduces a device for amplification
of electric signals which vary over a wide range of input values. The
device consists of series-connected amplification and control stages. To
ensure normal operation of the device in the case of small signal-to-noise
ratios (less than unity), the regulating circuit for the control stages is
connected to the following amplification stage of the device through a
synchronous detector with filter.

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KATINAS, G. S.

JPRS 55341
6 March 72

CHANGES IN SKELETAL MUSCLE ASSOCIATED WITH INACTIVITY

Of the many stress factors to which the organism is exposed in space flights, restricted mobility because of the limited space in the craft and weightlessness may affect the condition of the skeletal muscles first. Restricted mobility results in a small number and small scope of motions. Weightlessness affects muscles differently. In this case, the mobility of the body and its different parts is not restricted in theory, but the power load on skeletal muscles is diminishes. To simulate these spaceflight factors, two series of experiments were conducted on mongrel albino male rats.

Methods

In the first series, 27 experimental animals were placed in small cages ("hypokinetic chambers") that did not allow them to move from place to place; as the rats grew they were placed in larger chambers. They were examined after being kept under these conditions for 15, 30, 45, 60, and 90 days. The same number of control rats were kept under the usual conditions.

One of the forelegs was amputated at the boundary between the middle and proximal third, so that the sites of attachment of shoulder muscles remained intact, in the second series of animals (11 rats). These animals could move freely in a spacious cell using three legs. The proximal parts of the amputated extremity were mobile, but the power load on the muscles of the shoulder and shoulder girdle was diminished, so that they were not involved in maintaining the body above the support surface under the new static and dynamic conditions. The studies were conducted three to six months after amputation. Ten intact animals served as controls.

In all cases, determination was made of body weight, body weight following removal of the skin, subcutaneous cellular tissue, and internal

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TITLE--METHOD FOR ANALYSIS OF QUANTITATIVE INDICES IN CYTOLOGY -U-

AUTHOR-(02)-KATINAS, G.S., POLONSKIY, YU.Z.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA 12(3): 399-403, ILLUS. 1970

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CYTOLOGY, INDEX, QUANTITATIVE ANALYSIS, MATHEMATIC METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0287   STEP NO--UR/9053/70/012/003/0399/0403

CIRC ACCESSION NO--AP0134092
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0134092

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DERIVATION OF FORMULAS FOR
DETERMINING THE STANDARD ERROR OF THE ARITHMETICAL MEAN UNDER THE NORMAL
AND POISSON'S DISTRIBUTION OF VARIANTS IS GIVEN. THE ANALYSIS OF
FORMULAS SUGGESTS THAT THE VALUE OF THE ARITHMETICAL MEAN CANNOT BE
IMPROVED BY INCREASING THE NUMBER OF OBSERVATIONS ONLY, WITHIN THE
LIMITS OF EACH ORGANISM. THE VALUE CAN BE IMPROVED, HOWEVER, BY
INCREASING THE NUMBER OF ORGANISMS INVESTIGATED.   FACILITY:
INST. EXP. MED., ACAD. MED. SCI. USSR, LENINGRAD, USSR.

UNCLASSIFIED

USSR

DANILOV, I. V., POPOVA, L. A., and KATINAS, V. A., Institute of Experimental Medicine, Academy of Sciences USSR, Leningrad

"Changes in Cat Behavior and Brain Bioelectrical Activity During Drowsiness After Polarization of Some Brain Structures"

Abstract: In chronic experiments on relatively unrestrained cats, micropolarization of various brain structures (sensorimotor, temporal, and occipital cortex) combined with electrical stimulation of hypnogenic zones (reticular formation or posterior hypothalamus) markedly altered the "ritual" of the animals' behavior (licking and washing movements) that generally precedes natural sleep. Micropolarization in the preparatory period lengthened the period of active washing movements and raised the thresholds of electrostimulation of the hypnogenic zones to induce sleep. But applied while the animals were drowsy, micropolarization accelerated the onset of sleep and made it longer and deeper. The sleep resulting from the combined effect of electrostimulation and polarization of hypnogenic zones was characterized by a change in the correlations of the slow- and fast-wave sleep phases in the various brain structures. Synchronism disappeared and the slow-wave and fast-wave phases became typical of the deep structures and cortical regions, respectively.

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USSR

KATKAUSKAYTE, A. I.

"Random Fields with Independent Increments"

Lit. Mat. Sb. [Lithuanian Mathematics Collection], 1972, Vol 12, No 4, pp
75-85 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract
No 4V151, by the author).

Translation: A random field is studied with independent increments. Some
results relating to random processes with independent increments are general-
ized for random fields. An expansion of the characteristic function of such
fields is produced with certain limitations.

1/1

USSR

KATINAS, V. I., ZHOGZHDA, I. I., ZHUKAUSKAS, A. A.,

"Study of Local Heat Emission of a Plate in a Transient Flow Mode"

Translation: Results are presented from an experimental study of the transient
area of a thermal boundary layer over a plate in a stream of air (Prandtl num-
ber $P_f=0.7$), water ($P_f=3.5$, 6.5) or transformer oil ($P_f=108.5$, 262.3). The
experimental plate was 725 mm long, electrically heated, and was covered with
a network of copper-constantan thermocouples with a spacing of 15 mm. Heat
flux q_w was held constant along the entire surface; the R_x number was varied
between 10^3 and $1.4 \cdot 10^6$; the temperature drop $\Delta t=6-27°$. Development of a
transition was determined by the changing nature of the dependence of the
local heat emission coefficient $a_x=a(x)$.
    The experiments indicated a significant influence of the P number on the
value of the R number, corresponding to the beginning of the transition from
laminar to turbulent flow in the boundary layer (R_{fk}). When P_f was changed
from 0.7 to 262, the value of R_{fk} decreased by approximately 6 times. Based
on a generalization of their experimental data, the authors suggest an empirical
1/2

USSR   UDC: 51

KATKHANOV, M. N., FARKHUTDINOV, A. F.

"Optimizing Technological Production Information"

V sb. Primeneniye vychisl. tekhn. v mashinostr. (Use of Com-
puter Technology in Machine Building--collection of works),
Izhevsk, 1971, pp 110-116 (from RZh-Kibernetika, No 8, Aug
72, Abstract No 8V586)

[No abstract]

1/1

Diagnosis

USSR   UDC 616.981.51-078.73

SHLYAKHOV, E. N., SHVARTS, S. A., GRUZ, Ye. V., and KATKHANOVA, T. M., Moldavian Institute of Hygiene and Epidemiology

"Immuno-Allergic Diagnosis of Anthrax in Man with Anthraxin"

Abstract: Data from 1,152 cases were evaluated in an effort to ascertain the rate of development and duration of skin-allergic reactions, the effectiveness of anthraxin tests in comparison with bacteriological studies, and the problem of whether the indices of anthraxin tests depend on the test periods or the beginning of a specific cure. It was found that with the anthraxin skin test, a diagnosis could be reliably confirmed 2.5 times more effectively than by the bacteriological method. Anthraxin skin tests are the only method of retrospective diagnosis of anthrax. In 93% to 73% of cases, it was possible to establish anthrax many years, or sometimes even decades, after its occurrence.

1/1

1/2   012   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--IMMUNO ALLERGIC DIAGNOSIS OF ANTHRAX IN MAN WITH THE AID OF
  ANTHRAXIN -U-
AUTHOR--(04)-SHLYAKHOV, E.N., SHVARTS, S.A., GRUZ, YE.V., KATKHANOVA, T.M.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 6,
  PP 79-83
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANTHRAX, MAN, SKIN TEST, DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0409   STEP NO--UR/0016/70/000/006/0079/0083

CIRC ACCESSION NO--AP0126162
-------------------------------UNCLASSIFIED--------------------------------

CIRC ACCESSION NO--AP0126162
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MANY YEAR EXPERIENCE IN THE
APPLICATION OF ANTHRAXIN FOR THE DIAGNOSIS OF ANTHRAX IN THE SOVIET
UNION AND ABROAD DEMONSTRATED ITS HIGH SPECIFICITY AND EFFICACY. WITH
THE AID OF ANTHRAXIN SKIN TEST ANTHRAX DIAGNOSIS WAS RELIABLY CONFIRMED
TWO AND A HALF TIMES MORE FREQUENTLY (IN 92PERCENT OF THE CASES) THAN BY
BACTERIOLOGICAL EXAMINATION.   AT PRESENT SKIN TEST WITH ANTHRAXIN IS
THE ONLY METHOD WHICH PERMITS TO ESTABLISH RETROSPECTIVE DIAGNOSIS OF
ANTHRAX MANY YEARS AFTER AN ATTACK OF THIS DISEASE (FROM 93 TO 73PERCENT
OF THE CASES).   EARLY SPECIFIC TREATMENT OF ANTHRAX REDUCED THE INDICES
OF DAIGNOSTIC TESTS WITH ANTHRAXIN A LITTLE.   FACILITY:
MOLDAVSKIY INSTITUT GIGIYENY I EPIDEMIOLOGII.

UNCLASSIFIED

USSR

BORKOVEKIY, B. A., GALUZINSKIY, G. P., KATKOV, A. F., ROMANTSOV, V. P.

"Algorithmic Hybrid Systems"

Translation: Algorithmic hybrid computer systems are systems in which the method of representation of information is hybrid, i.e., both in analog and digital representations, while the method of solution is algorithmic. This monograph studies theoretical and practical problems of the construction of computer systems consisting of a digital automaton or digital computer and analog circuits modeling the numerical integration operator considering boundary conditions, acting as standard subroutines of a special type.

1/1

USSR

UDC   8.74

BORKOVSKIY, B. A., GALUZINSKIY, G. P., KATKOV, A. F., ROMANTSOV, V. P.

"Algorithmic Hybrid Systems"

Kiev, Algoritmicheskiye gibridnyye sistemy (cf. English above), "Nauk. dumka", 1972, 116 pp, ill. 68 k. (from RZh-Matematika, No 1, Jan 73, abstract No 1V783K)

Translation: Algorithmic hybrid computer systems are systems in which the method of representing the information is hybrid i. e., in continuous quantities and codes and the method of solution is algorithmic. This monograph deals with theoretical and practical questions of constructing computer systems made up of a digital automaton, or a digital computer, and analog circuits which model the operator of numerical integration with regard to boundary conditions which play the part of standard sub-programs of a special type.

1/1

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USSR

PUKHOV, G. Ye., Academician of the Academy of Sciences of the UkrSSR,
MAYERGOYZ, I. D., KATKOV, A. E., and GUMENYUK-SYCHEVSKIY, V. I., Institute
of Cybernetics, Academy of Sciences of the UkrSSR, Kiev

"On the Theory of One Class of Devices for Computer Input of Graphic Data"

Abstract: This paper deals with a class of devices for automatic input
of graphic information into a computer. Using conductive sheets of films,
the devices considered operate on the basis of modeling distributions with
a structure which is known and is as simple as possible. The only known
representative of this class is a device which utilizes a square conduc-
tive sheet in which time-alternating electric fields are set up in two
mutually perpendicular directions parallel to the sides of the square.
A pen (pencil) is used for time-sequential measurements of the voltage,
approximately proportional to the x and y coordinates, which are sent
through an analog-code converter to the computer and to a display. A
broader principle is introduced for improving this type of device. In
essence, this generalized principle is as follows. Two potential distri-
butions alternating in time and described by the equations
1/2

USSR

PUKHOV, G. Ye., et al., DAN SSSR, Vol 200, No 1, Sep 71, pp 53-55

$$U = \varphi_1(x,y), \quad U = \varphi_2(x,y)$$

are set up in the conducting plate. The voltages U_1 and U_2 measured by the pen on each cycle isolate equipotential lines to which the contact point of the pen belongs on each cycle. The equations of these lines take the form

$$U_1 = \varphi_1(x,y); \quad U_2 = \varphi_2(x,y).$$

Solving this system, we find the coordinates of the point of contact of the pen as the coordinates of the point of intersection of the equipoten-tials. Two realizations of this generalized approach are presented. Two figures, bibliography of nine titles.

2/2

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USSR

UDC 681.3

BORKOVSKIY, B. A., VOLLERNER, A. N., KATKOV, A. F., AULIK, M. N., ROMANTSOV, V. P., TYUTIN, A. A.

"Modeling Mathematical Machines with Variable Structure"

Modeliruyushchiye Matematicheskiye Mashiny S Peremennoy Strukturoy, [English Version Above], Kiev, Nauk. Dumka Press, 1970, 248 pages, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V602 K, unsigned).

Translation: Results are presented from theoretical studies of models with variable structure, designed for modeling of mathematical operations, systems of finite equations and linear differential equations. Significant attention is given to methods of studying models with variable structure and recommendations are given for their engineering planning. The book is designed for engineers, scientific workers and graduate students interested in electronic modeling.

1/1

UDC: 681.332.6

USSR

PUKHOV, G. Ye., GALUZINSKIY, G. P., KATKOV, A. F., ROMANTSOV, V. P., Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"An Analog with Automatic Data Input for Solving Systems of Differential Equations"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 278239, class 42, filed 12 May 69, published 5 Aug 70, p 137

Translation: This Author's Certificate introduces an analog with automatic data input for solving systems of differential equations. The device contains interconnected integrating capacitors, digital controlled resistors, an amplifier for generating null-potential points, controlled switches, and a digital automaton. As a distinguishing feature of the patent, the required number of digital controlled resistors is reduced by including prediction devices in the analog which are connected through the switches to the outputs of the amplifier for generating null-potential points. The outputs of the prediction devices are connected to the resistors controlled from the digital automaton and to the integrating capacitors, which are connected through two-position switches to the amplifier input and to a zero-potential line.

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1/1

USSR   .   UDC   681.332.4

PUKHOV, G. Ye., GALUZINSKIY, G. P., KATKOV, A. F., BAKUMENKO, V. D., Institute of Cybernetics, Academy of Sciences of the UkrSSR

"Reversible Models for Solving Systems of Algebraic Equations"

Translation: Reversible models for solving systems of algebraic equations are known which contain operational amplifiers whose inputs and outputs are connected through main and auxiliary conductance matrices to the outer terminals of the model. The conventional devices have low-level working voltages. As a distinguishing feature of the proposed device, it contains controllable current sources with a positive amplification factor whose outputs are connected to the outside terminals and to the lines for the main and auxiliary conductance matrices which correspond to these terminals, and the controlling inputs of these current sources are connected through the auxiliary conductance matrix to the inputs of the operational amplifiers. This increases the working voltage level.

1/1

UDO 621.394.542.1

USSR

KATKOV, F.A., MASLOV, V.V.

"Multifrequency Device For Transmission Of Discrete Information"

Mnogochastotnyye ustroystva peredachi diskretnoy informatsii (cf English above), Kiev, "Tekhnika," 1971, 85 pp, ill. 24 k. (from RZh--Elektrosvyaz', No 6, June 1971, Abstract No 6.64.239K)

Translation: Methods are considered for an increase of the efficiency and reliability of transmission of discrete information with the use of multifrequency codes. The effect of phase distortion on the transmission rate is studied and a method is given of increasing the speed of response of time-and-frequency systems. The principal units are described of a multifrequency system and the device constructed. The book, intended for technical engineers and scientific workers who are occupied with development, planning, and application of systems for transmission of discrete information, can be useful to students of higher education institutions for appropriate professions. 37 ill. 14 tab. 15 ref. Annotation.

1/1

UDC 591.1.15

USSR

LYAPIN, YR. N., GUSEV, D. I., KATKOV, A. YE., PODGURSKIY, A. M., and NECHAYEV.
L. I.

"The Dependence of the Accumulation of Radionuclides in the Tissues of Fish
on Temperature and Saline Conditions in the Environment"

Tr. Atlantich. NII ryb. kh-va i okeanogr. (Transactions of the Atlantic
Scientific Research Institute of Fisheries and Oceanography), No 44, 1973,
pp 45-59 (from RZh-Biologicheskaya khimiya, No 11, 10 Jun 73, Abstract No
11 F1418)

Translation: The work presents the findings of an experimental study of the
accumulation of cesium-137, strontium-90, cerium-144, antimony-125, chromium-
51, iron-59, cobalt-60 and ruthenium-106 in the tissues of fish (golden
carp, lake ruff, rainbow trout) at a temperature of 0° and 17° in fresh
water (mineralization up to 100 milligrams per liter) and in artificial sea
water prepared according to the Bruyevich method using salts of super chemical
purity.

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ussr

KATKOV, A. YE., LYAPIN, YE. N., GUSEV, D. I., and NECHAYEV, L. N.

"Kinetics of Polonium-210 in the Tissues of Fish at 0^0 C and in Water of Different Salinity"

Translation: The kinetics of the accumulation and the character of metabolism of polonium-210 were investigated in tissues in simulated winter conditions of habitation in water of different salinity.

1/1

USSR

KATKOV, G. A., and TRUMBACHEV, V. F.

"Instruments With Photoelastic Sensing Elements for Measuring Stresses in Rock Masses and Underground Structures"

Translation: The article describes the designs of gauges with photoelastic sensing elements developed by the authors at the Institute of Mining imeni A. A. Skochinskiy. 1. A rod uniaxial tensometer is intended for measurement of strain of the surface layer or a layer situated at a given depth; base 50 mm; it has been tested on 15x15x15-cm concrete cubes axially compressed on a 30-ton press; variance from calculation 12%. 2. A three-component bore-hole deformometer is used to measure radial deformations of boreholes (three components at angle of 120°). 3. A single-component dynamometer is intended for measurement of loads acting upon underground structures from the direction of the surrounding rocks; an elastic element in the form of a steel ring senses the load along the vertical diameter and is constricted by a plate of photoelastic material along the horizontal diameter. 4. A single-component

1/2

USSR

KATKOV, G. A., and TRUMBACHEV, V. F., Izmereniye napryazh. v massive gorn. porod., Novosibirsk, 1970, pp 148-153

dynanometer is employed to measure the loads on concrete, ferroconcrete and dynanometric props; a sensing element is glued by its ends to the inside of the membrane; the load acts upon the outside of the membrane.. Laboratory tests have confired the efficiency of the gauges.

2/2   - END -

7676
CSO: 1861-W

- 90 -

KATKOV, N. G.

"Measuring the Electrodynamic Parameters of Bicomplex Media by the Method of Two Arbitrary Displacements of an Unknown Unmatched Load"

Translation: It is shown that the electrodynamic parameters of a bicomplex medium $\mu = \mu_1 - j\mu_2$, $\varepsilon = \varepsilon_1 - j\varepsilon_2$ filling a section of a guide system can be analytically determined from the results of measurement of three different input impedances with two arbitrary displacements of an unknown unmatched load located behind the medium. One illustration, bibliography of five titles. Resumé.

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USSR

BEZHANOVA, M. M., KATKOV, V. L., POTTOSIN, I. V.

"Works on Analytic Transforms at the Computer Center, Siberian Affiliate, Academy of Sciences USSR"

Vychisl. Mat. i Vychisl. Tekhn. [Computer Mathematics and Computer Tech- nology -- Collection of Works], No 3, Khar'kov, 1972, pp 18-20 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V646, by the authors).

Translation: This work is a review of systems for digital computer analytic transforms studied at the Computer Center, Siberian Affiliate, Academy of Sciences, USSR. The programming systems studied include DEFPROTSESSOR, ANALITIK, KINO and PASSIV.

1/1

USSR

UDC: 8.74

KATKOV, V. L., RAR, A. F.

"Programming in EPSILON"

Programmirovaniye na Yazyki EPSILON [English version above], Novosibirsk, Nauka Press, 1972, 64 pp (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V533K)

Translation: EPSILON is a language designed for problems involving processing of symbolic information and belongs to the class of machine-oriented languages. This means, in particular, that its creators attempted to consider the peculiarities of the computers for which translators for this language are available as completely as possible. Clearly, it is impossible in practice to consider the peculiarities of all computers simultaneously. Therefore, the description of the language is presented in two stages: at the first level (the standard level), the language is not fully defined--some choice is left in various structures. At the second level--specific representation--the description of the first level is supplemented and refined as applicable to the specific computer on which the EPSILON translator is to run. The basic content of this book consists of a description of the first level of the language. Readers familiar

1/2

USSR

Katov, V. L., Rar, A. F., Programmirovaniye na Yazyki EPSILON, Novosibirsk, Nauka Press, 1972, 64 pp

with ALGOL will master the language much more rapidly, since EPSILON has a great deal in common with ALGOL. The basic differences are as follows: 1. The language is not suited for description or computational problems. Therefore, it contains only very simple arithmetic expressions and all actions must be performed with non-negative integers. 2. The language does not have the modular structure and localization of variables. Even the bodies of procedures are not modular, and their formal parameters have the sense of global variables. 3. A code mechanism is introduced, allowing the coding of all objects to be fixed, and their classification to be organized. 4. Procedures are divided into two classes according to the method of performance--closed and open. In the former case, the actual parameters are represented only by their value, in the latter case--only by name; then the actual parameters may even be sequences of operators.

2/2

USSR.

BAYER, V. N., KATKOV, V. M., STRAKHOVENKO, V. M.

"Higher-Order Effects in the External Field: Generation of
Pairs by Particles"

Abstract: Because the analysis of higher orders of electromag-
netic interaction is of interest in problems of the motion of
high-energy particles through an external magnetic field, this
paper uses such an analysis in the example of the process of
pair generation by a particle of this type. The probability of
the occurrence of this process is computed by an operator method
worked out by the first two of the authors named above and pub-
lished in earlier articles (Zhurnal eksperimental'noy i teoreti-
cheskoy fiziki, 53, 1967, p 1478, ZhETF, 55, 1968, p 1542), and
a formula is obtained for the probability of pair generation by
a photon per unit time. The asymptotic values of the probability
are examined using the method of equivalent photons. Concluding,
the authors note that the results of their work permit solving

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USSR.

BAYER, V. N., et al, <u>Yadernaya Fizika</u>, Vol 14, No 5, 1971, pp
1020-1026

the problem of degradation of the energy of high-energy particles
entering a strong external field. They express their gratitude
to V. S. Fadin for his useful comments.

2/2

1/2   017   UNCLASSIFIED   PROCESSING DATE--23OCT70

TITLE--ELECTRON SPIN EQUATION IN AN EXTERNAL FIELD INVOLVING RADIATIVE
EFFECTS -U-

AUTHOR-(03)-BAIER, V.N., KATKOV, V.M., STRAKHOVENKO, V.M.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETTERS (NETHERLANDS), VOL. 31A, NO. 4, P. 198-9, 23 FEB.
1970

DATE PUBLISHED--23FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON SPIN, ELECTRON POLARIZATION, TRANSITION RADIATION,
ELECTROMAGNETIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0428   STEP NO--NE/0000/70/000/004/0198/0199

CIRC ACCESSION NO--AP0111621
                              UNCLASSIFIED

CIRC ACCESSION NO---AP0111621
ABSTRACT/EXTRACT---(U) GP-0- ABSTRACT.   THE AUTHORS CONSIDER THE KINETICS
OF RADIATIVE POLARIZATION.   FACILITY: INST. NUCLEAR PHYSICS,
NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

SAN'KO, V. S., BORODIN, V. S., and KATKOVA L. V.

UDC 681.332.65

"Device for Comparing Binary Numbers"

Translation: The proposed invention belongs to the devices of digital auto-
mation and computer engineering in which transmission and conversion of se-
quential code groups of binary numbers, in decending bit order, are carried
out. A circuit for determining the larger of two binary numbers made of
magnetic elements with a rectangular hysteresis loop is well-known. This
circuit permits determination of the larger of two numbers coming to its
inputs. The circuit contains six magnetic elements with a rectangular
hysteresis loop. The purpose of the present invention is expansion of the
possibilities of this system. The essence of the invention consists in
series connection of the exclusion circuit and the selective switching
circuit and also creation of an auxiliary output, as a result of which the
proposed circuit performs three operations instead of two. In the circuit
1/2

USSR

SAN'KO, V. S., et al., USSR Author's Certificate No 264776, filed 21 Oct 68, published 17 Jun 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 71, Abstract No 6B217P)

of the proposed device the bit-by-bit number comparison principle is used. The larger number turns out to be the one for which there is a "1" in one of the high-order bits at the same time as there is a "0" in the second number. If in one of the numbers the highest-order bit is "1." then this number is larger than the other. For identical symbols in the first or several high-order bits the larger number turns out to be the one for which on sequential inspection, beginning with the high-order bits (left to right), there turns out to be a "1" in the same bit and a "0" in the other bit. From what has been stated it follows that the process of determining the larger of two numbers with a bit-by-bit comparison can begin only at the time of occurrence of different symbols in one of the high-order bits (when going from left to right). This bit can be called the "decision" bit. The time required to determine the larger number depends on the location of the "decision" bit for a given number of bits of the compared numbers.

2/2

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USSR   UDC: 519.2

KATKOVNIK, V. Ya., KONSON, Ye. D.

"Procedures for Sequential Planning of Experiments"

Translation: Procedures are described for constructing plans close to
D-optimum plans, or procedures asymptotically coincident with them.
    Two cases are considered: the information matrix is degenerate
(the number of experimental points is lower than the number of
unknown parameters of the model), and the information matrix is non-
degenerate (the number of experimental points is not less than the
number of unknown parameters of the model). Sequential planning on the
main components is described for the first case. A scheme of ascent by
parameters is constructed in finding the exact D-optimum plan for a model
on the main components which contains p parameters. Convergence of the
sequence to the D-optimum plan on p main components depends on the system

1/2

USSR

KATKOVNIK, V. Ya., KONSON, Ye. D., Kibernet. i vychisl. tekhn. Resp. mezhved. sb., 1973, vyp. 19, pp 50-55

of functions $\phi_0(x)$, the form of the region U, and the initial position of the points x_j ($j = 1, 2, \ldots, p$).

In the second case a planning sequence is considered where p measurements ($p \geqslant n$) are made to estimate the parameters of the model, and the points of the experiments are arranged so that the information matrix is nondegenerate. There exists the possibility of making q additional measurements. In accordance with the criterion of D-optimality the arrangement of the additional experiments is defined when the determinant of the information matrix is maximized with respect to all q points simultaneously. A proof is presented for convergence as $q \to \infty$ of the procedure described by S. N. Sokolov (RZhMat, 1963, 6V222) to the value of the information matrix determinant which is the maximum possible for the given system of functions $\phi_0(x)$ in the region of planning U.

2/2

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KATKOVSKIY B.S.

UNCLASSIFIED

Description:

(U) During this quarterly reporting period, seven new articles [1-7]* were located from the Institute of Medico-Biological Problems (IMBP). On the basis of these articles, it was possible to identify eight new personalities with the Institute. These personalities, the subjects of the articles, and the dates are given below:

Name	Subject	Date
Gazenko, A.M.	space physiology/psychology	1970(1)
Genin, A.V.	hypokinesis/physiology	1971(2)
Katkovskiy, B.S.	nutrition	1971(3)
Korniyev, V.P.	temperature measurement	1970(4)
Kovalinskiy, F.	space physiology/psychology	1970(1)
Kovalenko, V.M.	temperature measurement	1970(4)
Morozov, D.Kh.	spacecraft radiation shielding	1970(5)
Trichinova, V.A.	spacecraft radiation shielding	1970(5)

(U) One of the new articles was issued jointly from IMBP and the Laboratory of General and Radiation Immunology at the Institute of Epidemiology and Microbiology imeni N. F. Gamaleya [6]. This 1970 article, dealing with the effects of microflora on lymphoid tissue and the adrenal gland, probably

Gorbunova was associated by the article[2] with the Laboratory of Cytochemistry at IMBP. Korniiyev and Kovalson were listed in the article[4] as being associated with the Laboratory for Investigation of Nervous and Humoral Regulation at IMBP.

*Superscript numbers in parentheses refer to items in the Reference List.

1

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USSR

UDC 612.766.1-06:613.24

KAKURIN, L. I., PURAKHIN, YU. N., GEORGYEVSKIY, V. S., KATKOVSKIY, B. S., VYSOTSKIY, V. G., CHEREPAKHIN, M. A., USHAKOV, A. S., LARICHEVA, K. A., PETUKHOV, B. N., IVANOV, P. P., MACHINSKIY, G. V., MIKHAYLOV, V. M., POMETOV, YU. D., and SMIRNOVA, G. I.

"Locomotor Activity of Man Kept on a Reduced Food Ration"

Moscow, Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

Abstract: The combination of drastic limitation in locomotor activity with reduction to a low-calorie diet (down to basal metabolism) was studied in six healthy men 24-35 years of age who were confined to bed for a number of days under conditions of hypokinesia. Pronounced changes were observed in the functions of the cardiovascular, respiratory, nervous, and muscular systems of the body. Tabular data were collected on physiological tremor of closed eyes, maximum physical work fitness, muscle tone dynamics, and the cardiovascular system in the orthostatic position. Asthenia of the nervous system and a slowing down of the biopotentials in the cerebral cortex were observed. Likewise, it was noted that hypokinesia caused disturbances in body coordination and statics. The pulse rate increased and the arterial pulse pressure was

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USSR

KAKURIN, L. I., Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

reduced in persons subjected to the orthostatic test. Three persons reached
a state of near collapse. These changes were attributed to a significant
reduction in the compensating actions of the blood circulation. It was found
that after about 10 days, the observed changes gradually decreased in the test
subjects. This regression was largely of a functional character and was linked
to the "detraining" of the various systems of the body. The authors believe
that the severity of the changes in the body functions is directly proportional
to the degree of hyperkinesia to which the tested persons were subjected. It
is proposed that maintenance of homeostasis requires a certain level of motor
activity even with a low-calorie ration.

2/2

USSR

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

"Single-Pole Transistor Flip-Flop"

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

1/1

1/2   017   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--THIOCYANATOSCANDATES OF SOME QUATERNARY AMMONIUM BASES -U-

AUTHOR-(03)-YEREMIN, YU.G., KATOCHKINA, V.S., KOMISSAROVA, L.N.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(5), 1248-54

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--COMPLEX COMPOUND, THIOCYANATE, SCANDIUM COMPOUND, QUARTERNARY
   AMMONIUM SALT, ELECTRIC CONDUCTIVITY, ELECTROLYTE, THERMAL DECOMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0740   STEP NO--UR/0078/70/015/005/1248/1254

CIRC ACCESSION NO--AP0136179
                          UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136179
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY. OF (R SUB4 N) SUB3 (SC(NCS)
SUB6) (I) (R EQUALS ME, ET, OR BU) IN H SUB2 O, MECOET, ACETOPHENONE,
ETOH, AMYL ALC., ACOET, AND ACOBU IS GIVEN. ELEC. COND. OF I IN MEOH OR
CONCD. AQ. SOLNS. SHOWS THAT THESE SALTS ARE 3:1 ELECTROLYTES AND THEY
DECOMP. ON DILN.   THE ANION HAS NCS COORDINATED VIA N (DELTA(NCS)
EQUALS 490, NU(CS) 825, AND NU(CN) 2050-100 CM PRIME NEGATIVE1). I
DECOMP. GREATER THAN 180DEGREES.

UNCLASSIFIED

1/2   029   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--SYNTHESIS AND PROPERTIES OF ANTIPYRINE AND PYRAMIDON COMPLEXES OF
   SCANDIUM OF THE AMINE TYPE -U-
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COUNTRY OF INFO--USSR

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SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, SCANDIUM COMPOUND, AMINE DERIVATIVE,
   ELECTRICAL CONDUCTIVITY, IR SPECTRUM, ION EXCHANGE RESIN, COMPLEX
   COMPOUND, NITRATE, CHLORATE, IODIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/2033   STEP NO--UR/0078/70/015/004/0972/0977

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CIRC ACCESSION NO--AP0132290

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. (SCL SUB6)X SUB3 (X EQUALS NO SUB3 PRIME NEGATIVE, CLO SUB4 PRIME NEGATIVE, I PRIME NEGATIVE AND L EQUALS ANTIPYRINE) AND (SC(PYR) SUB3)(CLO SUB4) SUB3 .3H SUB2 O (PYR EQUALS PYRAMIDON) WERE PREPD. IN AQ. SOLNS. SOLY. IN H SUB2 OF (SCL SUB6)X SUB3 DECREASED WITH X IN THE ORDER NO SUB3 PRIME NEGATIVE LARGER THAN I PRIME NEGATIVE LARGER THAN CLO SUB4 PRIME NEGATIVE. ELEC. COND., IR SPECTRA, AND ION EXCHANGE CHROMATOG. PROVED THAT ANTIPYRINE AND PYRAMIDON COORDINATE TO SC FORMING A COMPLEX CATION. THIS(PYRAMIDON) COMPLEXES FAILED TO PPT. AS NITRATES OR IODIDES. WITH THE EXCEPTION OF (SCL SUB6)(NO SUB3) SUB3 WHICH M. 224DEGREES, THE COMPLEXES DECOMPD. ON MELTING.   FACILITY: KALININ. POLITEKH. INST., KALININ, USSR.

KATOLA, V. M. and KOVALEVSKAYA, A. N., Blagoveshchenskiy Medical Institute

"Dynamics of an Experimental Breslau Infection in Albino Mice Under the Influence of a Constant Magnetic Field"

Translation: It has been reported that exposure to a variable magnetic field reduces the natural resistance of albino mice to Listeria. To determine the effects of a constant magnetic field on the course of the infectious process, we performed experiments on albino mice weighing 19-22 grams. The animals were divided into two experimental groups and one control group. The experimental mice were kept in a magnetic field produced by a permanent magnet with poles of 2,500 oe. The control animals were kept under the same conditions but outside the magnetic field. Mice of the first experimental series were enterally infected with a culture of Breslau salmonella and were immediately placed in the magnetic field. In the second experimental series, the animals were first kept in the magnetic field for 10 days and then infected. Control mice were infected at the same time. Each day,

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Immunobiologii, Vol 10, Oct 1970, p 142

experimental and control animals were killed, and an Endo medium was inoculated
with 0.1 ml of emulsions of mesenteric lymph nodes, spleen, liver, lungs, kid-
neys, and the content of the gastrointestinal tract. The isolated cultures
were subjected to morphological, fermentative, and serological identification.
A total of 360 mice were used in the investigation.

The first signs of disease appeared on the 4th day after infection in the con-
trol mice and 2 days later in the experimental mice. Parallel with this, the
mesenteric lymph nodes were enlarged. Salmonella were obtained from the mesen-
teric nodes of the control mice 2 days after infection, while cultures prepared
with the lymph nodes of the experimental animals yielded a growth on the 4th
day. During that time, Salmonella were also obtained from other organs of the
control group. The concentration of Salmonella per 100 mg of tissue in the
experimental animals was 10 to 100 times less than in the control animals. On
the 7th day after infection, no differences were observed in the infestation
of the various organs. Blood cultures of the control mice displayed a growth
on the 3rd day, and those of experimental mice on the 5th day after infection.

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