

2/2 031

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105655

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTS. WERE CARRIED OUT WITH A CYCLOTRON AND TARGETS OF PRIME204 PB AND PRIME208 PB PREPD. BY ELECTROLYTIC METHODS, BY SIMULTANEOUS DETN. OF CROSS SECTIONS OF SIGMA SUBF OF THE (ALPHA, F) PROCESS AND OF THE ANGULAR DISPERSION WITHETA) OF THE FISSION FRAGMENTS. THE ENERGY DROP OF ALPHA PARTICLES WAS DETD. BY AL FOILS WITH ACCURACY IS LESS THAN OR EQUAL TO PLUS OR MINUS 0.2 MEV. ANGULAR ANISTROPY W(90DEGREES)-W(90DEGREES) WAS PLOTTED AS A FUNCTION OF THE EXCITATION ENERGY E FOR PRIME208 PO, PRIME212 PO, AND PRIME210 PO, WITH E EQUALS E SUBX NEGATIVE E SUBF, WHERE E SUBX IS THE INITIAL ENERGY OF EXCITATION OF THE EXISTING NUCLEUS AND E SUBF IS THE HEIGHT OF THE FISSION BARRIER. E SUBF FOR PRIME208 PO WAS 19.8 MEV BY DETN. OF THE FUNCTION SIGMA SUBF (E SUBX). VALUES ASSUMED FOR PRIME210 PO AND PRIME212 PO WERE 20.5 AND 18.8 MEV, RESP. (S. G. THOMPSON, 1967). EXPTL. RESULTS AND THEORETICAL ANAL. OF THE ANISOTROPY PROVED THE WEAK DEPENDENCE OF THE ENERGY GAP DELTA SUBF ON THE NUCLEUS DEFORMATION IN THE FISSION PROCESS. FACILITY: INST. YAD. FIZ., ALMA ATA, USSR.

UNCLASSIFIED

OKON, I.M.

Gyros

STABILITY OF AN INDICATING GYROSTABILIZER ON ROTATION OF A THREE-STAGE GYROSCOPE

Article by S. M. Zakharenko, I. M. Okon, Leningrad, Institute of Precision Mechanics and Optics, Leningrad, U.S.S.R., *Prilozheniya k Zhurnalov Prikladnaya Mekhanika*, No 6, 1971, submitted 10 September 1971, pp 53-57.

The condition of stability of an indicating stabilizer in the presence of viscoelasticity in the suspension of a forced rotating three-stage gyroscope is obtained.

One of the effective means of improving the accuracy of indicating gyro-stabilizers is the method of forced rotation of the sensitive elements around the kinetic moment vector (see the bibliography). As the studies indicate, the increase in angular velocity of forced rotation has a positive effect on the efficiency of this method.

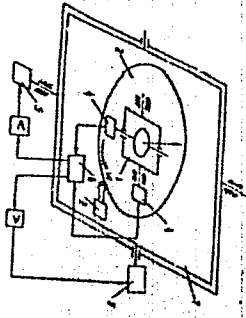


Figure 1.

In this article a study was made of the possibility of increasing the angular velocity of forced rotation of the three-stage gyroscope taking into account viscous friction from the position of stability of the indicating stabilizer.

So: IM SPIS 6001
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(1)

CAZOL

USSR

UDC 577.1:615.7/9

OKONENKO, L. N., and NURMACAMBETOV, YE. K.

"Vitamin A and C Content of Animal Organism in Experimental Fluoride Intoxication"

Tr. Alma-At. med. in-t (Works of Alma-Ata Medical Institute), 1970, 26, pp 340-344 (from RZh-Biologicheskayay Khimiya, No 22, 25 Nov 71, Abstract No 22F2036 by H. SH.)

Translation: Data are presented on the content of vitamin A in the liver, and oxidized and reduced forms of vitamin C in the liver, adrenal glands, lungs and blood of male rats when inoculated daily (6 hours each for 3 and 6 months) with varying concentrations of HF (0.1, 0.5, 1.0 and 3 mg/cu m).

1/1

USSR

UDC 615.916.:669.7917.015.25

OKONISHNIKOVA, I. YE., ROZENBERG, YE. YE., and VORONTSOVA, A. S., Institute of Labor Hygiene and Occupational Diseases, Sverdlovsk

"Prophylactic Effect of Succimer in Chronic Experimental Intoxication With Metallic Mercury Vapors"

Moscow, Gigiyena truda i professionalnyye zabolevaniya, No 3, Mar 71, pp 28-31

Abstract: The newly synthesized mercury antidote succimer dithiol is highly specific, harmless for the body, and convenient to use. It was studied in cases of acute mercuric chloride poisoning of animals. Its effectiveness in prophylaxis and under conditions of prolonged exposure to low concentrations of metallic mercury vapor were studied. White rats (24) were subjected to the daily action of metallic mercury vapor in a concentration of 0.15 ± 0.01 mg/m³ (seven hours per day, five times each week for a period of three months). Half of the group of animals received succimer before and after the exposure in a dose of 100 ng/kg. A third group of 12 rats served as controls. No apparent pathological changes were observed in animals exposed to these relatively low mg concentrations, but intoxication phenomena were observed, which can rapidly progress to more pronounced signs of acute intoxication

1/2

- 71 -

USSR

OKONISHNIKOVA, I. YE., *Gigiyena truda i professionalnyye zabolevaniya*,
No 3, Mar 71, pp 28-31

when the Hg vapor concentration is increased for a short period (2 hours at 0.76 mg/m³ on the 35th day of the experiment). Regular treatment with succimer inhibited development of symptoms of chronic intoxication as well as signs of acute accidental poisoning. The normal blood catalase activity was retained, the content of free SH groups in whole blood, blood serum, kidneys and liver were protected, and there was no sharp weight loss in animals to whom succimer had been given. It is recommended that succimer administration be introduced as a prophylactic measure in mercury industry plants.

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1/2 008

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--COMPLEXING PROPERTIES OF STEREOISOMERS OF DIMERCAPTOSUCCINIC ACID

AUTHOR--(04)--OKONISHNIKOVA, I.YE., YEGOROVA, L.G., NIRENBURG, V.L.,
POSTOVSKIY, I.YA.

COUNTRY OF INFO--USSR

SOURCE--KHIM.-FARM. ZH. 1970, 4(1), 21-4

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ISOMER, RAT, MERCURY COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/1901

STEP NO--UR/0450/70/004/001/0021/0024

CIRC ACCESSION NO--AT0114341

UNCLASSIFIED

272 008

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0114341

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TWO FORMS OF THE TITLE COMPO., DL-DMSA AND MESO-DMSA, WERE TESTED AS TO THEIR RELATIVE EFFICACY IN THE REDN. OF PRIME203 HGCL SUB2 WHICH HAD BEEN GIVEN TO RATS. THE ISOMER TESTED WAS ADMINISTERED IS LESS THAN OR EQUAL TO 15 MIN PRIOR TO THE INTRODUCTION OF THE HG COMPO., 3 DOSES OF THE RESP. ISOMER BEING GIVEN EACH DAY FOR A TOTAL OF 3 DAYS. THE HG WAS GIVEN S. C. AT LEVELS OF 35, 70, AND 242 MG-KG. AN EXPT. WAS ALSO DONE AT AN ORAL DOSAGE LEVEL OF 385 MG-KG. THE PERCENT OF THE HG COMPO. ELIMINATED WAS CHECKED AFTER 1 AND 3 DAYS. IN ALL CASES THE DL FORM WAS MUCH MORE EFFICIENT THAN THE MESO FORM. THE RESULTS ARE GIVEN IN TABULAR FORM. ON ALKALI TITRN. OF THE 2 FORMS, BOTH IN THE PRESENCE AND ABSENCE OF HGCL SUB2, IT WAS FOUND THAT THE 2 TITRN. CURVES WERE ALMOST IDENTICAL. HOWEVER, DIFFERENCES WERE NOTED IN THE CURVES WHEN THE ABSORBANCE WAS DETD. AT DIFFERENT PH LEVELS. FACILITY: SVRDLOVSK. INST. GIG. TR. PROFZABOL, SVRDLOVSK, USSR.

UNCLASSIFIED

USSR

UDC: 577.4

OKONOV, K. S., OVCHINNIKOV, V. D., GOTUA, D. A.

"Modeling a System of Variable Structure in Terms of a Buslenko Aggregate for Optimum Control of an Object Under Conditions of Interference"

Probl. sistemotekhniki--sbornik (Problems of Systems Analysis--collection of works), vyp. 1, n.p., "Sudostroyeniye", 1972, pp 134-143 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V394)

[No abstract]

1/1

USSR

UDC 620.10

MOSKVIN, V. G., Aspirant, and OKOPNYY, Yu. A., Aspirant

"Stability Investigation of a System With Two Degrees of Freedom by a Random Parametric Effect"
(Article presented by Doctor of Technical Sciences V. V. Bolotin, Professor at the Moscow Power Engineering Institute)

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy. Mashinostroyeniye. No 3, 1972, pp 31—35

Abstract: The instability regions of a vibratory system with two degrees of freedom by a random parametric effect are determined, proceeding from the system of stochastic differential equations describing the disturbed motion of the system. The motion is interpreted as a Markovian process in an expanded phase space. The solution is found by the method of moment functions. Instability regions determined analytically from derived formulas are compared with experimental data from electronic computers. A satisfactory coincidence of theoretical and experimental data is shown. Three illustr., 11 formulas, five biblio. refs.

1/1

USSR

UDC 669.187.2:621.365.5

OKOROKOV, G. N., SHALIMOV, A. G., ANTIPOV, V. M., and TULIN, N. A.

Proizvodstvo Stali i Splavov v Vakuunnykh Induktsionnykh Pechakh (The Production of Steel and Alloys in Vacuum Induction Furnaces), Moscow, Metallurgiya, 1972, 191 pp

Translation of Annotation: The construction of various types of contemporary vacuum induction furnaces is described. Physicochemical processes are described which occur during smelting of steels and alloys in vacuum induction furnaces. Methods are proposed for intensification of reduction and refining of metals. A detailed characterization of the quality of metal is given. The book is intended for scientific workers, engineering-technical personnel, and highly qualified workers of metallurgy factories. It can be useful for students in advanced courses of metallurgical institutions of higher education. 98 illustrations, 64 tables, bibliography of 172 titles.

Table of Contents:

	Page
Introduction	3
Chapter 1. Construction of Vacuum Induction Furnaces	
Laboratory Furnaces	6
Semiproduction Furnaces	11
Production Furnaces	12

1/3

USSR

OKOROKOV, G. N., et al., The Production of Steel and Alloys in Vacuum Induction Furnaces, Moscow, Metallurgiya, 1972, 191 pp

Use of Supplementary Electromagnetic Metal Mixing	30
Crucible Lining of Vacuum Induction Furnaces	32
Chapter 2. Oxygen Behavior During Vacuum Induction Melting	
Interaction of Molten With the Furnace Atmosphere and the Fire-proof Lining	37
Decoxidation of Metal	56
Chapter 3. Nitrogen Behavior During Smelting of Steel and Alloys in Vacuum Induction Furnaces	
Influence of Surface Active Elements on the Speed of Nitrogen Discharge	67
Influence of the Specific Metal-Gas Contact Area	74
Influence of Temperature on the Nitrogen Discharge Process	75
Influence of the Intensity of Electromagnetic Mixing on the Speed of Nitrogen Discharge	79
Denitrating of Smelts Containing Strong Nitridizing Elements	81
Chapter 4. Evaporation of Condensed Contaminants and Components of Smelts in the Vacuum	
Influence of Melting Parameters on Evaporation of Contaminants in Vacuum Induction Furnaces	88

2/3

USSR

OKOROKOV, G. N., et al., The Production of Steel and Alloys in Vacuum Induction Furnaces, Moscow, Metallurgiya, 1972, 191 pp

On the Limiting Stage in the Process of Discharging Condensed Contaminants in the Vacuum	97
Relationship of Rates of Evaporation of Contaminants in the Vacuum and the Alloy Base	104
Chapter 5. Decarbonization of Metal in Vacuum Induction Furnaces	108
Chapter 6. Intensification of Refining Processes in Vacuum Induction Furnaces	
Speeding Degasification of Metal Processes	120
Intensification of Deoxidation Processes	132
Use of Slags	135
Combining Vacuum Induction Melting with Other Heating Methods	142
Chapter 7. Smelting Technology in Vacuum Induction Furnaces and Properties of Steels and Alloys	
General Conditions of Melting Technology	146
Characteristics of Smelting and Properties of Steels and Alloys	151
Production of Steels and Alloys by a Duplex Process of Vacuum Induction Furnace and Vacuum Arc Smelting	173
Conclusion	183
Bibliography 3/3	185

USSR

UDC 669.187.2.083

1/1.9
GOTIN, V. N., ZAYTSEV, B. YE., SHCHERBAKOV, A. I., ZHITKOV, N. K., OKOROKOV,
G. N., BOYARASHINOV, V. A., VOYNOVSKIY, YE. B., TOPILIN, V. V., SHALIMOV,
AL. G., CSIPOVA, L. M., CHERNOV, YU. V., ROZANOVA, T. S., and LAKTIONOV, V. S.

"Influence of Wall Thickness of Crystallizer and Consumption of Cooling Water on
Conditions of Formation of Ingot During Vacuum Arc Remelting"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of
Works], No 75, Metallurgiya Press, 1970, pp 178-180

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Translation: In a vacuum arc furnace in a crystallizer (C) 160 mm in diameter
with a current of 2.0-3.7 ka, the influence of wall thickness of C and tempera-
ture of cooling water on conditions of formation of ingot of complexly alloyed
nickel-based alloys is studied. C with wall thicknesses of 30 and 18 mm were
studied, the temperature on the outer surface of the C reaching 75°C in the first
case, 105°C in the second. The temperature of the internal surface of the C was
identical, 140-150°C. Neither a change in C thickness nor a change in water
consumption from 11 to 22 m³/hr influenced the depth of the liquid metal bath,
i.e., both repeated rolling of the C and reduced water consumption were permis-
sible. 2 figures.

USSR

UDC:669.187.5

ZAYTSEV, B. Ye., GOTIN, V. N., SHCHERBAKOV, A. I., SERGYEV, A. B., ZHITKOV, N. K., OKOROKOV, G. N., BOYARSHINOV, V. A., TULIN, N. A., VOYNOVSKIY, Ye. V., TOPILIN, V. V., POZDEYEV, N. P., SHALIMOV, A. G., OSIPOVA, L. A., CHERNOV, Yu. V., and RAZANOV, T. S.

"Specifics of Vacuum Arc Remelting of Nickel-Based Alloys and Stainless Steels With Reverse Arc Polarity"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 181-183

Translation: Results are presented from a study of vacuum arc remelting of nickel alloys in a crystallizer 380-480 mm in diameter with thermocouples calked in length and height. The rate of melting with reverse polarity is 20% higher with identical bath depth of liquid metal. This is a result of more intensive heat transfer from the walls of the crystallizer during melting with reverse polarity. The macrostructure, chemical composition N, O, H, and mechanical properties of the metal produced by melting with forward and reverse polarity are identical. The ingot produced with reverse polarity had no corona. 2 figures; 1 table; 1 biblio. ref.

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- 15 -

USSR

OKOROKOV, V. R.

UDC: 519.2

"Reliability of Production Systems"

Leningrad, Nadezhnost' proizvodstvennykh sistem (cf. English above), 1972, 167 pp, ill. 1 r. 2 k. (from RZh-Kibernetika, No 5, May 73, abstract No 5V361 K [annotation])

Translation: The book considers theoretical principles and engineering methods of calculating the fundamental quantitative characteristics of reliability for various laws of time distribution between failures of production systems and their elements. Basic information is presented on experimental evaluation of reliability in the case of limited volume of statistical data on failures; fundamental data are given on calculating the reliability of production systems with different schemes of connection of their component elements, and also on selecting optimum reliability of production systems.

The book is written for engineering and technical per-

1/2

USSR

OKOROKOV, V. R., Nadezhnost' proizvodstvennykh sistem, 1972,
167 pp, ill.

sonnel engaged in the planning and operation of production
systems, and also for students of all specialties in engineer-
ing and economics departments.

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- 30 -

1/2 -- 020
 UNCLASSIFIED
 TITLE--INTERNAL FRICTION OF ZINC SINGLE CRYSTALS AFTER TWINNING
 DEFORMATION -U- PROCESSING DATE--18SEP70
 AUTHOR--(03)-GINDIN, I.A., OKOVIT, V.S., CHIRKINA, L.A.
 COUNTRY OF INFO--USSR
 SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1), 162-7
 DATE PUBLISHED-----70
 SUBJECT AREAS--MATERIALS, PHYSICS
 TOPIC TAGC--METAL INTERNAL FRICTION, METAL SINGLE CRYSTAL, ZINC, TWINNING
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1988/0699
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 CIRC ACCESSION NO--AP0105675
 UNCLASSIFIED

2/2 020

CIRC ACCESSION NO--AP0105675
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT. THE DISSIPATIVE CAPABILITIES OF THE DEFORMATION TWIN BOUNDARIES OF ZN WERE INVESTIGATED BY THE INTERNAL FRICTION METHOD. THE MEASUREMENTS WERE MADE ON A REVERSE TORSIONAL PENDULUM AT FREQUENCIES OF 1.1 AND 3.0 HZ WITHIN THE AMPLITUDE INDEPENDENT REGION. THE WORKING AMPLITUDE WAS NOT GREATER THAN 1.5 TIME 10 PRIME NEGATIVES. THE SAMPLES WITHOUT TWINS ARE CHARACTERIZED BY A MONOTONIC BEHAVIOR OF DELTA(T) WITHOUT ANOMALIES. FOR SAMPLES DEFORMED BY THINNING, A PEAK OCCURS ON THE DELTA(T) CURVE AT 240DEGREE SK. THE TEMP. BEHAVIOR OF THE ATTENUATION DECREMENT WAS DETD. AS A FUNCTION OF THE IMPURITY CONTENT, THE AMPLITUDE, AND THE FREQUENCY OF VIBRATIONS. THE CHANGE IN THE WIDTH OF THE TWIN INTERLAYERS DURING THE INTERNAL FRICTION MEASUREMENTS WAS ALSO DETD. THE ANOMALIES OF THE OBSD. PEAK ARE COMPARED WITH CERTAIN OTHER INTERNAL FRICTION PEAKS.

UNCLASSIFIED

USSR

UDC 669.5:539.67

GINDIN, I. A., OKOVIT, V. S., and CHIRKINA, L. A., Physicotechnical Institute,
Academy of Sciences Ukr SSR

"Internal Friction of Zinc Single Crystals After Twinning Deformation"
Sverdlovsk, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1,
Jan 70, pp 162-167

Abstract: An experimental investigation was made to determine the temperature and frequency dependence of the internal friction of original zinc single crystals and ones deformed by twinning. The crystals varied in purity. The dissipative possibilities of deformation twin boundaries were investigated by the internal friction method. Single-crystal zinc of 99.998% (Zn-A) and 99.98% (Zn-B) purity was selected to investigate the phenomena of inelasticity related to the presence of deformation twins. Measurements were carried out on a reverse torsional pendulum at frequencies of 1.1 and 3.0 hz in the amplitude-independent region, with an operational amplitude not exceeding 1.5×10^{-5} . It is shown that the temperature dependence $\delta(T)$ of the zinc single-crystal decrement of all samples, without twins, is characterized by a nearly horizontal curve with no anomalies, in the range of temperatures considered.

1/2

USSR

GINDIN, I. A., et al., Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 162-167

In samples deformed by twinning, a peak appeared on the characteristic at 240°C. The initial behavior (of all characteristics of originals and with twin interlayer) coincided. This fact indicates, as does the conducted X-ray analysis, that with twinning deformation the matrix remains undistorted. The effect of impurity content, amplitude, and frequency on the temperature dependence of a damping decrement was investigated. The distinctive properties of the peak, owing to the motion of twin boundaries (variation of temperature and peak height with the oscillation frequency) were identical to the peak characteristic with martensite transformations. This is of great interest, because a similarity is also observed in the kinetics of the martensite needle and twin interlayer growth. Orig. art. has: 3 figures.

2/2

- 52 -

OKRAINETS, P.N.

SO: 5725 59223
26 JULY 1973

HIGH-TEMPERATURE CREEP OF METALS WITH A FACE-CENTERED CUBIC LATTICE

Article by P. N. Okrainets and V. K. Pichenko, (Kiev); Moscow, Izvestiya Akademi Nauk SSSR-Metally, No. 3, 1973, submitted 22 January 1972, pp 151-159

A substantial improvement was recently noted in understanding the role of a number of factors which determine the behavior of metals during creep. Successes in establishing the nature of high-temperature creep of pure metals were especially noted. At high temperatures the role of certain factors, important at low temperatures, is substantially diminished, and the correlation of experimental and calculated data noticeably improved. In this instance a strong relationship of the rate of steady-state creep $\dot{\epsilon}$ to the magnitude of stacking-fault energy γ has been observed for metals with an fcc lattice which can be expressed by the empirical expression:

$$\dot{\epsilon} = A \frac{D^2}{b^2} \exp\left(-\frac{U}{RT}\right) \exp\left(-\frac{E}{RT}\right) \exp\left(-\frac{2\gamma}{kT}\right) \quad (1)$$

where m can have values of 2.3/4, 2.6/3, and 3.5/3, 6/. Despite differences in the magnitude of m , caused primarily by differences in correction of values the modulus μ and correlations to the modulus defect $\mu/2$, an inverse effect of stacking-fault energy γ on the rate of high-temperature creep was evident. Use of equation (1) was limited only by the high-temperature region

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In the field of which the activation energy of creep is shown to be a function of the activation energy of self-diffusion and on, in other words, when the rate of creep is controlled by the process of dislocation climb, it is assumed that this condition is satisfied for all metals at a temperature close to half their melting point $T_m/2$.

Results of the mechanical and structural investigations for a number of metals with a face lattice over a wide temperature interval showed that the established, by mechanical and structural experiments, temperature of transition from low-temperature deformation to high-temperature deformation depends on the stacking fault energy γ . The lower the metal's stacking fault energy, the higher the transition temperature. In the case of aluminum the transition temperature varied from 0.27 T_m for aluminum up to 0.40 T_m for silver. In Fig. 1 reflects this relationship in logarithmic coordinates for silver, copper, nickel, and aluminum which conforms to the empirical relationship of the type

$$T(\text{and } T_m) = \text{const} \cdot \gamma^{-1} \quad (2)$$

Line b in Fig. 1 was obtained from points of the same order for creep under a constant stress σ/σ_0 . In this case the indicator of degree of the relative transition temperature was equal to 5, and the transition temperature for all metals investigated turned out to be higher than in the case of smooth loading. In the first case tests were conducted with smooth loading, containing loads almost to fracture of the samples. At the same conditions, close to "equilibrium", the tests clearly reveal the metal differences with respect to mechanical σ/σ_0 and stress-strain ϵ/ϵ_0 properties. In the case of conventional creep tests with a constant load the substructure formed as a result of rapid load application in the first stage of creep remains a strong "low-temperature" effect and, correspondingly, the transition temperature turns out to be somewhat higher and its relationship to dislocation climb energy is somewhat weaker than in the case of smooth loading.

Since the transition temperature was primarily established by the presence of substructure traces of recovery, it is convenient in comparing the data obtained by us with existing literature data on the change of creep activation energy of metals with a face lattice, inasmuch as this would make it possible to compare the possible mechanism of recovery, its value of data systematized by us on the change of creep activation energy in relation to temperature are presented in Fig. 2/9-12/ for

USSR

UCC 539.54

KOZYRSKIY, O. I., OKRAINETS, P. N., Kiev

"Specifics of Hardening of Nickel During Thermal Cycling"

Kiev, Problemy Prochnosti, No 5, May, 1971, pp 90-93.

Abstract: The influence of thermal hardening on structural changes in large-grain nickel and on its behavior during creep is studied. The possibility is demonstrated of significant improvement of heat resistance properties of nickel by thermal cycling of prepared specimens. The thermal cycling acts primarily on the surface layer of the specimen, changing its strength characteristics. Tests have indicated increases in strength by an order of magnitude by this method.

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- 53 -

Miscellaneous

USSR

UDC 669.15.018.44

KOZYSKIY, G. YA., KONONENKO, V. A., OKRAINETS, P. N., and PETRUNIN, G. A.

"Effect of Preliminary Strain on Heat Resistance of 1Kh18N9T Steel"

Metallofizika. Resp. mezhved. sb. (The Physics of Metals. Republic Interdepartmental Collection of Works), 1970, vyp. 31, pp 143-148 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3F618 by authors)

Translation: A study was made of the effect of preliminary cold strain (CS) on the durability and steady-state creep rate of 1Kh18N9T steel. It was found that there are two regions of preliminary CS displaying a significant (five fold in time to rupture increased in the creep resistance of the steel. At 750° and a stress of 12 kg/mm² on region is observed in the vicinity of 1.5%, the second in the case of 5-10% strain. There is a discussion of peculiarities of the mechanisms of stabilization of the substructure created by low and high degrees of preliminary CS. Three illustrations. Bibliography with 19 titles.

1/1

USSR

UDC 539.4.015.1

KOZYRSKIY, G. YA., OKRAINEYS, P. N., and PISHCHAK, V. K., Institute of Metal Physics, Academy of Sciences USSR

"The Effect of the Loading Rate on the Characteristics of the Creep and Substructure of Nickel"

Kiev, Metallofizika, N1 31, 1970, pp 139-143

Translation: The characteristics of the creep and the substructure of nickel at a temperature of 500°C and a load of 5 kg/mm² were studied. The time of application of the load changed from 1 to 5.10⁵ seconds. It is shown that the characteristics of nickel creep depend greatly on the time and application of the load. The smaller the rate of the load's application, the greater the rate of the specimen's creep. The mechanical characteristics of the creep are compared with x-ray structural studies. A correlation is made between the specific disorientation of the substructure and the resistance of nickel creep. Bibliography: 2 entries, 2 illustrations and 2 tables.

1/1

--35--

USSR

UDC 539.4.015.1

KOZYRSKIY, G. YA., OKRAINETS, P. N., and PISHCHAK, V. K., Institute of Metal Physics, Academy of Sciences USSR

"A Change in the Disorientation of the Substructure of Nickel and Copper Under Conditions of Slow Loading at High Temperatures"

Kiev, Metallofizika, No 31, 1970, pp 148-152

Translation: The effect of plastic deformation and temperature on the substructure's disorientation was studied on high-purity polycrystalline nickel and copper specimens. Mechanical tests were conducted in vacuum at a loading rate $v = 0.05 \text{ kg/min}^2$ per hour at temperatures 0.443, 0.564, and 0.68 from the melting point. It is shown that under appropriate testing conditions the specific disorientation (the relationship of the disorientation angle to the value of deformation) of the substructure of copper is several times greater than that of nickel. It is concluded that such a difference in the values of specific disorientation of the substructure of copper and nickel is connected with the difference in the values of packing defects in these metals. Bibliography: 10 entries, 3 illustrations, 1 table.

1/1

- 65 -

Steels

USSR

UDC 539.4.015.1

KOZYRSKIY, G. YA., KONONENKO, V. A., OKRAINETS, P. N., and PETRUNIN, G. A.,
Institute of Metal Physics, Academy of Sciences-USSR

"The Dependence of Heat Resistance of Kh18N9T Steel on the Value of Preliminary Deformation"

Kiev, Metallofizika, No 31, 1970, pp 143-148

Translation: This work investigated the effect of preliminary cold deformation on the durability and rate of the established creep of 1Kh18N9T age-hardenable steel. It was established that there are two regions of preliminary deformation in which a considerable increase (of 5 times in the time prior to fracture) in the steel's creep resistance is observed. At a temperature of 750°C and a stress of 12 kg/mm² one region is observed near 1.5% and the second, with a deformation of 5-10%. This study discusses the characteristics of the mechanisms of stabilization of the substructure created by small and large degree of preliminary deformation.

Bibliography: 19 entries, 3 illustrations.

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USSR

UDC 669.317:539.371

OKRAIMETS, P. N., and PISHCHAK, V. K., Institute of Physics of Metals, Academy of Sciences Ukrainian SSR

"Disorientation of the Substructure of Metals with Face-Centered Lattice at High Temperature Deformation"

Sverdlovsk, Fizika Metallov and Metallovedeniye, Vol 29, No 6, Jun 70, pp 1204-1209

Abstract: A study is made of the change of disorientation angles of the substructure of coarse-grained polycrystalline specimens of nickel and copper under slow loading at temperatures 0.45, 0.56, and 0.68 from melting temperatures, which for nickel were 500, 700, and 900° C and for copper -334, 492, and 650° C. All specimens were tested in a vacuum of 10⁻⁵ torr at a loading rate of 0.05 kg/mm²·hr. It is shown that at identical values of deformation and smelting stress application, the angles of substructure disorientation for copper and nickel decrease with increasing temperature. In the entire range of deformations studied, temperatures and stresses, the angles of disorientation of the substructure of copper are smaller than that of nickel. The specific disorientation of the substructure decreases with increase in stress. It is shown that the difference in the curves obtained for nickel and copper depend on the difference in energy of the packing defects of these metals.

1/1

USSR

IL'ICHEV, H. H., KORSHKIN, V. V., KORSHUKOV, V. A., MALYUTIN, A. A.,
OKHODACHUKA, T. G., and PASHENIN, P. P., Physics Institute imeni P. N.
Lebedev, Academy of Sciences USSR

"Superbroadening of Spectrum of Ultrashort Pulses in Liquids and Glasses"
Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15,
No 4, 20 Feb 72, pp 191-193

Abstract: Experiments conducted by the authors showed that superbroadening of the spectrum of picosecond pulses at rather high radiation powers can be observed in practically any transparent dielectric. A neodymium self-mode-locked laser and two multiplier stages (length of active elements ~ 300 mm) were used in the experiments, permitting radiation with a total energy equal to 0.1-0.2 j in a train of 10-15 ultrashort pulses. ISP-51 and STE-1 type spectrographs were used to observe the spectral broadening. Liquids with various types of molecules and optical properties were used: carbon disulfide, nitrobenzene, benzene, toluene, isopropyl alcohol, carbon tetrachloride, water, and liquid nitrogen. Superbroadening of the spectrum was found in all these

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USSR

IL'ICHEV, N. N., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 4, 20 Feb 72, pp 191-194

substances except CS₂ and nitrobenzene. The superbroadening effect was also observed in a number of glasses and crystals (in K-8, F-1, L-26, K2SS-7 glasses and in fused quartz and calcium tungstate). It is suggested that the observed superbroadening is due to strong laser phase modulation rather than four-photon interaction.

12

- 65 -

USSR

ROMANKO, A. M., VERBICHASHVILI, K. G., and OEROPITIDZE, Z. A.

"Modification of the Differential Ballistooscillograph of the Extremities"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 68, No 3, Dec 72,
p. 772

Translation of Russian Abstract: Schematic wiring diagrams of the modified ballistooscillograph of extremities are presented. Several curves of the differential ballistooscillogram of the extremities obtained on different individuals (athlete, patient) are given. The modifications introduced into the design of the ballistooscillograph have transformed it into a universal sensing device, with a cranio-caudally directed functions. This device makes it possible to record a ballistocardiogram, as well as to prepare differential ballistooscillograms of extremities without changing the position of a patient. This was impossible to do before with any known type of ballistooscillograph. The modified instrument is applicable for the examination of bed patients, as well as in sports medicine. Curves obtained with the modified ballistooscillograph are of a definite configuration, without any technological aftereffects. The clinical testing of the device indicated its suitability in medical practice. Curves recorded with it showed the rehabilitation signs in the function of differential extremities after surgery.

1/1

USSR

OKSENGENDLER, G. I., Candidate of Medical Sciences

"Antidotes and their Mechanisms of Action in the Organism"

Moscow, Priroda, No 4, 1973, pp 50-59.

Abstract: Antidotes are divided into several classes. Direct-action antidotes include many substances which interact directly with the poisons within the body, causing them to lose their toxic properties, either temporarily or permanently. Since in many cases it is impossible to act upon the poison or even to know what type of poison has been taken until symptoms appear, another important type of antidote is that type which protects biological structures from the action of the toxic substances. These substances have the reverse influence on the receptors of the various structures of the organism from the influence of the poison. Some antidotes, such as the cholinesterase reacti- vators, work by restoring structures of the organism damaged by poisons. It is noted that in order to be effective, antidotes must be given in the proper dose and at the proper time. If given too late, when the toxic effect of the poison is beginning to decrease, the antidote may actually cause a shift in the physiological functions affected by the poison in the direction opposite to the shift caused by the poison, which may be equally harmful.

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USSR

UDC 612.816-087.5

NAGAYEV, I. YA., OKSENGENDLER, G. I., and TZHEVKIN, V. A., First Medical Institute ineni I. P. Pavlov, Leningrad

"A Method of Determining the Threshold of Neuromuscular Excitation in Laboratory Animals"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 5, 1971, pp 48-49

Abstract: The authors describe a device capable of recording threshold values of neuromuscular excitation in response to electrical and chemical stimulation more objectively than current methods based on measurement of chronaxy. The device provides for uniform increase in voltage at the electrodes. It automatically turns off the current, measures the internal resistance of the animal's body, and records the results. Experiments on mice showed that the device was able to detect the minimum doses of hydrazine and tetraethyl lead capable of affecting the threshold of neuromuscular excitability.

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- 73

USSR

OKSENICH, I., Candidate of Geographical Sciences, Ashkhabad

"In Consideration of Medical Climatology"

Moscow, Meditsinskaya Gazeta, 4 Apr 73, p 3

Translation: How can we better utilize the forces of nature for purposes of prophylaxis and treatment? In an attempt to provide an answer to this question climatologists and physicians have attempted to quantitatively evaluate the effects of climate and weather on the human organism. Subsequently, it became possible to establish a relationship between the state of warmth of an organism on the one hand, and the complex consisting of temperature, moisture, and wind on the other, in the form of equivalent-effective and radiation-equivalent-effective temperatures, taking into consideration the effects of direct radiation.

In recent years in medicine, and especially in the case of treatments conducted at health resorts, the complex method of Fedorov-Chubukov for climatological analysis has gained wide acceptance. This new trend treats of the climate structure of weather, since it is through the weather that the external environment exerts its effects on the living organism.

Scientific institutions of the hydrometeorological service of the USSR have developed theoretical principles, according to which quantitative

1/4

USSR

OKSENICK, I., Meditsinskaya Gazeta, 4 Apr 73, p 3

approximations may be made of the indexes of heat balance of the human organism. However, calculations of the heat balance without due consideration to weather conditions, have been found to be inadequate for purposes of medical climatology and climatological treatment. In relation to this, the studies of the Tomsk scientist, V. Rusanov, are of great interest; he has proposed a medical classification of weather in terms of hours of the day (momentary weather). His approach permits an instrumental approach to the treatment of a great quantity of standard meteorological data that has accumulated over the years. This classification reflects the thermal state of man on the basis of the relation that prevails between the weather and his heat balance, as well as the physiological reactions of the organism.

At the present time much more attention is being given to the periodic changes in the sun's activity and changes in current weather, which reflect, after all, meteorological foundations of pathologic changes in the organism. An understanding of these phenomena will be of great practical and scientific importance for medicine. Serious considerations are also given to the utilization for prophylactic and therapeutic purposes different sections of the sun's spectrum, as well as the use of concentrated pulses of sunlight.

Thus, we can appreciate that the central problem in modern medical meteorology and climatology deals with the thermal state of man.

2/4

USSR

OKSENICH, I., Meditsinskaya Gazeta, 4 Apr 73, p 3

specialists are attracted to this field, and there is a shortage of medical climatological laboratories.

It is imperative that these problems be solved without delay on the basis of the experience that has accumulated at the health resort and physical therapy scientific institutions.

4/4

USSR

OKSENICH, I., Meditsinskaya Gazeta, 4 Apr 73, p 3

Of great interest are the studies elucidating the effects of atmospheric oxygen on the organism, which were first conducted by the staff of the Central Scientific Research Institute of Health Resorts and Physical Therapy of the Ministry of Health of the USSR.

Frequently, the significance of meteorological factors is unappreciated, and results in the fact that in various sanatoria, especially in the South, the climate is not artificially regulated in a proper manner during the hot months of the year to alleviate its adverse effects on the patients who are being treated.

The effects of meteorological factors on man are frequently inadequately treated in scientific investigations. Furthermore, descriptive studies of various authors pertaining to health resort resources or the state of man under different climatic conditions, are often limited to data on the temperature of the air and other such meteorological information. No attempts are made at numerical evaluation or analysis of the climatological material. In a scientific report the section dealing with the climate appears, often enough, as an extraneous body, solely on the basis of tradition.

Unfortunately, the public health system as yet does not evidence satisfactory coordination with respect to medical climatology. Few highly qualified

3/4

172 010 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DETERMINATION OF GAS MOISTURE --U-
AUTHOR--(05)-DEMYANOV, YU.A., KOMISSAROV, N.M., BAKULIN, A.I., ~~RUZAVIN, YE.I.~~ OKSKHIGIN
V.S., RUZAVIN, YE.I.
COUNTRY OF INFO--USSR
SOURCE--J.S.S.R. 261,740
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRATSY, TOVARNYE ZNAKI 1970, 74(5)
DATE PUBLISHED--13JAN70
SUBJECT AREAS--METHODS AND EQUIPMENT, MATERIALS
TOPIC TAGS--SPECTROSCOPIC ANALYSIS, MOISTURE MEASUREMENT, CHEMICAL PATENT,
GAS ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/0878 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0132968
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0132968

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GAS MOISTURE IS DETD. IN A WIDE PRESSURE RANGE BY 1ST HEATING THE GAS IN A HERMETIC CELL BY USING SHOCK WAVES AND THEN DETG. THE AMT. OF OH PRIME NEGATIVE, FORMED FROM DISSOCCN. OF H SUB2 O VAPOR, BY ABSORPTION SPECTROSCOPY.

UNCLASSIFIED

USSR

UDC 621.397.658

OKSMAN, A.K.

"Modulators And Demodulators Of Wide-Band Pulse Signals"

Elektrosvyaz', No 6, June 1972, pp 51-56

Abstract: The paper considers a diode modulator with a nonsymmetric input and a demodulator with a nonsymmetric output, intended for transmission of video signals on cables and other communication lines. These circuits are also suitable for transmission of broadcasting signals. It is assumed that the device is intended for a range of frequencies up to 20 MHz. A method is shown by which it is possible during planning of the apparatus to determine the input impedances and the transfer constants of the modulator and demodulator. Detailed procedures are presented for conducting the calculations concerned with the modulator and demodulator. 5 fig. 3 ref. Received by editors, 27 March 1971.

1/1

162

USSR

UDC: 621.396.6.017.7

~~OKSMAN, A. I.~~, MAKSIMOV, Yu. B., CHERNYSHENKO, A. A.

"An Algorithm for Correcting the Arrangement of Radio Electronic Elements in a Device to Optimize Thermal Conditions"

Pribory i sistemy avtomatiki. Resp. mezhved. nauchn.-tekhn. sb. (Devices and Systems for Automation. Republic Interdepartmental Scientific and Technical Collection), 1970, vyp. 14, pp 133-137 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V228)

Translation: The authors discuss construction of a purpose function for finding the optimum arrangement of the elements in electronic radio equipment on an instrument panel based on heat conditions. The gradient method is used to minimize the resultant purpose function (overall estimate of overheating of the circuit.) A computer check of the proposed algorithm showed satisfactory results. The algorithm for correcting the arrangement of the elements in the device may be one of the elements in the solution of the complex problem of constructing electronic modules. Three illustrations, bibliography of five titles. Resumé.

1/1

USSR

UDC 621.315.592

OKSMAN, YA.A., SEMENOV, A.A., SMIRNOV, V.N., SMIRNOV, O.M.

"On The Multiphoton Absorption In Wide-Band Semiconductors"

Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 731-735

Abstract: Specimens of GaAs, ZnSe, and ZnS were irradiated by intense luminous fluxes in the region of transparency. For excitation, ruby and neodymium lasers were used which furnished single pulses with an energy less than one Joule and a duration of 50 and 100 nanosec, respectively. The dependence is found: 1) Of nonequilibrium absorption and the concentration of carriers (GaAs only) on the intensity of laser emission; 2) Of the photodielectric signal (nonequilibrium complex conductivity) on the intensity of laser emission; and 3) Of the photodielectric signal (effectiveness of photoresponse) in single crystal ZnS on the energy of the photons of the illuminator $\hbar\omega$ at constant intensity of the laser emission. The results provide a reason for considering that in wide-band semiconductors with a wide spectrum of impurity states which are exposed to the effect of powerful light pulses with $\hbar\omega_0 < E_g$, impurity one- and two-photon generation of carriers appears in the first place; in the latter case it evidently goes through real compound states. 3 fig. 8 ref. Received by editors, 27 Jan 1971; in final rewording, 13 July 1971.

1/1

- 188 -

Therapy

USSR

UDC 615.849.19.015:616-091

KHROMOV, B. M., KOROTKEVICH, N. S., OKSOVA, Ye. Ye., KRYLOV, K. I.,
PROKOPENKO, V. T., and BOGDANOV, M. P., Leningrad Institute of Postgraduate
Medicine imeni S. M. Kirov, Leningrad Institute of Precision Optics and
Mechanics, and Institute of Psychoneurology imeni V. M. Bekhterev

"Organ Changes Following Experimental Resection With a Laser Beam"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 2, 1973, pp 45-48

Abstract: The liver, spleen, and kidneys of rats were resected with a laser beam (energy density 10 to 18 j/mm²). Immediately after the operation, a linear area of coagulated tissue could be seen on the surface of the organs. Histologic examination from 1 to 33 days after the operation revealed several distinct zones of altered tissues in the 3 operated organs. Under a surface zone of coagulated tissue was a zone of necrosis and then a zone of reactive changes. Still deeper was normal tissue with solitary hemorrhages. A leukocyte reaction became apparent on day 3. Edema and hemorrhages were most pronounced in the spleen. Connective-tissue fibers began to proliferate in the necrotic zone of the spleen on day 3 after the operation and in the liver and kidneys on day 7. The amount of connective tissue gradually increased and formed a scar.

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USSR

UDC 621.385:530.145.6:57

KHROMOV, B.M., KRYLOV, K.I., KOROTKEVICH, N.S., OKSOVA, YE.YE., PROKOPIENKO, V.T.,
BOGDANOV, M.P.

"Test Of The Use Of A Laser During Surgical Operations (Experimental Studies)"

[Nauch.tr.] Leningr. in-ta usoversh. vrachey im. S.M. Kirove ([Scientific Works]
Leningrad Institute For The Improvement Of Doctors imeni S.M. Kirov), 1971, Issue
97, pp 64-67 (from RZh--Radiotekhnika, No 9, Sept 1971, Abstract No 95509)

Translation: The paper describes the use of a laser for dissection of soft tissues and organs of animals with the aid of a laser at the Department [Kafedra] Of Operational Surgery of the Leningrad Institute For The Improvement Of Doctors. The continuous operation CO₂ laser with a power up to 20 watts had a 0.5 mm wide beam. The depth of the cut amounted to 18 mm (liver of a dog). Cutting off parts of the organs took place anemically; the surface of the cut was dry and of a chestnut brown color with longitudinal stripes proceeding into the interior. Coagulated tissue is disposed on the line of the cut and in the adjoining tissues necrotic and necrobiotic changes develop with subsequent replacement of their connecting tissues and formation of a scar. 1 ill. 1 tab. V.I.

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USSR

GUSEV, V. A.: ~~OKSIIK, A. A.~~: FOGEL', Ya. M. (Physicotechnical Institute, Ukrainian Academy of Sciences)

"Dissociation of Diatomic Molecules Into Ions by Impact of Fast Ions and Atoms"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; April 1972, pp 1284-90

Abstract: The mass-spectrometer technique is employed for measuring the relative effective cross sections for formation of slow atomic negative ions produced in collisions between fast ions and atoms of hydrogen, helium, neon, argon, and krypton (3-50 keV energy) and O_2 , CO and NO molecules. The difference observed between the functions $\sigma_{\beta}^{-+}(\nu)$ and $\sigma_{\beta}^{-0}(\nu)$ is ascribed to the contribution to the measured cross section of processes involving dissociative electron capture by the target molecules. Some considerations regarding the mechanism of diatomic molecule dissociation into positive and negative ions are presented.

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USSR

GUSEV, V. A., OKSYUK, A. A., FOGEL', Ya. M., PILIPENKO, D. V., Physico-technical Institute, Academy of Sciences, Ukrainian SSR

"The Formation of Slow Atomic Negative Oxygen Ions in Collisions Between Fast Protons or Hydrogen Atoms and O₂ Molecules"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 12, 1970, pp. 1909-1916

Abstract: A method is developed for the investigation of processes involving the formation of negative ions in collisions between fast ions or atoms with gas molecules. The effective cross sections of the formation of O⁻ ions in collisions between 3-50 kev hydrogen ions or atoms and oxygen molecules are measured in terms of relative units. 4 figures, 16 bibliographic entries.

1/1

USSR

UDC 621.383.89

TITOV, YU. A., SHELEPETS, V. I., OKSYUTICH, N. B.

"Codoscope Type Cathode Ray Tube"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 16,
8 May 70, p 57, Patent No 270102, Filed 20 Dec 67

Translation: This Author's Certificate introduces a codoscope type cathode ray tube containing recording and reproducing projectors, address plates, a control assembly, a potential carrier assembly and a luminescent output screen. The tube is distinguished by the fact that in order to insure high speed of recording the parallel binary code and to decrease the amplitude of the control signals, the control assembly comprises a system of parallel deflecting plates separated by dielectric and arranged perpendicular to the plane of the beam in direct proximity to the potential carrier.

1/1

- 320 -

USSR

UDC 621.372.855.1:538.575

LAZIYEV, E.M., ~~OKSYZYAN, G.G.~~, SEROV, V.L.

"Parametrical Radiation Of Relativistic Electron Bunches In A Waveguide Filled With Schistose Dielectric"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1335-1336

Abstract: Experimental data are presented concerning excitation of an E_{01} wave in a circular waveguide, based on the fundamental harmonic of the frequency of beam grouping of a linear accelerator $f = 2797.2$ MHz. The energy of the accelerated electrons was equal to 50 Mev. With the aid of a magnetic analyser and a collimator of $\phi 5$ mm an electron beam was cut out with the width of the spectrum $\Delta E/E_0 = \pm 0.2$ percent which corresponded to $\sim 3-5^\circ$ of the phase length of the bunch. The number of electrons in the bunch amounted to $\sim 2 \cdot 10^6$ particles and the angular divergence to $\sim 3 \cdot 10^{-2}$ rad. The beam of electrons passed through a circular waveguide 9.6 cm in diameter filled with alternating layers of air and Teflon ($\epsilon = 2.05$). The Teflon disks had a central aperture $\phi 12$ mm for passage of the beam. The power of the excited E_{01} wave was measured before and after. The results of the experiments are presented in figures. The authors thank K.A. Barsukov, B.M. Bolotovskiy, and E.D. Gazazyan for discussions. 2 fig. 4 ref. Received by editors, 13 September 1971.

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1/2 : 025

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--TRIALS OF METHYLNITROPHOS FOR TREATMENT OF WATER RESERVOIRS AGAINST
LARVAE OF CULEX PIPIENS IN MOSCOW -U-

AUTHOR--(02)-OKTYABRSKAYA, T.A., SHERINA, L.N.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYE BOLEZNI, 1970, VOL 39,
NR 1, PP 59-62

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INSECT CONTROL, MOSQUITO, ORGANIC PHOSPHOROUS INSECTICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1986/1950

STEP NO--UR/0358/70/039/001/0059/0062

CIRC ACCESSION NO--AP0103676

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103676

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF TESTS OF 30PERCENT CONCENTRATED EMULSION OF METHYLNITROPHOS (SUMITION) AGAINST LARVAE OF CULEX PIPIENS MOSQUITOES IN WATER RESERVOIRS OF TWO TYPES: DITCHES AND MARSHES: FILTRATION FIELDS AND BIOLOGICAL PONDS OF LOCAL CANALIZATION, ARE PRESENTED. THE CONCENTRATE WAS READILY MIXED WITH WATER AND FORMED A STABLE EMULSION. METHYL NITROPHOS PRODUCES AN ACUTE TOXIC EFFECT (MAJORITY OF LARVAE DIE WITHIN 2 TO 3 HOURS). THE EFFECTIVE DOSE OF THE DRUG DEPENDS ON THE EXTENT OF GROWTH AND DEPTH OF THE WATER RESERVOIR AS WELL AS ON THE INSTAR OF LARVAE. IN SHALLOW WATER RESERVOIRS A DOSE OF 300 TO 600 G-HECTAR OF 30PERCENT DRUG (DEPENDING ON THE GROWTH) IS RECOMMENDED FOR LARVAE OF CULEX PIPIENS OF I-II INSTAR. FOR DEEP WATER RESERVOIRS THE DOSE SHOULD BE 600 TO 1500 G-HECTAR. FOR LARVAE OF III TO IV INSTARS THE DOSES SHOULD BE 600 TO 1200 AND 1500 TO 3000 G-HECTAR, RESPECTIVELY. BEFORE TREATMENT IT IS RECOMMENDED TO MOW DOWN THE VEGETATION ON THE BANK OR TO TREAT THE WATER RESERVOIR WITH HIGHER EXPEDITURE OF THE WORKING FLUID WITHOUT INCREASING THE DOSE OF THE DRUG. AS A RESULT OF USING SMALL DOSES (300 G-HECTAR) THE USEFUL BIOFAUNA OF WATER RESERVOIRS DOES NOT DIE. INCREASING THE DOSE TO 1500 G-HECTAR CAUSES ITS PARTIAL DEATH, AND FURTHER INCREASE (ABOVE 3000 G-HECTAR) RESULTS IN A COMPLETE STERILIZATION OF THE WATER RESERVOIR. THEREFORE IT IS RECOMMENDED TO CARRY OUT TREATMENTS AGAINST LARVAE OF I TO II INSTARS. REPEATED HABITATION OF WATER RESERVOIRS OCCURS IN 6 TO 7 DAYS IRRESPECTIVE OF THE DOSE OF THE DRUG USED.

UNCLASSIFIED

USSR

UDC 546.185+547.245

KIREYEV, V. V., KOLESNIKOV, G. S. (deceased), RAYGORODSKIY, I. M., and
OKULEVICH, P. O., Moscow Institute of Chemical Technology imeni D. I.
Mendeleev

"Reaction of Alkoxyphosphazenes With Chloromethylorganosilanes"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 4, Apr 71, pp 792-797

Abstract: The reaction course was measured by the amount of the chloride evolved butyl. The following starting materials were used: hexabutoxycyclophosphazotriene, triphenoxytributoxycyclophosphazotriene, chloromethyltributoxysilane, chloromethylmethyldibutoxysilane, chloromethylmethylphenylsilane, and chloromethyltributylsilane. The products were shown to contain the P-O-CH₂Si< group. It was proposed that the reaction takes place via ionization of the P-O-R bond in alkoxyphosphazene followed by a nucleophilic attack of the phosphazonium ion on chloromethyltriorganosilane.

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USSR

UDC 621.391

OKULICH-KAZARINAS, Ya. A., LASHAS, A. V., LEVITAN, E. G.

"A Device for Memorizing the Images of Symbols"

Vil'nyus, Nauchnyye trudy vysshikh uchebnykh zavedeniy Lit. SSR. Avtomatika i vychislitel'naya tekhnika (Scientific Works of Institutions of Higher Education of the Lithuanian SSR. Automation and Computer Technology), No 2, 1970, "Mintis", pp 99-103

Abstract: The paper describes a memory device developed at Kaunas Polytechnical Institute and designed for visual observation of symbols read out by the "RUTA-701" machine. The electrical data of the elements and modules of the memory device, as well as the requirements for control signals give an idea of the feasibility of using it in other instances of adjustment or monitoring. Three illustrations, bibliography of two titles.

1/1

- 105 -

USSR

UDC 632.254:634.723

OKULOV, A. I., Mariysk Agricultural Experiment Station

"Simazine and the Yield of Black Currants"

Moscow, Zashchita Rasteniy, No 5, May 73, p 22

Abstract: Tests were carried out in Kalinin Oblast' to determine the effects of the herbicide simazine on the yield of black currants. Simazine was applied in the amounts of 4, 5, 7, and 10 kg/ha. The latter two amounts were applied against the background of fertilization with $N_{60}P_{60}K_{60}$. Under the effect of simazine, a reduction in the amount of weeds reaching 96.7% was obtained. From the standpoint of the increase in the yield of berries during three years following the application of the herbicides, the best results were obtained with 4 kg/ha simazine and 7 kg/ha simazine + NPK. Use of 10 kg/ha simazine without NPK reduced the yield. While the increases in the yield of berries were relatively small, eradication of the weeds with the herbicide saved labor that would be required for manual weeding. Simazine should be applied in the early spring before the appearance of the principal amount of weeds.

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- 23 -

USSR

OKULOV, M. A., Editor

"A Reliable Barrier Against Infection"

Baku, Bakinskiy Rabochiy, 22 Aug 70, p 4

Translation: Svetlana Vinokurova, Correspondent for the Novosti Press Agency, addressed the famous Soviet scientist, Professor Aleksey Sumarokov, Director of the Central Institute of Epidemiology, USSR Ministry of Health, with the request to answer a few questions dealing with reports of cases of cholera in Astrakhanskaya Oblast of the Soviet Union.

The rumor has spread abroad, that the local outbreak of cholera reported by the USSR Ministry of Health has taken on large dimensions. Various parts of the USSR and considerable territories are named. What can you say about such rumors, and what is the true situation?

"Cases of cholera were indeed recorded in Astrakhanskaya Oblast. El Tor vibrio, the pathogen, was isolated; it is well known to epidemiologists of many nations where outbreaks of cholera have been observed in recent times. How is it
1/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

different? Clinically, the disease it induces, according to the data of most investigators, is essentially milder than cholera caused by infection with the classical vibrio. This is a metamorphosis which can be readily explained: the vibrio has altered and continues to alter its 'appearance' under the influence of prophylactic inoculations, the extensive use of antibiotics, sulfanilamides, and other chemicals.

Even recently almost all infectious diseases threatened peoples' lives. Now the situation is quite different. Modern medicine is armed with all the necessary means for the effective control, and ultimately for the conquest, of infectious diseases. This is indicated by the successful control of cholera in Astrakhan-skaya Oblast."

Can you briefly describe the measures adopted to prevent the spread of infections? Are there any difficulties involved in this respect?

"We rely first of all on the advances and enormous experience accumulated by Soviet preventive medicine. The function of the Soviet health service has always been based on principles of prophylaxis. But the control of infectious

2/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

diseases has been a Soviet national problem from almost the very first days of existence of the Soviet nation. In an unbelievable short time, many dangerous infections were eradicated. This was achieved at the price of exceptional efforts and expenditures, but this is precisely when the sanitary epidemiological service was founded in the USSR. At present, this service helps us deal with the spread of dysentery, typhoid fever, etc. In principle, the cholera prophylaxis does not differ from the set of measures instituted in the control of the former intestinal infections, and at any rate the mechanism, the means of transmission of pathogens, is the same.

In the last few years, special decrees have been adopted in the Soviet Union dealing with infectious pathology, and in particular with intestinal infections. Since 1 July 1970, the 'Fundamental Legislation of the Soviet Union and Union Republics on Public Health' have become law. Through this law the government has compelled all organizations of the economy, ministries and agencies to develop and institute measures to protect water reservoirs and soil from pollution. Prevention of water-borne outbreaks of intestinal infections is one of the most effective prophylactic measures.

3/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

We have all the means to treat cholera. As demonstrated by the Astrakhan' case, prompt intervention by doctors assures almost 100 percent success: complete recovery of patients. There are also prophylactic means, such as anticholera vaccine.

The territory protected from spread of infection is always much broader than a focus of infection. It is logical therefore that not only did we prohibit travel from Astrakhan', but also initiated in some seaports (and often also in resort towns) a series of restrictions to reduce the scope of migration, and of chaotic movement of the population in summer vacation travel.

The latent incubation period of cholera lasts up to five days. During this time, it may be difficult to detect the sickness, or to make an immediate diagnosis. Therefore, all suspected cases (in this instance all individuals with intestinal disorders) were put under medical observation for a few days, until there was conclusive evidence that the individual was healthy. Observation is needed not only to institute treatment promptly if needed, but also to isolate a potential spreader of infection.

4/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

The greatest difficulty encountered by the sanitary epidemiological service is the 'healthy man's psychology,' no matter how paradoxical this may appear. So long as we are well, we think we are safe. Quite often, in spite of all warnings, people forget to be careful: so what if fruit or vegetables are not properly washed, or milk is not boiled or if water is consumed from an untested source during a hike -- but all these are the best means of spreading infection.

It is summer now, the season for vacations, and many resort regions, particularly the Southern coast of the Crimea and the Caucasus, are overloaded with vacationers. The quality of water and food is strictly monitored, and all laws of hygiene are strictly observed in sanatoriums, rest homes, and boarding houses. But those who are spending their vacation on their own, the 'wild' ones, as they say, would be difficult to cover by such measures. Therefore it is desirable to temporarily restrict the flow of unorganized vacationers to Crimea and the Caucasus. The communications system and transport organizations are rendering much aid to public health workers in this respect."

Has it been possible to determine the source of infection?

5/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

"We do not live in a sealed world. It suffices to mention that extensive trade, cultural and athletic relations exist between the USSR and other nations of the world, but unfortunately the epidemiological situation is quite different in many of them, as compared to the Soviet Union. Even in developed capitalistic nations such as the USA, England, FRG and others, intestinal infectious diseases are still a major social problem. For example, in President John Kennedy's message to Congress in February, 1962, it was stated that over two million people are stricken by intestinal infections in the USA each year.

The thorough sanitary protection of borders, and the sanitary-epidemiological service, which is well organized throughout the Soviet Union, help break the route of transmission and spread of infections. But if we consider that the pathogens of many intestinal diseases, including the cholera vibrio, live in the human organism without revealing themselves for several days, and if we consider in addition that modern aviation makes it possible to travel thousands of kilometers in a few hours, it will become clear what a complex problem our sanitary epidemiological service has to solve. The cholera outbreak is an example.

6/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

It would be wrong to believe that because of the advances in medicine and public health, the danger of spread of cholera beyond its traditional foci is negligible. Of course, the times are gone when cholera made devastating attacks on entire continents, wiping out millions of lives in many nations of the world, as it easily crossed frontiers and borders. The last, sixth, pandemic occurred in the late 1890's. After this, starting in 1926, the disease seemed to retreat to the regions of its origin, to the Ganges delta. At any rate, for the next 40 years only isolated sporadic outbreaks were recorded. Until 1961 it appeared that we were through with extensive spreading of cholera.

However, in 1961, a new major outbreak of cholera, caused, incidentally, by the El Tor vibrio, was observed in Southeast Asia and the West Pacific. This vibrio was first isolated in 1905 in the El Tor quarantine camp in Egypt, from the cadavers of pilgrims destined for Mexico and suffering from the classical form of cholera.

Originally, the cholera induced by the El Tor vibrio was observed as an endemic infection in the Celebes. Apparently it began to spread from these foci in 1961.

7/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

In 1965, cholera struck in 23 nations, including some where it had not been observed for many decades. Cholera spread to Iran, where about 3,000 cases were recorded, and to the Asian USSR, where there were over 500 cases. In all, according to official statistics, there were 51,334 cases recorded in the world in 1965,

According to the data of foreign investigators who made an epidemiological study of El Tor outbreaks, the carrier state may persist for over 1,000 days, and even after successful treatment, the former patient can excrete the vibrio. This is why such vast zones of the Soviet Union are involved in the prophylactic measures."

How do you, as an epidemiologist, and your colleagues assess the course of the control measures. Do you believe that it will be possible to suppress the cholera outbreak in the very near future?

"Experience in the control of infectious diseases in the USSR shows that success is usually related to the scope of measures and promptness in instituting the complex of general sanitary and other measures barring the route of the infection.
8/9

USSR

OKULOV, M. A., Bakinskiy Rabochiy, 22 Aug 70, p 4

Inasmuch as all measures to prevent the spread of cholera beyond Astrakhan' were initiated very promptly and adequately, it must be assumed that we can cope with this outbreak very soon. As of today, eradication of cholera cases in Astrakhan' is proceeding successfully.

9/9

1/2 027 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--QUANTUM WAVES IN A DEGENERATE ELECTRON FLUID OF METALS -U-
AUTHOR--(03)-ZYRYANDV, P.S., OKULOV, V.I., SILIN, V.P.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 4, PP 1295-1309
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRON OSCILLATION, ELECTRON GAS, QUANTUM OSCILLATION,
ELECTRON MOTION, ELECTRON SPECTRUM, SPIN WAVE, CRYSTAL LATTICE
VIBRATION, METAL ELECTRICAL CONDUCTIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/1570 STEP NO--UR/0056/70/058/004/1295/1309
CIRC ACCESSION NO--AP0106316
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--A20106316

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EQUATION SET IS OBTAINED WHICH DESCRIBES THE OSCILLATIONS OF AN ISOTROPIC ELECTRON FLUID IN A QUANTIZED MAGNETIC FIELD. FERMI FLUID INTERACTION IS ASSUMED TO BE OF THE CONTACT TYPE AND IS DESCRIBED BY TWO CONSTANTS. BRANCHES OF THE PROPER FREQUENCY SPECTRUM WHOSE EXISTENCE IS COMPLETELY DUE TO QUANTIZATION OF THE ELECTRON ORBITAL MOTION (QUANTUM WAVES) ARE CONSIDERED IN THE CASE OF PROPAGATION ALONG THE DIRECTION OF THE MAGNETIC FIELD. IN CONTRAST TO SUCH WAVES IN AN ELECTRON GAS (PRIME4-8), QUANTUM WAVES IN A LIQUID, AS A RULE, ARE RELATED TO OSCILLATIONS OF THE SPIN DENSITY. UNDER CERTAIN CONDITIONS THE EXISTENCE OF QUANTIZED SPIN WAVES IS POSSIBLE. IT IS SHOWN THAT THE LONGITUDINAL QUANTUM WAVES STRONGLY INTERACT WITH OSCILLATIONS OF THE ION LATTICE OF THE METAL. LIMITS OF APPLICABILITY OF THE RESULTS ARE INDICATED WHICH ARE DUE TO THE EFFECT OF COLLISIONS AND OF TEMPERATURE SMEARING OUT OF THE FERMI DISTRIBUTION.
FACILITY: INST. FIZIKI METALLOV, AN SSSR, FIZICHESKIY INST. IM. P. N. LEVEDEVA, AN SSSR.

UNCLASSIFIED

USSR

UDC 614.449.57:615.285.7

LINEVA, V. A., PRSHIVORA, M., LEVIYEV, P. YA., OKULOV, V. P.,
GADZHIZALOV, D., SANINA, M. M., SAGATELOVA, I. S., and OBOLENSKAYA,
L. F.

"Trails of the Czechoslovak Insecticide ES-50 Metathion in the USSR.
I. ES-50 Metathion Used to Control the Housefly"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No 2,
1970, pp 211-220

Abstract: ES-50 metathion, an organophosphorus compound derived from phenitrothion O, O-dimethyl (O-3-methyl-4-nitrophenyl) thiophosphate, was developed and tested in Czechoslovakia where it demonstrated a broad spectrum of action against flies, cockroaches, ticks, and crop pests. It has low toxicity for warm-blooded animals and no cumulative effect. Laboratory and field tests of the insecticide in five different climatic regions of the Soviet Union showed that it is highly effective in a dose of 2 g/m² of treated surface for 30-60 days. The temperature and humidity are the most important factors in the action of metathion. The higher the temperature and
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USSR

LINEVA, V. A., et al., Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No 2, 1970, pp 211-220

humidity, the more toxic its effect. Increasing the humidity of the room or moistening the treated surfaces increases metathion's potency, especially on glass or wood. Among the negative features: (i) it has an unpleasant odor; (ii) it leaves marks on the treated surfaces; (iii) flies seem to develop resistance to it fairly quickly.

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- 15 -

Acc. Nr: AP0049049

Ref. Code: UR1357

PRIMARY SOURCE: Vestnik Oftal'mologii, 1970, Nr / ,
pp 53-58

TOMOGRAPHY IN DIAGNOSING ORBITAL NEWGROWTHS

N. T. Adamov, G. I. Okulova, E. I. Gasparyan

Summary

Experience gathered by the authors gives ground to assert that laminar investigation of the orbit alongside with a more precise definition of topical data facilitates establishing the character of the neoplasm growth, of its morphological picture and of external outlines and shape. It also permits judgement to be formed as to the extent of the pathological process and the state of anatomic formations surrounding the orbit. The results of these investigations prompted the authors to conclude that tomographic examination of the orbit holds great promise in matters of diagnostics and may be recommended for wide use in medical practice.

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REEL/FRAME
19800835

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Construction

USSR

OKULOVA, M. N., Balyura, M. V.

"Lateral Thrust and Its Significance in the Settling of Foundations"

Tr. Novocherkas. Politekhn. In-ta [Works of Novocherkask Polytechnical Institute], Vol 238, 1971, pp 88-92, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V808 by Yu. M. Lychko).

Translation: Results are presented from experiments on measurement of horizontal displacements developing upon loading of soils with a vertical load. The experiments were performed in a metal box measuring 1.4 x 1.4 x 1.4 m using sands and clay soils of broken structure. The load on the soil was applied through a rigid concrete stamp measuring 40 x 40 cm in stages of 0.25-0.50 kg/cm² to a relative impression of 0.5 to 1. Horizontal displacements were measured by a depth using five marks of special design with an accuracy of 0.01 mm. The curves of horizontal displacements produced in testing the soils are analyzed. It is noted that horizontal displacements in loaded bases depend on the type and density of the soil and are significant in general volumetric deformation.

1/1

Ecology

USSR

UDC 591.553.5:599.323.4

OKULOVA, N. M., Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences USSR, Moscow

"Information Criterion of the Optimum in Ecological Studies"

Moscow, Zhurnal Obshchey Biologii, No 1, 1972, pp 105-109

Abstract: Energy is replacing population size as a criterion of the optimum of ecological systems. A population of optimum density and structure is defined as one that possesses the highest (under the existing conditions) productivity and does not disrupt the biocenotic relations prevailing (i.e., does not reduce the productivity of the biocenosis as a whole). The number of animals is apparently controlled not only by change in the quantity of energy but also by change in the organization of the population, i.e., in the amount of information in the biological system. If the energy balance is positive (the biomass grows), the amount of negative entropy (information) increases, but if the biomass diminishes, information is lost while the entropy of the system increases. Borrowing the concept of relative entropy from information theory, the author traces the connection between change in numbers and relative entropy of a red vole (*Clethrionomys rutilus* Pallas) population in Kemerovo Oblast (Western Siberia). The two parameters are closely related. Once the optimum is reached a further increase in abundance results in a decline in relative entropy.

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USSR

UDC 599.323.4:591.526(571.1)

OKULOVA, N. M., ARISTOVA, V. A., and KOSHKINA, T. V., Institute of Polio-
myelitis and Virus Encephalitides, Academy of Medical Sciences USSR

"The Effect of Population Density on the Size of Individual Home Ranges of
Small Rodents in the West Siberian Taiga"

Moscow, Zoologicheskii Zhurnal, Vol 50, No 6, Jun 71, pp 908-915

Abstract: Data were collected by tagging small rodents over areas of 2.5-4.3 hectares in various types of terrain and recapturing them six to eight times over a period of ten days. An average individual sector was computed for all species inhabiting that zone. Evaluation of the effect of density includes taking into consideration the combined effect of one particular species and of all the other species of small rodents. The effect of the dominant species on the subdominant is much stronger than vice versa. Features of feed availability in different locations are closely related to the population density and do not disrupt the established dependence. The average size of an individual home range of *Clethrionomys rutilus*, the most numerous and dominant species, is determined by the population density to the extent of 86.7%, and that of *Clethrionomys rufocanus* and *Microtus oeconomus*, subdominant species, 1/2

USSR

OKULOVA, N. M., et al., Zoologicheskii Zhurnal, Vol 50, No 6, Jun 71,
pp 908-915

to 52-55%. The dependence of the range size (S) on the density of the
animals (d) is expressed by the hyperbolic function $s=0.11+(3.55/d)$.

2/2

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DISLOCATION DENSITY DEPENDENCE OF THE COEFFICIENT OF ANOMALOUS
ADSORPTION X RAYS IN SINGLE CRYSTALS -U-
AUTHOR--OKUN, E.O.
COUNTRY OF INFO--USSR
SOURCE--VESTSI AKAD. NAVUK BELARUS. SSR, SER. FIZ. MAT. NAVUK 1970, (1),
107-11
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--MATHEMATIC MODEL, CRYSTAL DISLOCATION, X RAY ABSORPTION,
ABSORPTION COEFFICIENT, CRYSTAL LATTICE STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0375 STEP NO--UK/0428/70/000/001/0107/0111
CIRC ACCESSION NO--AP0111568
UNCLASSIFIED

272 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0111568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MODEL FOR AN INFINITE CRYSTAL IS PROPOSED. THE MAGNITUDE OF THE DISORIENTATION ANGLE OF THE MOSAIC BLOCKS WAS DETD. AND IS DISCUSSED BY USING THE DIRAC DELTA FUNCTION. THE MAGNITUDE OF THIS ANGLE IS ASSOCD. WITH THE NATURE OF THE BLOCK STRUCTURE OF THE CRYSTAL. THE MOSAIC STRUCTURE OF A CRYSTAL OUGHT TO BE CONDITIONED BY THE SAME FACTORS, AS ALSO THE SUBSTRUCTURE OF THE CRYSTALS. THE DIFFERENCE IN THE COEFF. OF ANOMALOUS ABSORPTION OF X RAYS FOR INFINITE CRYSTALS IS DISCUSSED IN MATH. TERMS. ALSO DISCUSSED IS THE DIFFERENCE BETWEEN THE INTEGRAL SCATTERING COEFF. AND THE INTEGRAL CHARACTERISTICS FOR ANOMALOUS TRANSMISSION OF X RAYS IN INFINITE CRYSTALS. THUS, THE DISORIENTATIONS OF THE MOSAIC BLOCKS EXERT THE SAME INFLUENCE ON THE EFFECT OF ANOMALOUS SCATTERING OF X RAYS IN SINGLE CRYSTALS AS IN INFINITE CRYSTALS, AND THE OBSD. DEPENDENCE OF THE ABSORPTION COEFF. ON DISLOCATION D. MUST BE ATTRIBUTED EXACTLY TO THE INFLUENCE OF THE BLOCK DISORIENTATION.

FACILITY: INST. FIZ.

TVERD. TELA POLUPROV., MINSK, USSR.

UNCLASSIFIED

USSR

NOSKOV, M. M., OKUN', G. L., and CHERVA, YE. G.

"Multichannel Device for Linking a Computer With Telegraph Communication Channels"

USSR Authors' Certificate No 379923, Cl. G 06f 3/02, filed 28 Dec 70, published 20 Apr 73 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 20, 1973, p 144)

Abstract: The device consists of interlink units, in each of which the control circuit is connected to a teletype receiver and transmitter and input and output registers connected to the computer. The distinctive feature is that, to eliminate the loss of inputted information, an interlock circuit is inserted between the teletype transmitter and the control circuit, and an additional output of the control circuit is connected to the corresponding computer inputs directly and through the interrupt-cause register.

1/1

YEGOROV, YU. I., et al., Optimal'n. planir. razvitiya i razmeshch. otrasley
prom-sti, Part 1, Novosibirsk, 1972, pp 174-186

of a more general form are also considered; in particular, those which are the
natural generalization of fixed supplementary payments. The specific example
of the formalization of the logical condition for the problem of optimizing
the construction and functioning of a new mine is given.

2/2

- 42 -

USSR

UDC: 681.327

OKUN', G. L. CHERVA, Ye. G., KRESTOVSKAYA, V. F.

"Device for Making Electronic Computer Compatible With Telegraph Communications Line"

USSR Authors' Certificate No 249089, Filed 15 April 1968, Published 4 January 1970 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B266P, by N. V.)

Translation: This device contains a buffer register, code converter, punch register, telegraph apparatus register, and control device. It differs from known devices in that in order to eliminate redundancy in the transmission of alphanumeric information to the telegraph communications line, the device contains a service combination register, differentiating circuits, and a flip-flop determining the order of reading of service or information combinations. The outputs of the service combination register are connected to the inputs of the differentiating circuits. The outputs of these circuits are connected to the input of the reading order flip-flops for service or information combinations, the outputs of which are connected to the potential inputs of the tubes reading the service and information combinations. One illustration.

1/1

Acc. Nr: APO054282

Ref. Code: UR0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 2, pp 184-189

STUDIES OF CONFORMATIONAL HETEROGENEITY OF NATIVE PROTEINS
BY PHOTOCHEMILUMINESCENCE METHOD

S. L. AKSENTSEV, G. D. NISENBAUM, S. V. KONEY, and I. M. OKUN'

Laboratory of Biophysics and Isotopes, Belorussian Academy
of Sciences, USSR, Minsk

The break points were revealed in the curves rate constant of decay—temperature at photochemiluminescence investigation of several proteins in solutions. These breaks are mainly due to the fact that the protein molecules at 5—40° exist in more than one native reversible conformational state. Investigation of influence of salt and propanol concentration on the photochemiluminescence parameters permits to suggest that the regions of protein molecules controlled by hydrophobic interactions are able to manifest gradual structural transitions rather than cooperative rearrangements.

REEL/FRAME
19831420

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UDC: 537.528

OKUN', I. Z.


"Investigating Compression Waves Caused by a Pulse Discharge in Water"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, vol. 41, No. 2, 1971, pp 292-301

Abstract: A continuation of an article published by the author earlier in the same journal (vol. 37, 1967, p 1729), the present paper discusses experimental work on the effect of compression waves set off by a pulse discharge in water at a distance of 12 cm from the discharge channel. The ratio of the distance to the length of the channel is less than or equal to 5, and the compression waves are close to cylindrical. Results of the experiments are generalized. It is stated that interest in pulse discharges in water is stimulated by the possibility of using it for hydrolocation, modeling nuclear explosions in water, and for impulse stamping. A short description of the experimental method is given, together with pressure oscillograms of the compression waves. Tables of wave parameters and amplitudes are also presented. The author expresses his gratitude to I. B. Sinani, A. Ye. Yerшов, V. N. Kalinin, and M. S. Prayman. He is associated with the M. I. Kalinin Polytechnical Institute of Leningrad.

1/1

USSR

 Instruments and Measurements

UDC 621.317.799:621.382

MUSTAFAYEV, Z., OKUN', I.Z., FRAYMAN, B.S.

"Method Of Measurement Of Thermal Conductivity Of Semiconductor Films"

Sb. Tr. po agron. fiz. (Collection Of Works On Agricultural Physics), 1970, Vyp 25, pp 104-110 (from REZh--Elektronika i yeye prizneniye, No 6, June 1970, Abstract No 68510)

Translation: A method is proposed for determination of the thermal conductivity coefficient, based on measurement of the thermal conductivity of a packet of films on substrates, both in a stationary and a nonstationary regime. At first the thermal losses were determined and then the over-all thermal loss which consists of the thermal losses and the flux of the films measured. 2 ill. 6 ref. Summary.

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USSR

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GRIBOV, V. N., KOBZAREV, I. YU., MUR, V. D., OKUN', L. B., POPOV, V. S.

"On the Properties of Amplitudes Not Satisfying Conditions of the Pomeranchuk Theorem"

Moscow, Yadernaya Fizika, Vol 12, No 6, Dec 70, pp 1271-1285

Abstract: The properties of amplitudes violating the Pomeranchuk equality $\sigma = \bar{\sigma}$, where σ and $\bar{\sigma}$ are the total cross sections for particles and antiparticles respectively, are investigated. It is shown that in the case of constant asymptotic ($S \rightarrow \infty$) cross sections both the crossing-antisymmetric and the crossing-symmetric parts of the amplitude must have a radius that increases logarithmically with energy. Then $a_p^+(\xi)$, the imaginary parts of partial waves of the S -channel with negative sign, must be an alternating function of its arguments $\xi = \ln S$ and the impact parameter p . Therefore $a_p^+(\xi)$, the imaginary parts of the crossing-symmetric partial amplitudes cannot be proportional to $a_p^-(\xi)$ and must be selected in such a way as to ensure S -channel unitarity. The properties

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USSR

GRIBOV, V. N., et al., Yadernaya Fizika, Vol 12, No 6, Dec 70, pp 1271-1285

of amplitudes violating the equality $\mathcal{I} = \bar{\mathcal{I}}$ are analyzed using the example of the so-called automodeling partial amplitudes, which are a function of one variable $\mathcal{I} = \rho/\xi$. The general form of these amplitudes, their crossing properties, and the question of S -channel unitarity and their dependence on the angular momentum j in the t -channel are discussed. Certain examples of automodeling functions are given.

2/2

USSR

GRIBOV, V. N., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences USSR, and Institute of Theoretical and Experimental Physics, State Committee for the Use of Atomic Energy; MUR, V. D., Moscow Engineering-Physics Institute, and Institute of Theoretical and Experimental Physics, State Committee for the Use of Atomic Energy; KOBZAREV, I. YU., OKUN', L. B., and POPOV, V. S., Institute of Theoretical and Experimental Physics, State Committee for the Use of Atomic Energy

"Properties of Amplitudes With Logarithmically Increasing Interaction Radius"

Moscow, Yadernaya Fizika, Vol 13, No 3, Mar 71, pp 670-680

Abstract: A previous article by the authors considered the elastic scattering amplitudes of the particle $F(s,t)$ and antiparticle $\bar{F}(s,t)$ for the case in which the Pomeranchuk equality is violated:

1/4

USSR

GRIBOV, V. N., et al., Yadernaya Fizika, Vol 13, No 3, Mar 71, pp 670-680

viz., given $s \rightarrow \infty$ the total cross-sections of the interaction with a given target for the particle and antiparticle are constant and do not equal each other

$$\sigma, \bar{\sigma} = \text{const}, \quad \sigma \neq \bar{\sigma}.$$

An analysis was given of so-called self-similar modes in which the behavior of the amplitudes, in essence, is determined by a single variable $\bar{t} = \rho_0 \xi_q$; where $\xi = \ln s$, q is the momentum transfer ($t = -q^2$), and ρ_0 is the length dimensionality param-

2/4

USSR

GRIBOV, V. N., et al., Yadernaya Fizika, Vol 13, No 3, Mar 71, pp 670-680

eter; and it was shown that the imaginary part of the crossing-antisymmetric amplitude is an alternating function of its arguments ξ and q . The present article considers limitations which are imposed on the amplitude by analyticity and unitarity in the case of constant total cross-sections, as well as those that vary with energy, without any assumption of self-similarity. It is shown that a number of amplitude properties established in the earlier article, particularly the sign alternation of the imaginary part of the crossing-antisymmetric amplitude, obtain even without the assumption of self-similarity. Modes are considered in which the characteristic impact parameters ρ increase with increase in energy (the Pomeranchuk equality is violated, given $\rho \sim \rho_0 \xi$), with a discussion only of those ρ and q for which $\rho/\rho_0 \gg 1$ and $q\rho_0 \ll 1$.

3/4

USSR

GRIBOV, V. N., et al., Yadernaya Fizika, Vol 13, No 3, Mar 71,
pp 670-680

The authors thank A. A. ANSEL'M, G. S. DANILOV, I. T.
DYATLOV, G. T. ZATSEPIN, B. L. IOFFE, A. B. KAYDALOV, and YE. M.
LEVIN for useful discussions.

4/4

USSR

DOLGOV, A. D., ZAKHAROV, V. I., OKUN', L. R., Institute of Theoretical and Experimental Physics of the State Committee On the Use of Atomic Energy

"Shrinkage Characteristics of Amplitudes and the Asymptotic Behavior of Weak Interaction Cross Sections"

Moscow, Yadernaya Fizika, No. 4, Apr 72, pp 808-819

Abstract: The so-called shrinkage characteristic of the amplitude caused by constriction of the scattering cone at asymptotically high energies is discussed. It is noted that the amplitude at $t = 0$ is nonregular and the usual Froissart limitation does not occur in the case of weak interaction when exchange of massless particles (the neutrino) is possible. This would indicate that as $s \rightarrow 0$, the cross section increases exponentially: $\sigma_{tot} \sim s^a$, where $a > 0$. This article discusses possible restrictions on the value of a , assuming that for $t < 0$ the amplitude satisfies the dispersion relationship for s with a finite number of subtractions. The basic idea of the approach here is to study the singularities which are caused by constriction of the scattering cone at high energies and to compare them with ordinary threshold singularities caused by

1/2

USSR

DOLGOV, A. D., et al, Yadernaya Fizika, No. 4, Apr 72, pp 808-819

particle exchange (called diagram singularities). The narrowing of the core on the strength of unitarity is an unavoidable consequence of the growth of the total cross section. It is shown that if it is required that the singularity in the amplitude be no greater than $t^2 \ln t$, as occurs with diagrams with exchange of neutrino pairs, the total cross section σ_{tot} as $s \rightarrow \infty$ cannot rise more rapidly than $\sigma^{1/3}$. If it is required that the shrinkage singularity be absent, σ_{tot} cannot rise in terms of powers of s . All conclusions are based on the assumption of the validity of dispersion relationships with a finite number of subtractions for $t \geq 0$. It is noted, in conclusion, that the problem of the asymptotic behavior of the cross section when exchange of massless particles is possible is not limited to the scope of weak interactions for which neutrino exchange is essential. It also has a direct relationship to electromagnetic interaction caused by photon exchange. For the case of massless particles many theorems of quantum field theory are inapplicable in the form in which they are ordinarily formulated. This is attributed to the fact that they assume the presence of an energy slit between the vacuum and the spectrum of physical states. It is suggested that it would be of interest to obtain a more detailed description of the asymptotic behavior of amplitudes on the basis of these ideas and to understand better their relationship with the basic principles of quantum field theory.

2/2

- 48 -

USSR

GRIGORYAN, G. V., NIKOLAYEV, N. N., and OKUN, I. R. Institute of Theoretical and Experimental Physics, State Committee on the Use of Atomic Energy

"Electromagnetic Interaction of Muon and $K_L \rightarrow 2\mu$ Decay"

Moscow, Yadernaya Fizika, Vol 15, No 5, May 72, pp 995-998

Abstract: Calculations of the lower bound for the probability of $K_L \rightarrow 2\mu$ decay usually assume that the amplitude of the $2\gamma \rightarrow 2\mu$ transition is described by quantum electrodynamics. It is this amplitude of two photons with $J^P = 0^-$ at a c.n.s. energy equal to the K meson mass which determines the imaginary part of the $K_L \rightarrow 2\gamma \rightarrow 2\mu$ amplitude. The article considers how justified the hypothesis concerning the validity of quantum electrodynamics is in this case and whether it can be discarded in order to explain the contradiction between experiment (A. R. CLARK, T. ELIOTT, R. C. FIELD, et al.: $\Gamma(K_L \rightarrow 2\mu)/\Gamma_L < 1.8 \cdot 10^{-9}$) and theory (L. M. SENEGAL: $\Gamma(K_L \rightarrow 2\mu)/\Gamma_L > 5.6 \cdot 10^{-9}$). Five types of experimental data are discussed: viz., 1) $K_L \rightarrow 2\mu$

1/2

USSR

GRIGORYAN, G. V., et al., Yadernaya Fizika, Vol 15, No 5, May 72, pp 995-998

decay; 2) anomalous magnetic moment of muon; 3) mu pair photoproduction on nuclei; 4) formation of so-called "tridents": $\mu \rightarrow 3\mu$ transition in nuclear field; 5) $\eta \rightarrow 2\mu$ decay. Conclusion: Data on $g - 2$ and mu pair photoproduction rule out the breakdown of muon electrodynamics as an explanation of the CLARK et al. experiment provided this breakdown does not fall in the narrow energy region near the K meson mass and does not decline rather quickly towards larger or smaller energies.

The authors thank V. N. GRIBOV, A. D. DOLGOV, V. I. ZAKHAROV, B. L. IOFFE, and I. YU. KOBZAREV for useful discussions.

2/2

- 42 -

1/2 011
 UNCLASSIFIED
 TITLE--REGENERATION OF K PRIME MESONS AND THE POMERANCHUK THEOREM -U-
 PROCESSING DATE--16OCT70
 AUTHOR--(03)-GERSHEYN, S.S., KOBZAREV, I.YU., OKUN, L.B.
 COUNTRY OF INFO--USSR
 SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(1), 75-80
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 CONTROL MARKING--NO RESTRICTIONS
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PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105642

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTS. AIMED AT DETG. THE REGENERATION AMPLITUDE OF K MESONS AT ENERGIES UP TO 6 GEV ARE RECOGNIZED AS THE CLUE FOR TESTING THE HYPOTHESIS THAT THE CROSS SECTION DIFFERENCE FOR THE KN AND BAR K N DOUBLETS SHOULD BE A CONST. DIFFERENT FROM ZERO WHEN E YIELDS INFINITY. POMERANCHUK'S THEOREM WOULD NOT BE VIOLATED IF THE HYPOTHESIS WERE SHOWN TO BE TRUE (I. YA. POMERANCHUK, 1965).

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USSR

GERSHTEYN, S. S., KOBZAREV, I. YU. and OKUN', L. B.

"Generation of K⁰-Mesons and the Pomeranchuk Theorem"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 11, No. 1, 5 Jan 70, pp 75-80

Abstract: Data obtained at Serpukhov showing that the cross sections for K⁻-mesons are constant in the interval 20-55 Gev/c and obtained earlier at Brookhaven showing that the cross sections for K⁺-mesons are constant in the interval 6-20 Gev/c do not contradict the hypothesis that K⁺ cross sections would pass to a constant asymptotic limit above 6 Gev/c and that K⁻ cross sections would pass to a limit above 20 Gev/c, so that as E → ∞:

$$\sigma_{K^-p} - \sigma_{K^+p} = 3,5 \pm 0,5 \text{ mbarn} \quad \sigma_{K^-d} - \sigma_{K^+d} = (6 \pm 1) \text{ mbarn}$$

$$\sigma_{K^-n} - \sigma_{K^+n} = 2,5 \pm 1,5 \text{ mbarn}$$

1/2

USSR

GERSHTEYN, S. S., et al, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 11, No. 1, 5 Jan 70, pp 75-80

If this were so, the Pomeranchuk theorem (ZhETF, Vol. 34, 1959, p 725), according to which $\sigma = \bar{\sigma}$ as $E \rightarrow \infty$, would be violated. It turns out that the data of these two experiments do not in any way prove that the cross sections σ_{K^+p} and σ_{K^-p} actually pass to their asymptotic constant limits. In particular, it is possible that the cross section σ_{K^+p} begins to rise beginning with 20 Gev and approaches σ_{K^-p} . As for σ_{K^-p} , in the region $E = 20$ Gev it can be approximated within the existing error not only by a horizontal line but by a curve that drops slowly with the growth of energy and also by a curve having a minimum. The purpose of this work is to note that the hypothesis that $\sigma_{KN} - \bar{\sigma}_{KN} = \text{const} \neq 0$ as $E \rightarrow \infty$ leads to several clear predictions relative to the regeneration of K^0 -mesons. If the experiments do not contradict these predictions, it will mean that the hypothesis is incorrect. This paper was delivered at a conference on high-energy physics in Kiev on 22 December 1969.

2/2

1/2 013 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--REGENERATION OF K PRIMEO MESONS AND THE POMERANCHUK THEOREM -U-
AUTHOR--(03)-GERSHTEIN, S.S., KOBZAREV, I.YU., OKUN, L.B.
COUNTRY OF INFC--USSR
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PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NOTES THAT THE HYPOTHESIS SIGMA
SUBKN SIGMA SUBKN EQUALS CONST NOT EQUAL TO 0 AS E YIELDS INFINITY LEADS
TO A NUMBER OF DISTINCT PREDICTIONS PERTAINING TO K PRIMEO MESON
REGENERATION.

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USSR

1

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Committee on the Use of Atomic Energy

"On Possible Effects of CPT-Invariance Violation and $K_L \rightarrow 2\mu$ Decay"

Moscow, Yadernaya Fizika, Vol 15, No 5, May 72, pp 985-994

Abstract: An earlier article by the authors noted that the experimental data
of A. L. CLARK, T. ELIOTT, R. C. FIELD et al. on $K_L \rightarrow 2\mu$ decay can be fitted
to unitarity if it is assumed that there is a CPT-noninvariant interaction
which makes a contribution to the $K_L \rightarrow 2\mu$ decay amplitude in the form

$$ibK_2|\gamma_5| \quad (1)$$

and partly compensates for the contribution of the two-photon intermediate

1/2

USSR

BOGOMOL'NIY, YE. B., et al., Yadernaya Fizika, Vol 15, No 5, May 72, pp 935-994

state to the absorptive CPT-invariant part of the amplitude. If the absorptive part, which results from other real transitions, is ignored, there is no conflict with the CLARK et al. experiment if $b \simeq 0.5 a \simeq 10^{-12}$. The present article gives a detailed discussion of properties of such an interaction and experimentally observed effects in which it might appear. Properties of the K_L^0, K_S^0 system are considered, followed by a discussion of possible leptonic decays of K mesons with the participation of neutral currents and charged currents, nonleptonic decays, radiative decays, and muon decays.

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2/2

- 43 -

USSR

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" $K_L \rightarrow 2\mu$ Decay and the Possibility of Existence of a Light Vec-
tor Meson"

Moscow, Yadernaya Fizika, Vol 16, No 2, Aug 72, pp 376-383

Abstract: The authors discuss the hypothesis which holds that the existence of a light vector meson χ_0 is responsible for the failure of experiments set up to detect $K_L \rightarrow 2\mu$ decay. The analysis shows that existence of a χ -meson with the properties necessary for compensating the two-photon contribution to $\text{Im} F(K_L \rightarrow 2\mu)$ contradicts experiment. This and other difficulties seem to rule out the existence of such a particle. If the hypothetical χ -meson does exist, it would have to decay into new light neutral particles or undergo interaction $\chi\gamma\mu\bar{\mu}$, both unlikely possibilities. The authors thank V. V. Barmin, V. S. Demidov, A. G. Meshkovskiy, N. N. Nikolayev and V. A. Shebanov for constructive criticism.

1/1

- 74 -

USSR

BOGOMOL'NIY, YE. B., DOLGOV, A. D., ZAKHAROV, V. I., QUIN, J. B.,
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" $K_L^0 \rightarrow \mu^+\mu^-$ and the Anomalous Interaction of Muons With Hadrons"

Moscow, Yadernaya Fizika, Vol. 16, No. 1, Jul 72, pp 129-142

Abstract: The possible contribution of the 3π -intermediate state in the imaginary part of the amplitude of $K_L^0 \rightarrow \mu^+\mu^-$ decay and the possibility of the existence of anomalous muon-pion interaction which could balance the imaginary part of the amplitude of $K_L^0 \rightarrow \mu^+\mu^-$ decay arising through the 2γ -intermediate state are discussed. It is noted that the existence of an anomalously strong pion-muon interaction could resolve the contradiction between the experimental results of Clark, Field, et al and the theory. but it is shown that the anomalous interactions $\pi^0 - 2\mu$ and $3\pi - 2\mu$ do not contradict existing experimental data on elastic and inelastic scattering of a muon by a nucleon, on the generation of muon pairs by pions, and by data on $(g - 2)$ for the muon. It is noted that in this approach series difficulties arise which are associated with the very large value of $\text{Re } M_{KL}^{(3\pi)} \rightarrow 1/2$