USSR   UDC: 678.675:678.026:66.040.3:539.61

YEGORENKOV, N. I., NASYROV, I., and BELYY, V. A., Institute of Mechanics and
Metallopolymer Systems of the Academy of Sciences of the Byelorussian SSR

"The Effect of Antioxidants on the Adhesive and Cohesive Properties of Polycapro-
amide Coatings"

Minsk, Doklady Akademii Nauk BSSR, Vol XVII, No 1, pp 43-46

Abstract: The authors study the effect of the percentage by content of the anti-
oxidant, phenyl-beta-naphthylamine D, on the adhesion and microhardness of poly-
caproamide coatings which are obtained by the powder deposition method in air at
various temperatures. It is shown that adhesion and microhardness vary symbatically
with respect to changes in forming temperature and antioxidant content, while their
dependence on antioxidant content is characterized by two maxima, i.e. maximum and
maximum or by a single maximum. The latter is determined by the stage of oxidation
which in the case of the coating is realized by means of a non-stabilized polymer.
This is related to the processes associated with the destruction and structuring
of micromolecules. It is shown that maximum adhesion is exhibited by coatings made
from stabilized polycaproamide obtained at temperatures close to that required for
the depolymerization of the polymer. Original article: two figures and 15 biblio-
graphic entries.

1/1

USSR   UDC 539.376+532.135

SVIRIDENOK, A. I., PETROKOVETS, M. I., BELYY, V. A.

"Introduction of a Single Unevenness in a Viscoelastic Halfspace"

Translation: An estimate of the possibility of using the known laws of deformation of viscoelastic bodies with coefficients determined from mechanical experiments to the calculation of the interaction of a smooth metal sphere with polymer materials is presented. This creates prospects for direct application of the results of developing the theory of deformation and strength of polymer materials to the solution of the problem of friction during metal-polymer contact. The bibliography has 23 entries.

1/1

1/2   028   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MELTING AND CRYSTALLIZATION OF POLY,TRIFLUOROCHLOROETHYLENE,
  CONTAINING SYNTHETIC NUCLEATING AGENTS -U-
AUTHOR-(02)-RODCHENKO, D.A., BELYY, V.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK BELORUSS. SSR 1970, 14(5), 425-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CRYSTALLIZATION, CHLOROFLUOROCARBON COMPOUND, ETHYLENE,
  NUCLEATION, OPTIC MICROSCOPE, MOLYBDENUM DISULFIDE, CADMIUM, THERMAL
  STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1916   STEP NO--UR/0250/70/014/005/0425/0427

CIRC ACCESSION NO--AT0135459
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0135459
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF NUCLEATION OF
POLY(TRIFLUOROCHLOROETHYLENE) (I) CRYSTN. BY CDO AND CD ON THE MELTING
AND CRYSTN. TEMPS. WERE STUDIED BY OPTICAL MICROSCOPY. I CONTG.
0.1PERCENT DISPERSE CDO MELTED 2-2.5DEGREES HIGHER THAN I ITSELF, M.
209-9.5DEGREES. SPHERULITES APPEARED WITHIN A 1-2DEGREES RANGE WHILE
COOLING I MELT CONTG. CDO AND 10-11DEGREES HIGHER THAN I, WHICH
CRYSTALLIZED MORE SLOWLY. WHEN A CD STRIP WAS PLACED ON THE MICROSCOPE
STAGE WHERE MELTING WAS OBSD., MELTING BEGAN IN THE PARTICLES NOT IN
CONTACT WITH CD 1-2DEGREES LOWER THAN IN THOSE ADJACENT TO THE STRIP.
ON COOLING, SPHERULITES APPEARED QUICKLY IN THE LATTER REGION 4-6DEGREES
HIGHER THAN IN THAT NOT ADJACENT TO THE STRIP. SIMILAR BEHAVIOR WAS
OBSD. WITH MOS SUB2 AND SALTS OF ORG. ACIDS AS NUCLEATING AGENTS.
APPARENTLY, THE PRESENCE OF ARTIFICIAL NUCLEATING AGENTS CAUSES
FORMATION OF THERMALLY STABLE STRUCTURAL ELEMENTS.   FACILITY:
INST. MEKH. METALLOPOLIM SIST., MINSK, USSR.

UNCLASSIFIED

USSR   UDC 621.822.5

BELYY, V. A., KUPCHINOV, B. I., MIKHNEVICH, A. S., ASTASHIN, V. Ya., and
FEDORENKOV, N. I.

"Bearings with Metal-Polymeric Plating"

Moscow, Mashinostroitel', No 5, May 71, p 24

Abstract: A method of producing strip materials with antifriction metal-
polymeric plating has been developed at the Institute of Mechanics of Metal-
Polymeric Systems of the Belorussian SSR. The method is described, properties
of the new material are discussed, and its high antifriction quality is
demonstrated in comparison with the strip material tombac. Preliminary results
of field tests proved the high efficiency of the new material. Its use for
bearing bushings for starters of automotive engines is now being investigated.
Three figures.

1/1

AA 0038337

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UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 3-7c

236764   WOOD PLASTIC LAMINATES achieve requires
physical and mechanical properties and
are evenly spread over the depth of the product
when their pressmould is rotated in the horizontal
plane. Secondary pressing is followed by a heat
treatment stage for greater density. The horizontal
rotation produces a centrifugal effect so as to move
the ingredients radially. With heat added, or by
means of setting agents introduced into the binder,
the latter polymerises at a point where the in-
gredients have been radially slung out into the
required mutual position in the finished article.
. Suggested rotation at 900 r.p.m. and heating with
quartz lamps produces a layer of wood and graphite
or a nucleus of these close to the centre of the
article. The additional pressing can be effected
by a plunger introduced into the mould for the
purpose. 22.6.67. as 1166731/29-33, BELYI, V.A.,
Polymer Mechanics Sect. Acad. Sciences Belorussian
SSR. (10.6.69) Bul. 7/3.2.69. Class 39a^7 Int. Cl.
B 29j. ₁

½

19731446

AA0038337

AUTHOR: Belyy, V. A.

Otdel Mekhaniki Polimerov AN Belorusskoy SSR

-2/2

19731447

AA0040645   B   Belyi, V.A.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, /-70

242367   ESTABLISHING RESISTANCE PROBES, e.g. in
the surface of articles made from
thermoplastics materials, involved the embedding
of wire gauge in the surface layer of the article
concerned, but this was found to lead to some
collapse of the original structure of the plastics
surface. To improve the method for inserting the
wire resistance probes, it is suggested that the
wire gauze should be heated to a temperature higher
than the melting temp. of the material from wnich
the article is made, and the gauze is then
embedded in the surface layer of the article using
a tool, the temp. of which is lower than the
melting point of the plastic. Heating of the wire
gauze can be done with an electric current.
25.1.67. as 1129737/23-5, BELYI, V.A. and others
Belorussian Acad. of Sciences. (2.9.69) Bul.
15/25.4.69. Class 39a² Int. Cl. B 29c.

19750222

AA0040645

AUTHORS: Belyy, V. A.; Inyutin, I. S.; Sysoyev, P. V.; Kupchinov,
B. I.; and Kukharenko, L. B.

Otdel Mekhaniki Polimerov AN Belorusskoy SSR

19750223

Acc. Nr A70101934   Abstracting Service: Ref. Code
                     CHEMICAL ABST. 6-79   UR 0250

112136s **Effect of the dimensions of spherulitic formations on the strength and strain capacity of polypropylene.** Belyi, V. A.; Savkin, V. G.; Sviridenok, A. I. (Otdel Mekh. Polim., Minsk, USSR). *Dokl. Akad. Nauk Beloruss. SSR* 1970, 14(1), 40-2 (Russ). The strain capacity of the supramol. structure of PP-2 polypropylene films was investigated by monoaxial stretching on a specific app. which permitted continuous observation and recording on photographic film of the various stages in the deformation process. The rate of I film deformation was 1 mm/min The nature of the supramol. structure had a pronounced effect primarily on the deformation mechanism and disintegration of the films. Stretching of I films whose supramol. structure consisted of clearly expressed spherulites with sharply defined boundaries caused deformation of the samples along the borders of the spherulites at low deformation of the spherulites themselves. During deformation of I films with finer supramol. structures in which sharply defined boundaries between the individual spherulites were absent, deformation growth began just as in the other films, but the zone of transition into the recessed portion had a broader, more diffuse form. The decrease in spherulite dimensions not only changed the nature of the deformation but also improved the mech. properties.   DBJR

REEL FRAME
1985 890

1/2   035   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--EFFECT OF MEDIA ON THE FORMATION AND PHYSICOMECHANICAL PROPERTIES
  OF POLYPROPYLENE COATINGS -U-
AUTHOR--BELYI, V.A., PESCHANYI, G.G.

COUNTRY OF INFO--USSR

SOURCE--LAKOKRASOCH. MATER. IKH PRIMEN. 1970 (1) 37-40

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PLASTIC COATING, PHYSICAL CHEMISTRY PROPERTY, MOLECULAR
  STRUCTURE, OXIDATION, TENSILE STRENGTH, HARDNESS, POLYPROPYLENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1939/0551   STEP NO--UR/0303/70/000/001/0037/0040

CIRC ACCESSION NO--AP0107156
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0107156
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYPROPYLENE (I) COATINGS WERE
FORMED BY SPRAYING ITS MELT ONTO METAL PLATES. THE EFFECT WAS STUDIED
OF THE SURROUNDING MEDIUM ON THE TENSILE STRENGTH AT BREAK (SIGMA),
HARDNESS (H), MOL. WT. (M), AND STRUCTURE OF THE FILMS (MEDIUM, SIGMA IN
KG-CM PRIME2, H IN KG-MM PRIME2, M GIVEN): AIR, 80-97, 4.3-4.8, 6 TIMES
10 PRIME4; CO SUB2, 140-55, 5.6, 6.1, 10 TIMES 10 PRIME4; AR, 165-86,
5.7-6.1, 11 TIMES 10 PRIME4. THE FOREGOING RESULTS WERE OBTAINED WHEN I
FILMS WERE COOLED AFTER SPRAYING AT SIMILAR TO 10DEGREES-MIN RATE IN
AIR, CO SUB2, OR AR, RESP. HOWEVER, WHEN THE FILMS WERE COOLED IN WATER
AT SIMILAR TO 150DEGREES-MIN RATE SIGMA OF THE FILMS FORMED IN THE AIR,
CO SUB2, OR AR INCREASED TO 155-65, 180-200, OR 200-20 KG-CM PRIME2,
RESP. ALSO, THE M WAS INCREASED TO 85 TIMES 10 PRIME3, 107 TIMES 10
PRIME3, OR 120 TIMES 10 PRIME3 IN THE AIR, CO SUB2, OR AR, RESP. THE
STRUCTURE OF I FILMS DID NOT DEPEND ON THE MEDIUM, BUT COOLING IN WATER
GAVE A FINER GLOBULAR STRUCTURE, WHICH RESISTS THERMAL OXIDN.

1/2   036   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--EFFECT OF THE PHYSICAL STATE OF THE POLYMER ON THE NATURE OF THE
RUPTURE OF A POLYMER-METAL ADHESIVE JOINTS -U-
AUTHOR-(02)-BELYY, V.A., YEGORENKOV, N.I.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUVK BSSR, VESTSI, SERIYA FIZIKA-TEKHNICHNYKH NAVUK,
NO. 1, 1970, P. 58-63
DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ADHESIVE, BRITTLE FRACTURE, METAL TO NONMETAL BONDING, POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0197   STEP NO--UR/0201/70/000/001/0058/0063

CIRC ACCESSION NO--AP0113136
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0113136

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE NATURE OF THE RUPTURE OF POLYMER-METAL ADHESIVE JOINTS WHEN THE POLYMER UNDER TEST CONDITIONS IS IN A SOLID OR STRUCTURALLY FLUID (HIGHLY ELASTIC) STATE. IT IS SHOWN THAT THE SEQUENCE OF CHANGE IN THE FAILURE MODES OF A POLYMER-METAL ADHESIVE JOINT DURING A CHANGE IN THE FAILURE RATE IS DETERMINED BY THE PHYSICAL STATE OF THE POLYMER. IN THE CASE OF THE HIGHLY ELASTIC STATE THE COHESION FAILURE MODE OCCURRING AT LOW FAILURE RATES CHANGES, WITH AN INCREASE IN THE FAILURE RATE, INTO THE ADHESION MODE, WHILE IN THE CASE OF THE SOLID STATE THE ADHESION FAILURE MODE OCCURRING AT LOW FAILURE RATES CHANGES, WITH AN INCREASE IN THE FAILURE RATE, INTO THE COHESION MODE. HOWEVER, IN THE CASE OF BRITTLE FAILURE IN THE SOLID STATE THE COHESION MODE OCCURS AT LOW FAILURE RATES, AND NO CHANGE OCCURS IN THE FAILURE MODE WITH AN INCREASE IN THE FAILURE RATE.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--FORMATION OF SUPRAMOLECULAR STRUCTURES IN FILMS OF CRYSTALLINE
POLYMERS -U-

AUTHOR-(05)-KARGIN, V.A., SOGOLOVA, T.I., BELYY, V.A., MIRONOVICH, L.L.,
SAVKIN, V.G.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(3), 215-18

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--MOLECULAR STRUCTURE, CRYSTALLINE POLYMER, CAPROLACTAM,
CRYSTALLIZATION, SPHERULITE, CRYSTAL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1675

STEP NO--UR/0460/70/012/003/0215/0218

CIRC ACCESSION NO--AP0125296

UNCLASSIFIED

CIRC ACCESSION NO—AP0125296
ABSTRACT/EXTRACT—(U) GP-0- ABSTRACT. THE NATURE OF SUPRAMOL. STRUCTURES
IN CRYSTL. POLYCAPROLACTAM (I) DEPENDED ON THE PRESENCE OF HOMOGENEOUS
AND HETEROGENEOUS NUCLEATION AGENTS IN I MELTS, THE RATIO OF WHICH WAS A
FUNCTION OF CRYSTN. TIME AND CRYSTN. TEMP. HETEROGENEOUS CRYSTN. SITES
WERE MORE HEAT RESISTANT THAN HOMOGENEOUS ONES. SPHERULITES FORMED ON
HETEROGENEOUS CRYSTN. SITES HAD A MORE ORDERED CRYST. STRUCTURE.

UNCLASSIFIED

BELYY, V. A.

MICROTRIBOMETRIC STUDY OF SELF-LUBRICATING COMPOSITE MATERIALS BASED ON POLYMERS

UDC 678.01:539.61

The microtribometric method is described, and results are presented from studying the frictional properties of polymers and composite materials based on them. There are five illustrations and a 6-entry bibliography.

The actual solid-state contact is discrete as a result of roughness of the interaction surfaces. When selecting the calculation schemes for the frictional interaction, the unevennesses of the real surfaces are usually simulated by a set of bodies of regular shape, for example, spherical, [1]. Accordingly, the investigation of the interaction of the unevenness of one body with the surface of another is of definite theoretical and practical interest. The method of studying the friction of a microindentor commensurate with the dimensions of a unit unevenness and the structural elements is called the microtribometric method [2]. By means of this method it appears possible to investigate the frictional properties in connection with the structure of the material [3, 4]. It is of special interest to use microtribometry to study self-lubricating composite materials based on polymers and dry lubricants having a clearly expressed discrete structure. As a result of such studies it appears possible from the point of view of achieving the required frictional properties to obtain information about the selection of the binder, fillers, their dispersness and optimal distribution, and so on and to estimate the friction mechanism of the composite self-lubricating materials. In connection with the discussion in this report a study has been made of certain results of estimating the frictional properties of composite materials based on polymers and dry lubricants.

The study was made by the method of microtribometry on the DS-type device [3] using electron and optical microscopy. A corundum needle with a radius of curvature of the operating section of 15 microns was used as the indentor. This corresponds to dimensions of the unevennesses of the point metal surface of approximately finish class 6. The experiments were performed with a sliding

rate of 0.005-0.01 mm/sec and an indentor load of 1-8 gram force. The choice of speed was determined by trying to reduce the effect of the frictional heating. The load range was determined by calculations using the procedure [1] by obtaining with the actual operating conditions and the following characteristics of the material: the outline pressure on the contact -- up to 100 kilogram-force/cm²

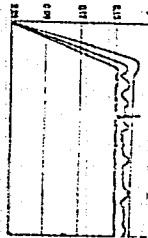-- the Young's modulus of the material $F = 5 \cdot 10^4$ kilogram-force/cm²; the Poisson coefficient $\mu = 0.4$.

Figure 1. Tribograms of the following binders:
1 -- PVF; 2 -- EPF; 3 -- SRS-1.

When taking the tribograms, the structure and the trail were photographed simultaneously using an optical microscope with 200 x magnification. After this, replicas were taken from the track, and they were photographed on the UEMR-100 electron microscope with up to 8000 x magnification. The specimens were prepared in the form of films from 100 to 200 microns thick (from the pure binder and the binder with (filler) and in the form of blocks of the finished composite material. The results of the microtribometric studies were compared with the experimental data using a pin friction machine.

A study was made of the frictional behavior of three types of binders:
-- epoxyphenol resin (EPF), phenol formaldehyde resin (SRS-1) and polyvinyl furfural (PVF).

During movement of a single-spherical indentor over the plastic half-space, the magnitude of the friction coefficient is defined both by the molecular interaction of the contact surfaces depending on the nature of the contact bodies and by the volumetric deformation of the material which can be characterized by the magnitude of the ratio of the depth of introduction of the indenter to its radius (h/R) [1]. Accordingly, when estimating the effect of the nature of the polymer material on the friction coefficient and the nature of the frictional contact tests were made for a constant magnitude of the ratio h/R = 0.2. As a result of the difference in mechanical properties of the selected binders, the identical value of h/R = 0.2 is achieved correspondingly for different loads by the magnitude of which it is possible to judge the carrying capacity of the binder.

USSR   UDC 539.3

BELYY, V. Kh., GERG, T. Ya.

"The Problem of Estimating the Accuracy of Solutions in Problems on Concen-
tration of Stresses in a Circular Conical Shell Weakened by a Small Circular
Aperture"

Sb. tr. Vses. Zaoch. Politekhn. In-ta [Collected Works of All-Union Poly-
technical Correspondence Institute], No 73, 1972, pp 17-20, (Translated
from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 V141 by
N. A. Kulakov).

Translation: A "precise" solution, the supplementary stress state of which
is described by the equation

$$\triangle\triangle V + 8i\beta^2 \left(\sum_{j=1}^{\infty} \varepsilon^j \triangle_{k_j} \right) V = 0$$

is compared with an approximate solution, the equation of which is produced
by discarding terms with factors $\varepsilon^k\beta^2$ (k = 1, 2, ...) and retaining in the
boundary conditions only terms of first order relative to ε, where V is a
1/2

USSR   UDC 539.3

BELYY, V.. Kh., GERG, T. Ya., Sb. tr. Vses. Zaoch. Politekhn. In-ta, No 73, 1972, pp 17-20.

complex function, defining the stress-strain state; Δ_{k_j} are linear differential operators; β^2 and ϵ are small parameters. It is shown that

$$\| V_\epsilon - V_\epsilon^{(1)} \| < C_{max} (\epsilon\beta^2; \epsilon^2)$$

where C is a constant, V_ϵ is the "precise" solution, $V_\epsilon^{(1)}$ is the approximate solution. 8 Biblio. Refs.

2/2

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USSR

UDC 536.8+621.4

BELYY, V. V.

"The Problem of the Mechanism of Autostabilization of a Flame in the Combustion Chamber of a Liquid Fueled Rocket Motor"

Abstract: Studies of vortex stabilization of liquid fuel rocket motor flames have shown that low frequency pulsations in the value of the mean time required for burning of the fuel frequently occur. This article presents an attempt to find a physical explanation for these low frequency pulsations in burning intensity, without assuming unstable operation of fuel sprayers. It is demonstrated that the formulas describing the behavior of a self-stabilizing flame describe a system with feedback through the term describing the intensity of preparatory processes for burning, and that the characteristics of the system are such that random wandering of the flame around the combustion chamber should be expected. It is this random wandering of the flame which causes the low frequency fluctuations in burning intensity.

1/1

USSR

UDC: 8.74

BEMBEL', R. M., PROPP, E. F.

"Computing Theoretical Hodographs of Reflected Waves for Layered Media. The 'Goss-1' Program"

Translation: The program is set up in Minsk-22 computer codes and is formulated as a standard program. The operator is based on an equation of a theoretical hodograph of a reflected wave for a layered medium in which the refraction of the transmitted waves is taken into consideration on all intermediate boundaries. The angles of inclination of all higher layers, and the stratum velocities may be different, and are accounted for in the operator.

1/1

USSR

UDC: 8.74

BEMBEL', R. M.,

"Processing Isolated Hodographs of Reflected Waves. The 'OG'
Program (Description, Instructions and Text of the Program)"

Tr. Zap.-Sib. n.-i. geologorazved. neft. in-t (Works of the West
Siberian Scientific Research Institute of Geological Petroleum
Prospecting), 1972, vyp. 55, pp 122-128 (from RZh-Kibernetika,
No 10, Oct 72, abstract No 10V655)

Translation: The paper gives a brief description, instructions,
and the text of a program for processing isolated hodographs of
reflected waves plotted in an arbitrary system of longitudinal
profiling observations. The hodograph processing algorithm is
based on an algorithm for evaluating the parameters of a homo-
geneous model of the medium. The estimated parameters are the
effective velocity, the depth to the reflecting layer along the
vertical at the blast point, and the angle of inclination of the
reflecting layer. The observed values of the hodograph at sep-
arate points are used as the initial data. The program is com-

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USSR

BEMBEL', R. M., Tr. Zap.-Sib. n.-i. geologorazved. neft. in-t,
1972, vyp. 55, pp 122-128

piled in Minsk-22 computer codes for two versions of the initial
data: 1) for the case of uniform spacing of observation points;
2) for the case of a nonuniform system of observations. V.
Mikheyev.

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USSR

UDC 519.281

GOL'DIN, S. V., BEMBEL', R. M.

"Certain Methods of Regularization of the Method of Least Squares in Processing Geophysical Observations"

Tr. Zap-sib. N-i Geologo-razved. Neft. In-t, [Works of Western Siberian Scientific Research and Geological Prospecting Petroleum Institute], 1970, No 36, pp 86-102, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V178 by the authors).

Translation: Methods of regularization are significantly determined by the physical sense of the solution and the available a priori information concerning the unknown parameters. Therefore, in each specific case we must find the most adequate methods. This work analyses three methods for regularization of systems of normal equations from the least squares method: 1) decreasing the number of parameters estimated; 2) estimation of linear combinations with least dispersion; 3) consideration of the a priori distribution of parameters. In developing the second of these methods, a games theory interpretation is suggested for problems of solution of degenerate systems. In all cases, regularization of poorly founded and degenerate systems depends on the available a priori information.

1/1

USSR

UDC: 519.2

ARATO, Matyas, BENCZUR, Andras

"Results of Modeling the Distributions of Estimates of the Parameters of a Simple Gaussian Process"

Magy. tud. akad. Szamitastechn. kozp. kozl., 1972, 8, pp 3-35 (from RZh-Kibernetika, No 5, May 73, abstract No 5V243 by A. Novikov)

Translation: A Monte-Carlo method is used to study the behavior of different estimates for the parameter of the mean and the parameter of damping λ of a stationary Gaussian Markov process with correlation function $(\frac{1}{2}\lambda)\exp(-\lambda|\tau|)$. A modeling program and table of empirical quantiles are given for these estimates. It is noted that lower confidence limits cannot be constructed from the estimates for the parameter λ. Modeling was done on the SDS 3300 computer with Fortran programming.

1/1

USSR   UDC 576.851.49 (Bact. typhi).083.35:663.14:636.087.24

KASHANOVA, N. I., NUSINOV, A. E., BENDAS, L. G., and ZHARIKHINA, M. A., Moscow
Municipal Sanitary-Epidemiological Station and Moscow Pilot Plant for Enzyme
Preparations

"Use of a Fungus Hydrolysate from Nutrient Yeasts as the Base of a Nutrient
Medium for Phage Typing of Salmonella typhi"

Abstract: A nutrient medium derived from yeast hydrolysate is a quick and
inexpensive way of phage typing the agent of typhoid fever. The medium con-
sists of the hydrolysate diluted with water (1:5), sodium chloride, and agar.
Two drops of Vi-I phage are added to a test tube with the hydrolysate after
it is inoculated with S. typhi at the rate of 50 million cells in 1 ml of
medium. Complete lysis occurs within 5 hours. The suitability of the yeast
hydrolysate for typing S. typhi was successfully tested on 100 cultures iso-
lated from bacteria carriers and typhoid patients.

1/1

USSR

BENDERSKAYA, L. P., TANANAYEV, A. N., KERIMBEKOVA, N. A.

"Phase Composition of the Base of LR-1 Type Borostanate Luminophors"

Translation: A study was made of compounds formed in the $MgO-B_2O_3-SnO_2$ system by x-ray diffraction analysis and infrared spectroscopy. The formation of a new phase during interaction of the oxides MgO, B_2O_3 and SnO_2 differing from the structure of the known borostanate compounds is demonstrated. The initial components were of the following quality: MgO (of extreme purity), SnO_2 (analytically pure), $HgBO_3$ (of extreme purity). The homogenized charge was calcined at $1,250°$ for five hours.

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1/2   040   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--ELECTRON ELECTRON DOUBLE RESONANCE OF TRIPLET EXCITONS. II. SPIN
   EXCHANGE OF TRIPLET EXCITONS WITH PARAMAGNETIC IMPURITY CENTERS -U-

AUTHOR-(03)-STUNZHAS, P.A., BENDERSKIY, V.A., SOKOLOV, YE.A.

COUNTRY OF INFO---USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(3), 487-91

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--EXCITON, ELECTRON RESONANCE, ORGANIC CRYSTAL, CRYSTAL
   IMPURITY, ELECTRON SPIN, IMPURITY CENTER, EPR SPECTRUM. PHYSICAL
   DIFFUSION, ACTIVATION ENERGY, TEMPERATURE DEPENDENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1432   STEP NO--UR/0051/70/028/003/0487/0491

CIRC ACCESSION NO--AP0118421
                       UNCLASSIFIED

CIRC ACCESSION NO--AP0118421

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRON DOUBLE RESONANCE SPECTRA
OF TRIPLET EXCITONS (PRIME3 T) AND PARAMAGNETIC IMPURITY CENTERS (PRIME2
II) WERE STUDIED IN THE CRYSTALS OF COMPLEX SALT OF
TETRACYANOQUINODIMETHAN WITH METHYLTRIPHENYLPHOSPHONIUM.   CONCN. OF
PARAMAGNETIC IMPURITIES WAS 0.1-0.2PERCENT.   ELECTRON DOUBLE RESONANCE
WAS CAUSED BY SPIN EXCHANGE PROCESSES: PRIME3 TO SUB0 PLUS PRIME3 T
SUBPOSITIVE1 PLUS PRIME3 T SUBNEGATIVE1 (1) AND PRIME3 T SUBJ PLUS
PRIME2 II SUBNEGATIVEONEHALF EQUALS PRIME3 T SUBJMINUS1 PLUS PRIME2 II
SUBONEHALF; J EQUALS 0, 1 (2).   THE RATE CONST. OF PROCESS (2) DOES NOT
DEPEND ON THE TEMP. IN THE RANGE 115-80DEGREESK AND CORRESPONDS TO THE
PROCESS LIMITED BY DIFFUSION (GAMMA T II EQUALS 8 TIMES 10 PRIME
NEGATIVE13 CM PRIME3-SEC).   THE TEMP. DEPENDENT RATE CONST. FOR PROCESS
(1), WITH ACTIVATION ENERGY 0.06 EV, COINCIDES WITH THAT FOUND FROM THE
BROADENING OF EPR LINES.   AT 155DEGREESK GAMMA TT EQUALS 2 TIMES 10
PRIME NEGATIVE12 CM PRIME3-SEC.   FROM THE DIFFERENCE IN THE TEMP.
DEPENDENCE OF GAMMA T II AND GAMMA TT THE CONCLUSION WAS DRAWN THAT
EXCITON MOTIONS ARE ACTIVATIONLESS BUT THEIR SPIN EXCHANGE REQUIRES
ACTIVATION ENERGY.

TITLE--PHOTOEFFECT IN METAL FREE PHTHALOCYANINE CRYSTALS -U-

PROCESSING DATE--23OCT70

AUTHOR-(02)-USOV, N.N., BENDERSKIY, V.A.

COUNTRY OF INFO--USSR

SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 2, PP 535-543

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PHOTOELECTRIC EFFECT, DRIFT MOBILITY, ORGANIC CRYSTAL, ELECTRON MOBILITY, HOLE MOBILITY, PHTHALOCYANINE, QUANTUM YIELD, EXCITON, LASER PULSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1068

STEP NO--GE/0030/70/037/002/0535/0543

CIRC ACCESSION NO--AP0107577

CIRC ACCESSION NO--AP0107577 .UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DRIFT MOBILITIES OF ELECTRONS
(0.43 TO 0.70 CM PRIME2 V PRIME NEGATIVE1 S PRIME NEGATIVE1) AND HOLES
(0.24 TO 0.56 CM PRIME2 V PRIME NEGATIVE1 S PRIME NEGATIVE1) IN
THROUGHLY PURIFIED METAL FREE PHTHALOCYANINE CRYSTALS HAVE BEEN MEASURED
BY ILLUMINATION WITH SHORT LIGHT PULSES. THE MOBILITIES OF CARRIERS OF
BOTH SIGN DIMINISH WITH INCREASING TEMPERATURE: MU IS SIMILAR TO T
PRIME NEGATIVEN, N EQUALS 1.3 TO 1.5 FOR HOLES, N EQUALS 1.5 TO 1.9 FOR
ELECTRONS. THE QUANTUM YIELDS OF HOLES AND ELECTRONS ARE EQUAL IN
MAGNITUDE (7 MINUS OR PLUS 6 TIMES 10 PRIME NEGATIVE5 AT 295DEGREESK)
AND INCREASE EXPONENTIALLY WITH TEMPERATURE. PROBABLY, THE GENERATION
OF PHOTOCARRIERS IS CAUSED BY THERMAL DISSOCIATION OF SINGLET EXCITONS.
THE DIFFERENCE BETWEEN THE ENERGY GAP AND THE SINGLET EXCITON ENERGY IS
EQUAL TO THE ACTIVATION ENERGY OF QUANTUM YIELD (0.19 EV). UNDER THE
GIANT RUBY LASER PULSE THE PHOTOCURRENT IN PURE CRYSTALS IS A LINEAR
FUNCTION OF LIGHT INTENSITY, WHEREAS IN CRYSTALS CONTAINING IMPURITIES
THE SQUARE DEPENDENCE IS OBSERVED. THE MECHANISM OF CHARGE CARRIER
PRODUCTION UNDER HIGH LIGHT INTENSITY IS PROBABLY THE SINGLET EXCITON
ANNIHILATION, THE RATE CONSTANT BEING 4 TIMES 10 PRIME NEGATIVE15 TO 8
TIMES 10 PRIME NEGATIVE14 CM PRIME3 S PRIME NEGATIVE1.   FACILITY:
INSTITUTE OF CHEMICAL PHYSICS, ACADEMY OF SCIENCES OF THE USSR, MOSCOW.

UNCLASSIFIED

THE EFFECT OF EXO-HYDROLASE ON LINEAR HOMOPOLYMER. MATHEMATICAL EXPERIMENT

K. M. BENDETSKY

Institute of Enzyme and Alcohol Industry, USSR, Moscow

The dependence of the share of the destroyed chains P/S on the degree of substrate hydrolysis y/nS by exo-ase was evaluated. Differences between multichain and singlechain mechanisms are shown. The mathematical model for dependence $P(y)$ is suggested. The equation of hydrolysis rate of $n=r$ in the presence of exo-ase has two solutions. The choice of solution depends of that which mechanism is predominant.

APO014741   METALS ABST. 1 - 70   UR 0076

32 0051 Thermal Dissociation of Chalcogenides of the Zinc Subgroup. II.—Thermal Dissociation of Cadmium Selenide. F. I. Boev, L. A. Bendersky, N. V. Minaeva, and A. M. Bunin. Zhur. Fiz. Khim., Sept. 1969, 43, (9), 2234-2237 [in Russian].
The thermal dissociation of $CdSe$ was studied and compared with that of other analogous compounds constituting chalcogenides of Zn-subgroup metals. The apparent v.p., the sublimation pressure, and the dissociation constant were determined as functions of temp. and the heat of formation was calculated. Thus the apparent v.p. at 1100 °C was 0.05 atm, and the standard heat of formation $-31\,760$ kcal/mole. The sublimation pressure varied widely according to the prevailing conditions. 15 ref.—G.A.

19581804

AP9039824⁻   CHEMICAL ABST. /0-69   ULR 0076

74932t **Thermal dissociation of zinc subgroup chalcogenides. I. Thermal dissociation of zinc sulfide and zinc selenide.** Bo*v, E. I.; Benderskii, L. A.; Mil'kov, G. A. (Vses. Nauch.-Issled. Inst. Lyuminofor. Osobo Chisth. Veshchestv, Moscow, USSR). *Zh. Fiz. Khim.* 1969, 43(6), 1393-7 (Russ). ZnS and ZnSe were prepd. by gaseous synthesis in an atm. of Ar. The content of impurities was $10^{-3}\%$. Temp. dependencies of apparent vapor pressure and sublimation pressure were detd. for 1050-1175° (for ZnS) and for 1150-1240° (for ZnSe) in Ar. The free energy $(\Delta G°_{298})$ for the reaction $2Zn(g) + S_2(g) \rightleftharpoons 2ZnS(s)$ is −166.585 kcal./mole and for analogous reaction with Se, −124.0 kcal./mole. For the reaction $Zn(s) + S(rhomb) \rightleftharpoons ZnS(s)$ $\Delta G°_{298} = -50.86$ kcal./mole, $\Delta S°_{298} = -3.59$ cal./degree-mole, $\Delta H°_{298} = -51.93$ kcal./mole and for $Zn(s) + Se(hex) \rightleftharpoons ZnSe(s)$ $\Delta G°_{298} = -35.648$ kcal./mole, $\Delta S°_{298} = 14.0$ cal./degree-mole, $\Delta H°_{298} = -37.46$ kcal./mole. Dissocn. consts. (K_p) are given as a function of temp. The values of $\Delta H°_{18}$ calcd. from the K_p-T dependency are −49.89 and −35.36 kcal./mole for ZnS and ZnSe resp.   L. Kuca

1/1   1943   0129   /8

7

AN0026668

UR 9003

TITLE--   ANNOUNCEMENT OF THE COMMITTEE ON THE LENIN AND STATE
           PRIZES

NEWSPAPER-- IZVESTIYA, FEBRUARY 18, 1970, P 3, COLS 1-5

ABSTRACT-- THE COMMITTEE ON THE LENIN AND STATE PRIZES HAS
ANNOUNCED THE NAMES OF RESEARCHERS ADMITTED TO THE 1970 LENIN PRIZE
COMPETITIONS. THE LIST INCLUDES G. V. NOVOZHILOV, YA. A. KUTEPOV,
V. I. SMIRNOV, D. V. LESHCHINER, V. M. SHEYNIN, AND A. A. OVCHAROV
FOR THEIR "DEVELOPMENT OF THE INTERCONTINENTAL PASSENGER AIRLINER
IL-62", AND A. S. YAKOVLEV, YE. G. ADLER, M. G. BENDERSKIY,
K. M. VALIK, AND K. S. KIL.DISHEVA FOR "JET PASSENGER AIRLINER
YAK-40 POWERED BY THREE AI-25 ENGINES".

BOTH CANDIDATES WERE NOMINATED BY THE MINISTRY OF AVIATION INDUSTRY.

1/1

30

19661717

USSR   UDC 547.559+668.819

AL'YANOV, M. I., BORODKIN, V. F., BENDERSKIY, V. A., and KHOYNOV, YU. I.,
Ivanovo Chemical-Technological Institute, Branch of the Institute of Chemical
Physics, Academy of Sciences USSR, Chair of Chemical Technology of Organic
Dyes and Intermediate Products

"Metalphtalocyanine Purification Method by Means of Vacuum Distillation "

Abstract: A method was developed for the sublimation of large amounts of
metalphtalocyanines. The novelty of the process is in the introduction of a
heat conducting filler into the metalphtalocyanine mass. The apparatus
used in this process is described. It consists of a housing with a constricted
"tail" portion, a flange, a setup for performing condensation and crystal
collection, a condenser, thermal insulator and a heating unit. The material
to be purified, including the heat conducting filler is loaded in a tray
and inserted into the apparatus. It is followed by the removable receiver.
The unit is hermetically sealed, avacuated, and heated slowly to 450°. The
receiver then is pulled into the cold portion of the apparatus and the
heating continued up to 525°C. Then the apparatus is cooled, the crystals
1/2

USSR

AL'YANOV, M. I., et al., Izvestiya Vysshykh Uchebnykh Zavedeniy -- Khimiya
i Khimicheskaya Tekhnologiya, Vol 14, No 10, 1971, pp 1606-1608

obtained are ground up and the impurities formed due to some decomposition
are extracted with acetone until colorless crystalline material is obtained.

2/2

USSR

UDC 541.14:541.13

KORSHUNOV, L. I., ZOLOTOVITSKIY, YA. M., and BENDERSKIY, V. A., Institute of Chemical Physics, USSR Academy of Sciences, Moscow

"Photoelectric Effect at a Metal-Electrolyte Interface"

Abstract: Recent studies in England and the USSR have made it possible to distinguish elementary events underlying the electrode photoeffect, which is a phenomenon of great theoretical and practical interest.   The present survey is aimed at elucidating the elementary processes involved in photo-transfer of a charge through the metal-electrolyte interface (1) in solutions not absorbing light in the part of the spectrum used for excitation of the electrode, and (2) in solutions of photochemically active redox systems, when light is absorbed by the dye solution. Various solutions (K_2SO_4, KCl, $NaNO_3$, etc.) are studied photochemically. Complete graphical data illustrating the course of the experiments accompany the paper.

1/1

Abstract: The authors analyze the sensitivity and bandwidth of flat arith-
metical and logarithmic spirals used as pickups in electron paramagnetic
resonance spectroscopy. It is shown that arithmetical spirals can be used
to achieve high SHF magnetic field strength in a thin specimen (approximately
1 oersted/$W^{1/2}$) and that they have a sensitivity comparable to that of a
cavity resonator in a passband of 1000 MHz. It is concluded that flat spirals
can be successfully used in double electron-electron resonance technology and
pulse measurements of spin relaxation in the study of specimens excited by
strongly absorbed radiation. The radial spirals can be used as EPR signal
pickups for flat specimens with a thickness of the order of 0.1 mm and volumes
of less than 8 mm^3 (or 16 mm^3 in the case of bilateral arrangement of the
specimen). In the case of ideal matching, the sensitivity of the spiral
should be 5-10 times that of a resonator. The considerable bandwidth of a
radial spiral makes it useful as an EPR pickup, and the small dimensions are
very convenient for measurements at very low temperatures. In conclusion, the
authors thank V. P. Sazonov for discussion and constructive criticism.
1/1

USSR

MEYLANOV, I. S., BENDERSKIY, V. A., and BLYUMENFEL'D, L. A., Institute of
Chemical Physics, Academy of Sciences USSR, Moscow

"Photoelectric Properties of Layers of Chlorophyll a and b. I. Photo-
currents During Constant Illumination"

Abstract: The volt-ampere, spectral, and lux-ampere characteristics of
currents in layers of chlorophylls a and b with a thickness of $0.3-2\mu$
subjected to the action of a direct current and constant longitudinal
illumination were studied. Data presented in the article pertain to
layers of chlorophyll a; results for chlorophyll b were similar, but the
current values were smaller by a factor of 2-3. At the maximum potential
applied (250 V), the photocurrent reached 10^{-5} to 10^{-4} A/cm^2 at light in-
tensities of 10^{13} to 10^{14} photons/cm^{-2}sec^{-1}. The lux-ampere characteristic
was linear at 10^{11} to 10^{14} photons/cm^{-2}sec^{-1} in the entire spectral range
studied ($\lambda = 400-750$ mμ). The photoelectric gain reached 10^2 at 10^{13}
photons/cm^{-2}sec^{-1} (photocurrent, 5×10^{-5} A/cm^2). The photoconduction
spectrum was opposite to that of the absorption spectrum and had principal
1/2

USSR

MEYLANOV, I. S., et al, Biofizika, Vol 15, No 5, Sep/Oct 70, pp 822-827

maxima at 540 and 705 mμ. Similar relations were observed on illumination
of the anode and cathode; the anodic current exceeded the cathodic by a
factor of 2-3. Double injection from the electrodes could be assumed. The
quantum yield of the photoeffect exceeded 10% and was estimated at no less
than 15-20% at the 705 mμ maximum. The results showed that formation of
current carriers is one of the principal ways of conversion of light energy
by chlorophyll. Earlier objections to the semiconductor mechanism of photo-
synthesis on the ground that the quantum yield of the photoeffect in
chlorophyy is too small were thus eliminated.

2/2

172   009   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--QUASI CONTINUOUS SPECTRUM OF LOCAL LEVELS IN LAYERS OF
   PHTHALOCYANINES -U-
AUTHOR--USOV, N.N., BENDERSKIY, V.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 405-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SPECTROSCOPIC ANALYSIS, ORGANIC NITROGEN COMPOUND,
   PHTHALOCYANINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0583   STEP NO--UR/0449/70/004/002/0405/0407

CIRC ACCESSION NO--AP0107180
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0107180

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EARLIER WORK BY U. AND B. (1966, 1968, 1969) ON THE SENSITIZATION OF PHTHALOCYANINE IS REVIEWED.

0123

UNCLASSIFIED

1/2   025   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--ELECTRON ELECTRON DOUBLE RESONANCE OF TRIPLET EXCITONS. I. SPIN
EXCHANGE OF TRIPLET EXCITONS IN ION RADICAL SALTS -U-
AUTHOR-(04)-STUNZHAS, P.A., BENDERSKIY, V.A., BLYUMENFELD, L.A., SOKOLOV,
YE.A.
COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(2), 278-83

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON RESONANCE, EXCITON, ION RADICAL, ORGANIC CRYSTAL,
ORGANIC SACT, ELECTRON SPIN, TEMPERATURE DEPENDENCE, SPECTRAL LINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0371   STEP NO--UR/0051/70/028/002/0278/0283

CIRC ACCESSION NO--AP0055156
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0055156
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHANGES IN THE INTENSITY OF THE
ZEEMAN 0 YIELDS 1 TRANSITION OF TRIPLET EXCITONS DURING SATN. OF MINUS 1
YIELDS 0 TRANSITION IN CRYST. ION RADICAL SALTS OF
TETRACYANOQUINOMETHANE WERE STUDIED. AT LOW TEMPS., AN INCREASE OF
INTENSITY OF 0 YIELDS 1 TRANSITION CAUSED BY AN INCREASE OF POPULATION
OF S SUBZ EQUALS 0 LEVEL WAS OBSD. IF THE MINUS 1 YIELDS 0 TRANSITION
WAS SATD. AS THE TEMP. WAS INCREASED, THE EXCITON CONCN. INCREASED AND
THE PROCESS OF SPIN EXCHANGE PRIME3 T SUB0 PLUS PRIME3 T SUB0 EQUALS
PRIME3 T SUB NEGATIVE1 PLUS PRIME3 T SUB POSITIVE1 CAUSED A DECREASE OF
INTENSITY OF THE 0 YIELDS 1 TRANSITION. EQUATIONS WERE DERIVED FOR THE
ESTN. OF FREQUENCES OF SPIN EXCHANGE FROM THE ELECTRON ELECTRON
RESONANCE DATA. THEIR TEMP. DEPENDENCE AGREED WELL WITH THAT DETD. FROM
EXCHANGE GROADENING. THE EFFECT OF ELECTRON ELECTRON DOUBLE RESONANCE
IN THE RESION OF WEAK, BETWEEN LINE ABSORPTION WAS DISCOVERED.

UNCLASSIFIED

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USSR   UDC   51

BOLISLAVSKIY, A. I. and BENDERSKIY, V. M.

"A Method for Solving Problems in the Optimization of Production Processes"

Kiev, V sb. Prom. kibernetika (Industrial Cybernetics--collection of works) 1971, pp 299-306 (from RZh--Matematika, No 12, 1972, Abstract No 12V337)

Translation: The multidimensional, nonlinear knapsack problem

$$F(x) = \sum_{i=1}^{m} g_i(x_i) \to \max,$$

$$\sum_{i=1}^{m} h_{ik}(x_i) \leqslant b_k, \quad k = 1,2,\ldots,n,$$

$$x_i = 0,1,\ldots,M, \quad i = 1,2,\ldots,m,$$

1/2

USSR

BOLISLAVSKIY, A. I. and BENDERSKIY, V. M., Prom. kibernetika, 1971, pp 299-306

is considered. For its solution, an algorithm is proposed which uses dynamic programming and Lagrange multipliers. This algorithm is wrong, as the following example shows: Let us maximize $F(x) = x_1 + x_2$ under the conditions that $2x_1 + x_2 \leqslant 2$, $x_1 + 2x_2 \leqslant 2$, and $x_j = 0,1,2$. This problem has two solutions, $x = (0,1)$ and $x = (1,0)$. However, the proposed computing process is cycled: $x^1 = x^3 = x^5 = \ldots = (0,2)$; $x^2 = x^4 = x^6 = \ldots = (2,0)$. There are other inaccuracies as well. Yu. Finkel'shteyn

2/2

USSR   UDC 51

BOLISLAVSKIY, A. I., BENDERSKIY, V. M.

"A Method of Solving the Problems of Optimizing Production Processes"

V sb. Prom. kibernetika (Industrial Cybernetics--collection of works), Kiev,
1971, pp 299-306 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V337)

Translation: A study is made of a multidimensional nonlinear problem of rank

$$F(x) = \sum_{i=1}^{m} g_i(x_i) \to \max,$$

$$\sum_{i=1}^{m} h_{ik}(x_i) \leqslant b_k, \quad k = 1, 2, \ldots, n,$$

$$x_i = 0, 1, \ldots, M_i, \quad i = 1, 2, \ldots, m.$$

An algorithm is proposed for its solution which uses dynamic programming and
Lagrange factors. This algorithm is erroneous as the following example demon-
strates. Maximize $F(x) = x_1 + x_2$ under the conditions $2x_1 + x_2 \leq 2$, $x_1 + 2x_2 \leq 2$,
$x_j = 0, 1, 2$. This problem has two solutions $x = (0, 1)$ and $x(1, 0)$. However,
the proposed calculation process loops: $x^1 = x^3 = x^5 = \ldots = (0, 2)$; $x^2 = x^4 =$
$= x^6 = \ldots = (2, 0)$. There are other inaccuracies.
1/1

UDC 51

USSR

BOLISLAVSKIY, A. I., BENDERSKIY, V. M.

"Algorithm for Solving the Problems of Linear Programming for the Variables 0-1 and Its Application in the Problems of Operative Production Planning"

Sb. nauch. tr. VNII organiz. proiz-va i truda chern. metallurgii (Collected Scientific Works of the All-Union Scientific Research Institute of Organization of Production and Labor of Ferrous Metallurgy), 1972, vyp. 14, pp 172-174 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V495)

Translation: An algorithm is described for solving the problems of linear programming with boolean variables which was used to select the orders insuring optimal loading of machine tools in accordance with weekly proportions.

1/1

1/2   028   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--KINETICS OF THE DECOMPOSITION OF A CHROMIUM SOLID SOLUTION IN
SILICON -U-

AUTHOR-(03)-BENDIK, N.T., GARNYK, V.S., MILEVSKIY, L.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1) 190-5

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--SOLID SOLUTION, CHEMICAL DECOMPOSITION, THERMAL EFFECT,
CHEMICAL REACTION KINETICS, CHROMIUM, SILICON, ELECTRON PARAMAGNETIC
RESONANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/0241   STEP NO--UR/0181/70/012/001/0190/0195

CIRC ACCESSION NO--AP0048520
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0048520

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DECOMPN. OF THE SOLID SOLN. OF CR IN SI WAS INVESTIGATED BY EPR. ANAL. OF THE EXPTL. CURVES OF THE DECOMPN. IN TERMS OF THE DIFFUSION THEORY OF HAM POINTS TO THE EXISTENCE OF DEFECTS OF VARIOUS SYMMETRIES ON WHICH SEPN. OF CR FROM THE SOLN. TAKES PLACE. THE D. WAS EVALUATED FROM 10 PRIME6 TO 10 PRIME7 CM PRIME NEGATIVE2. THE TEMP. DEPENDENCE OF THE DIFFUSION COEFF. OF CR IN SI WAS INVESTIGATED AT 900-1250DEGREES, WHICH IS GIVEN BY THE EXPRESSION D EQUALS 0.01 EXP(MINUS 23,000-RT). THE TEMP. DEPENDENCE OF THE CONST. OF DECOMPN. TIME TAU CAN BE DESCRIBED BY THE EXPRESSION TAU EQUALS 2.7 TIMES 10 PRIME NEGATIVE9 EXP(21,000-RT).

UNCLASSIFIED

TITLE--MICRIBIOLOGICAL QUANTITATIVE DETERMINATION OF INOSITOL IN YEASTS

PROCESSING DATE--30OCT70

-U-

AUTHOR-(03)-KOROTCHENKO, N.I., BENDOSENKO, V.A., KONEVA, N.K.

B

CCUNTRY OF INFO--USSR

SOURCE--PRIKL. BIOKHIM. MIKROBIOL. 1970, 6(2), 243-7

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--YEAST, MICROBIOLOGY, QUANTITATIVE ANALYSIS, ALCOHOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1806

STEP NO--UR/0411/70/006/002/0243/0247

CIRC ACCESSICN NO--AP0127220

UNCLASSIFIED

CIRC ACCESSICN NC--AP0127220
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO DET. INCSITOL (I) IN YEASTS, A
  1 G ALIQUOT OF THE DRIED MATERIAL IS AUTOCLAVED WITH 20 ML OF 20PERCENT
  HCL FOR 1 HR UNDER 1 ATM TO LIBERATE I, THE HYDROLYZATE NEUTRALIZED TO
  PH 5.2-5.7 AND DILD. TO A CGNCN. OF 1-2 MU G-ML I.   TO DET. I
  MICROBICL., A 48 HR CULTURE OF SCHIZOSACCHAROMYCES PUMBE IS ADDED TO THE
  HYDROLYZATE, THE MIXT. INCUBATED 48 HR AT 35DEGREES, THE INTENSITY OF
  GROWTH MEASURED PHGTCCOLORIMETRICALLY, AND THE RESULT COMPARED TO A STD.
  CURVE MADE WITH KNOWN CONCNS. OF I. THE CONTENT OF I IN DRY YEASTS AS
  DETD. BY THIS METHOD IS, FOR DIFFERENT CANDIDA SPECIES, 1268-4792 MU
  G-G, THE LEVEL OF I DEPENDING PRIMARILY ON THE NATURE OF THE NUTRIENTS
  SUPPLIED.   FACILITY: ALL UNION RES. INST. PROTEIN BIOSYN., USSR.

BENDYASHVILI N.S.

Acc. Nr: AP0043794

Ref. Code: UR 0056

CONTRIBUTION TO THE THEORY OF SPIN-LATTICE RELAXATION
IN CRYSTALS WITH PARAMAGNETIC IMPURITIES

N. S. Bendiashvili, L. L. Buishvili, M. D. Zviadadze

The effect of nonuniform EPR broadening on relaxation of nuclei in crystals with
magnetic impurities is discussed. It is shown that the concentration dependence of the
relaxation rate agrees with the experimental data.

1/1

21 DI

REEL/FRAME
19770203

USSR   UDC 621.378.325+621.374.22

BENEDIKTOV, G. L., MIKHAYLOV, N. I., Leningrad Electrical Engineering
Institute

"Singularities of Producing Powerful Light Pulses of Complex Shape"

Abstract: The paper deals with distinctive characteristics in synthesizing
high-power square and back-to-back sawtooth light pulses and pulse packets
by using flash lamps. An experimental study is made of the change in resis-
tance of the lamps as a function of the shapes of current pulses. It is
found that the shape of the light pulses corresponds fairly closely to the
shape of the current pulses. Deviations are observed only on sections where
there is an appreciable change in the resistance of the lamps. The effects
of changes in lamp resistance and in the shape of light pulses may be ac-
counted for in the first approximation by utilizing oscillograms of typical
pulse shapes when designing circuits to produce light pulses of complex
shapes.

1/1

USSR

BENEDIKTOV, G. L.

UDC: 621.373:530.145.5

"A Thyristor Converter for Capacitive Laser Accumulators"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Electrical Communications Technology--collection of works), Vyp. 5, Moscow, "Svyaz'", 1970, pp 177-182 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6D159)

Translation: The paper deals with processes of charging the capacitive accumulators of the gas-discharge tubes of lasers when they are fed from a source of limited power. A circuit is given for a thyristor converter which assures a predetermined law of change in the active power consumption when the accumulator is being charged. Basic relationships are derived which are necessary for calculating the converter and control system. Three illustrations, one table, bibliography of three titles. Resumé.

1/1

USSR

UDC   621.371.029.55

BENEDIKTOV, Ye. A., GETMANTSEV, G. G., YEZHOV, A. I., KOROBKOV,
Yu. S., MALYSHEV, S. K., MATYUGIN, S. N., MITYAKOV, N. A.,
SAZONOV, Yu. A., CHERNOV, V. A., BEN'KOVA, N. P., BEREZIN, Yu. M.,
BUKIN, G. V., KOLOKOLOV, L. Ye., and PEREKHVATOV, Yu. K.

"Results of an Experiment in Shortwave Radio Propagation"

Translation: Results of experiments on investigating the charac-
teristics of wave propagation in the decameter range (5.7-15.0 MHz)
are analyzed; the communications took place between the following
magnetically adjacent points: an ionospheric station in Gor'kiy and
two science research ships in the Indian Ocean. In particular, the
possibility of communication over the Peterson beam was estimated.
Two illustrations, bibliography of one. N. S.

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BENEDIKTOV Ye. A.

VII. ATMOSPHERIC PHYSICS

Benediktov, Ye. A., G. V. Bukin, Yu. V. Kushnevskiy, S. N. Mityurin, N. P. Mozerov, Yu. K. Perekhvatov, and M. D. Fligel'.
Reception of Kosmos-381 signals from a conjugate point region. Kosmicheskiye issledovaniye, no. 2, 1972, 302-303.

An attempt is described to detect satellite r-f signals from a conjugate point, with the object of precluding the possible anomalous magnetospheric or ionospheric modes that may be excited from ground-based transmitters in conjugate point experiments. The tests were done in December, 1970 using the Kosmos-381 satellite which broadcast at 2, 3.2, 5.6, 8.6, 10.4 and 12.8 MHz. Pulse power was 100w, and pulse width was 150μs at a 48 Hz repetition rate; reception was monitored with wideband delta or rhombic arrays at both the Moscow and Gor'kiy tracking stations. During part of the test period the orbital plane included both the receiver and conjugate points; the remaining orbits included the conjugate point only.

In the 13th recording session with transmission at 12.8 MHz, a signal from the conjugate point (lat. 39.5° S, long. 55° E) was clearly received at Moscow for an interval of 20 seconds, corresponding to a satellite travel of 150 km. The magnetosphere channel width was however somewhat less than this value, since the satellite path was presumably at some inclination to it, and also because the channel tends to "trap" the transmitted signal near its boundaries. Analogous reception at Gor'kiy was only for 0.25 to 0.5 sec, evidently because the satellite only grazed the waveguide channel. In some cases conjugate point reception was obscured by noise in the 12.8 MHz range; however there were cases where clear line-of-sight signals were recorded with no corresponding conjugate point reception.

BENEDIKTOV, Ye. A.

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Since the tests were conducted at various times of day and
orbital inclinations, the authors point out that their data indicate the
spatial and time variation in the magnetosphere channel.

Benediktov, Ye. A., L. V. Grishkevich, and
V. I. Ivanov. Simultaneous measurement of
electron concentration and collision frequency
in the ionospheric D-region, using a partial
reflections method. IVUZ Radiofiz, no. 5,
1972, 695-702.

In a related earlier work the authors described initial results
in measuring electron density N in the D-layer by obtaining the corre-
lation coefficient between backscatter of the ordinary and extraordinary
wave components (IVUZ Radiofiz, no. 9, 1971, 1452). In that paper
the feasibility of simultaneously determining the collision frequency v_m
from the same data was postulated; In the present article this is verified
theoretically and experimentally. The analysis assumes a rectangular
transmitted pulse, τ at frequency ω and a sufficiently directional beam
so that, neglecting absorption in the scattering medium, the correlation
coefficient for both wave components may be found from

$$\rho_{x,r} = \frac{\sin X}{X}.$$

where $X = kL(\mu_0 - \mu_x)$; μ_0 and μ_x are refractive indices of the ordinary and
extraordinary components; $L = c\tau/2$; and $k = \omega/c$.   (1)

Graphical results of $\rho(N)$ are presented for an assumed
set of v_m based on Eq. (1), and calculated for transmitted frequencies
of 3 and 5.75 MHz. It is shown that with the assumed simplifications

· USSR.

UDC: 551.510.535

BENEDIKTOV, Ye. A., GRISHKEVICH, L. V., IVANOV, V. A., and
KOMRAKOV, G. P.

"Some Statistical Characteristics of Signals Partially Reflected
from the D Region of the Ionosphere"

Abstract: This paper offers experimentally obtained information
regarding the statistical characteristics of partially reflected
radio waves and its possible interpretation through a model of
"frozen" heterogeneities moving in a horizontal direction. The
experimental equipment consisted of a transmitter operating on
a frequency of 5.75 MHz, with a pulse power of the order of 750
kW and a pulse width of 50 μs repeated at a 50-Hz rate. A four
half-wave dipole, the antenna had a directional diagram of about
56° by 56° at a half-power level and was linearly polarized. The
receiver antenna consisted of 36 pairs of crossed dipoles and had
a 12° by 12° diagram, and was capable of picking up signals with
linear and circular polarization. Auxiliary receiver antennas
were also used. Experimental runs were made on separate days in
the spring of 1970 and were repeated in March of 1971. Processing
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USSR

of the data consisted in obtaining the amplitude distribution
function of the signals for various fixed altitudes, and in de-
termining the autocorrelation amplitude functions. The authors
express their gratitude to V. V. Tamoykin for his advice and to
T. N. Fedoseyeva for her assistance with the computations. They
are associated with the Scientific Research Radio Physics Insti-
tute.

2/2

1/2   018   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--RAPID TITRIMETRIC DETERMINATION OF BORON IN SILICATES -U-

AUTHOR-(02)-PIRYUTKO, M.M., BENEDIKTOVALODOCHNIKOVA, N.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(1), 136-41

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POTENTIOMETRIC TITRATION, BORON, SILICATE, SODIUM HYDROXIDE,
   METAL COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1177   STEP NO--UR/0075/70/025/001/0136/0141

CIRC ACCESSION NO--AP0138192
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0138192
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE DETN. OF B WITHOUT SEPG. THE
INTERFERING ELEMENTS IS BASED ON POTENTIOMETRIC TITRN. OF BOROMANNITIC
ACID WITH A 0.02N NAOH SOLN. TO PH 6.9 IN THE PRESENCE OF COMPLEXON III.
F PRIME NEGATIVE DOES NOT INTERFERE. FUSE 0.1-0.4 G OF THE SILICATE
WITH G NA SUB2 CO SUB3 IN THE PRESENCE OF A FEQ GRAINS OF KNO SUB3.
LEACH THE MELT WITH H SUB2 O CONTG. SUCH AN AMT. OF HCL AS TO MAKE THE
FINAL CONCN. 0.2N.   IN THE PRESENCE OF MN(II), TI(IV), ZR(IV), FE(II),
FE(III), AL(III), CR(III), AND CR(IV) ADD TO THE SOLN.   0.01M COMPLEXON
III (IN THE PRESENCE OF MN(IV) AND TI(IV) ADD ALSO SOME H SUB2 O SUB2)
AND BOIL; LARGER THAN OR EQUAL TO 30 ML COMPLEXON III DECREASES THE
ACCURACY OF THE DETN. COOL, DIL. TO BOL. WITH H SUB2 O, ADJUST AN
ALIQUOT TO PH 3 WITH NAOH AND BOL TO REMOVCO SUB2. COOL, DIL. TO 100-50
ML AND TITRATE POTENTIOMETRICALLY WITH 0.02N NAOH TO PH 6.9.   THEN ADD
MANNITOL (10 G FOR EACH 100 ML OF SOLN.) AND TITRATE AGAIN TO PH 6.9
WITH THE SAME ALKALI.   FACILITY: INST. CHEM. SILICATES,
LENINGRAD, USSR.

USSR

ZHUKOVSKIY, M.I., et al., Tr. Vses. nauchno-tekhn. konferentsii po termodina-
mike. Sekts. Novyye teploenerg. i kholodil'n. skhemy i tsikly, Leningrad, 1969,
pp 172-177

temperature, 1.5 tl magnetic inductance, and 100 mho/m specific conductance).
The original article has two illustrations and two bibliographic entries.
A.D. Lobanov.

A70-23156 #   Analysis of the dispersion equation for a three-dimensional periodic structure. (Analiz dispersionnogo uravneniia trekhmernoi periodicheskoi struktury). L. S. Benenson and I. N. Marchenko. *Radiotekhnika i Elektronika*, vol. 15, Feb. 1970, p. 263-277. In Russian.

Outline of a method of analyzing the dispersion equation for a three-dimensional periodic structure, based on the representation of this equation in the form of a superposition of partial characteristics related to individual spatial harmonics of a two-dimensional array. The overall analysis of this equation for various structural parameters is illustrated by graphs plotted for the cases of two and three spatial harmonics. An analytical solution of the dispersion equation is given for the case of two harmonics.   A.B.K.

ALS

REEL/FRAME
19780054

USSR

BENENSON, Z. M., KHAZEN, E. M.

"Measures of Information in Problems of Recognition of Hypotheses"

Tr. IV Vses. Soveshch. po Avtomat. Upr. 1968. Teoriya Avtomat. Upr.
[Works of Fourth All-Union Conference on Automatic Control, 1968. The
Theory of Automatic Control], Moscow, Nauka Press, 1972, pp 179-184
Discussion 256-262 (Translated from Referativnyy Zhurnal, Kibernetika,
No 3, Moscow, 1973, Abstract No 3 V190 by the authors).

Translation: Estimates are produced, relating the losses of information
and risk increment in construction of successive decision rules for
differentiation of multiple, complex hypotheses under conditions of
incomplete information. The construction of optimal decision rules for
recognition of hypotheses considering limitations on the "memory volume"
and requirements for stability of realization is studied.

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USSR

ABRIKOSOV, A. A.; BENESLAVSKIY, S. D. (Landau Institute of Theoretical Physics)

"On the Possible Existence of Intermediate Substances between Metals and Dielectrics"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; October, 1970;
pp 1280-98

ABSTRACT: The possibility of the existence of substances with electron spectra
containing neither an energy gap nor a Fermi surface is investigated. First of
all, the question of the possibility of contact at a single point of the con-
ductivity band and the valence band is investigated within the framework of
the one-electron model. It is shown that such a possibility exists under con-
ditions of symmetry of a crystal. A complete investigation is carried out for
points in the space of a reciprocal lattice with a small group equivalent to a
point group. The case of a more complex small group is considered. It is shown
that in the vicinity of the point of contact the spectrum may be linear as well
as quadratic.

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USSR

ABRIKOSOV, A. A., et al., Zhurnal Eksperimental'noy i Teoretich-
eskoy Fiziki, Oct 70, pp 1280-1298

The role of coulomb interaction is considered for both types of spectra.
A slowly varying (logarithmic) factor appears in the spectrum in the case of a
linear dispersion law. In the case of a quadratic spectrum the effective inter-
action for small momenta becomes strong and the concept of a one-particle
spectrum is invalid. The behavior of the Green functions is governed by laws
which are similar to those encountered in the theory of a field with a strong
coupling and in the vicinity of a phase transition point of the second kind
(scaling). These yield power laws for the electron specific heat and the elec-
tron momentum distribution.

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USSR

UDC 669.71.053.4.094

TIKHONOV, N. N. YASHUNIN, P. V., BENESLAVSKIY, S. I., and BYKOV, A. B.

"Solubility of Aluminum Hydroxide from Bauxites of Various Mineralogical Types in Alkaline-Aluminate Solutions"

Translation: The solubility of $Al(OH)_3$ from hydrargillite and bemite bauxites in alkaline-aluminate solutions was studied under conditions close to industrial. The solubility of natural hydrargillite and bemite differs somewhat from the solubility of these minerals obtained under artificial conditions. There is some variation of solubility as a function of the perfection of the crystals within the limits of the same crystalline modification. Approximate values of the calculated modulus are presented for leaching of hydrargillite and bemite bauxites under various conditions. 1 illustration, 4 tables, and 8 bibliographic references.

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USSR

BENETSKIY, B. A., NEFEDOV, V. V., FRANK, I. M., and SHTRANIKH, I. V.,
Institute of Nuclear Research, Academy of Sciences USSR

"Interaction of 13-17-Mev Neutrons With Lead Isotopes"

Abstract: For purposes of studying the interaction of neutrons with heavy nuclei in the vicinity of filled shells, the authors investigated the total neutron cross-sections σ_T for $Pb^{206,207,208}$. The results of these experiments were reported at the Twenty-Second All-Union Conference on Nuclear Spectrometry. A resonance peculiarity is observed in the behavior of σ_T for Pb^{207} at a neutron energy of 16.8 Mev (16.7 Mev c.m.s.), which corresponds to excitation of the compound nucleus Pb^{208} equal to $\varepsilon = 24.1$ Mev. The position of the resonance, the order of its width and the character of the peculiarity in the variation of the elastic scattering cross-section with energy suggest the excitation of analog fast-neutron capture resonance.

The authors thank V. A. ROZOVSKIY and V. P. MALIKOV, who took part in the work, and F. L. SHAPIRO, G. Ye. BELOVITSKIY, I. Ya. BARIT, V. I. POPOV, and V. A. SERGEYEV for discussing the work and for their interest in it.
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BENEVOLENSKAYA, T. V.

Space Physiology

Abstract: This paper gives the results of clinical and experimental investigations of animals and human subjects conducted to study the mechanisms underlying the effect of hypodynamia on the cardiac function. Clinical investigations which involved a 120-day bedrest experiment indicated that lessened activity resulted in deterioration of the autonomic function and asthenization of the body at later stages. Cardiac changes were traced in the ECG, largely due to a reduced amplitude of the T waves in the first standard and left chest leads. Hypokinetic experiments on rabbits revealed a drastic reduction in noradrenaline content in the hypothalamus at early stages and an inhibition of the adrenal function at later times. Ultra-structural investigations of myocardial cells revealed focal changes in contractile elements (myofibrillar swelling), trophic formations (reduced number of cristae in mitochondria) and increased permeability of the capillary endothelium. Changes in ECG waves which are typical of hypokinetic exposure can be attributed to disturbances in cardiac regulation and trophic support of the myocardium.

Studies of the effect of hypokinesia on the human body have shown that a marked restriction of motor activity causes a number of shifts in cardiac activity and vascular tone, as well as reduced adaptability of the cardiovascular system and circulatory regulation apparatus (A. L. Myasnikov, et al.; Yu. V. Latova; G. P. Mikhaylovskiy and T. V. Benevolenskaya; V. S. Georgiyev-skiy and V. M. Mikhaylov; L. I. Kakurin; A. V. Korobkov, et al.; N. K. Pan-ferova, et al.; A. V. Beregovkin, et al.; A. D. Voskresenskly, et al.; A. M. Genin, et al.; A. R. Kotovskaya; I. D. Pestov, et al.; P. A. Sorokin, et al.,

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USSR

BENGALI, N., GALAKHMATOVA, B. S., GULAMOV, I. R., KALACHEVA, Z. F., OMAR, M. R. and ROMANOVSKIY, Ye. A.

"Polarization of Protons as a Function of Energy during Elastic Scattering in 24_{Mg}"

Abstract: The authors used the double-scattering method to measure the extent to which polarization of protons during elastic scattering in ^{24}Mg depends on energy. Their experiments were carried out for energies ranging from 5.9 to 6.5 million electron volts for 60° and 120° angles of scattering. While measuring the dependence of polarization on energy during elastic scattering, they also valuated it for the case of inelastic scattering of protons in ^{24}Mg with an excitation level of 1.37 million electron volts, borrowing some needed data from another work. They found that polarization of protons varied considerably as a function of their energy for both angles in both types of scattering. The authors emphasize that their results are merely preliminary. They are planning further experiments to obtain spectroscopic information and data on the mechanism by which polarization is initiated.

1/1

USSR

BENIN, V. L., KIZILOV, V. U., and MAKSIMOV, V. M.

"Broad-Pulsed Modulator"

Translation: A broad-pulsed modulator contains a bistable transis-
torized d-c converter and is distinguished in that, for the pur-
pose of broadening the functional possibilities of the device, it
contains an additional magnetic core with a control winding, the
collector and output windings of the converter both using the
core.

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USSR   UDC 582.288.42:632.4

FENKEN, A. A. and DOTSENKO, A. S., All_Union Institute of Plant Protection

"Ways of Controlling Infection by Verticillium dahliae Kleb. in Soil"

Leningrad, Mikologiya i Fitopatologiya, No 4, 1971, pp 351-358

Abstract: Cotton growing is an economic necessity in the Central Asian
republics of the Soviet Union; crop rotation, fallowing, etc. are not feasible.
Field experiments have shown that two methods are especially valuable in
ridding the soil of infection and in substantially reducing the extent of
Verticillium wilt: (a) planting grain crops as precursors to cotton, partic-
ularly wheat, which seems to be completely immune to the disease; (b) plowing
under the after-harvest residues of grain crops and/or adding cellulose-
containing materials (sawdust, straw, etc.) to the soil in order to promote
the growth of saprophytic and antagonistic microflora.

1/1

1/2   036   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--INVESTIGATING THE MAGNETIC FIELD OF DEFECTS SURROUNDED BY DIRECT OR
   ALTERNATING CURRENT; CURRENT DENSITY DISTRIBUTION IN THE DEFECT ZONE OF
AUTHOR-(02)-BENKLEVSKAYA, N.P., ZATSEPIN, N.N.

COUNTRY OF INFO--USSR

SOURCE--SVERDLOVSK, DEFEKTOSKOPIYA, NO. 1, 1970, PP 89-94

DATE PUBLISHED-------70

SUBJECT AREAS--METHODS AND EQUIPMENT, MATERIALS

TOPIC TAGS--MAGNETIC FIELD, NONDESTRUCTIVE TEST, STEEL, SURFACE PROPERTY,
   CURRENT DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/0114   STEP NO--UR/0381/70/000/001/0089/0094

CIRC ACCESSION NO--AP0100655
                         UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   FOR A QUALITATIVE EXPLANATION OF
THE PECULIARITIES OF THE MAGNETIC FIELD TOPOGRAPHY OF DEFECTS SURROUNDED
BY CURRENT, IT IS IMPORTANT TO KNOW THE CURRENT DENSITY DISTRIBUTION IN
THE DEFECT ZONE.   THIS ARTICLE DESCRIBES EXPERIMENTS PERFORMED TO STUDY
THE X, Y, AND Z COMPONENTS OF THE CURRENT DENSITY AS FUNCTIONS OF THOSE
COORDINATES AND THE DIMENSIONS OF THE DEFECT.   THE METHOD OF
MEASUREMENT IS DESCRIBED; SINCE THE CURRENT DENSITY CANNOT BE MEASURED
DIRECTLY, OHM'S LAW IN DIFFERENTIAL FORM IS USED. THIS REQUIRES
MEASUREMENT OF THE POTENTIAL DIFFERENCE BETWEEN THE UNDAMAGED PART OF
THE MATERIAL AND THE ZONE OF THE DEFECT, A PROCESS EXPLAINED IN SOME
DETAIL.   A PICTURE OF THE SENSOR WITH WHICH THE MEASUREMENT IS MADE IS
GIVEN.   THE RESULTS OF THE EXPERIMENT GIVE A QUALITATIVE ESTIMATE OF THE
CURRENT FLOW AROUND THE DEFECT AND EXPLAIN SOME OF THE CHARACTERISTICS
OF THE MAGNETIC FIELD TOPOGRAPHY OF THESE DEFECTS.   SUBJECTS OF THE
EXPERIMENTS WERE STEEL PLATES 150 MM WIDE AND 15 MM THICK WITH
TRANSVERSE ARTIFICIAL DEFECTS.   THESE WERE RECTANGULAR SLITS OF VARIOUS
DIMENSIONS.   THE AUTHORS CONCLUDE THAT THE CURRENT DENSITY IN THE
SURFACE ZONE OF THE DEFECT IS NONUNIFORMLY DISTRIBUTED; IT IS WEAKENED
AT THE CENTRAL PART AND STRENGTHENED AT ITS END.   THEY FIND ALSO THAT
FOR DEFECT DETECTION, IT IS BEST TO USE THE CURRENT DENSITY COMPONENT IN
THE DIRECTION OF THE DEFECT LENGTH, AND THAT THE EXTENT OF THE DEFECT
CAN BE JUDGED FROM THE POSITIONS OF THE MAXIMA OF THIS CURRENT DENSITY
COMPONENT.

UNCLASSIFIED

1/2   022   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--CURRENTS IN AN UNPERTURBED IONOSPHERE AND THEIR GEOPHYSICAL EFFECTS
-U-
AUTHOR-(02)-BENKOVA, N.P., FATKULLIN, M.N.

COUNTRY OF INFO--USSR

SOURCE--IN: IONOSPHERIC STUDIES. NUMBER 19 (IONOSFERNYE ISSLEDOVANIIA.
NUMBER 19). (A70-32076 15-13), MOSCOW, IZDATEL'STVO NAUKA, 1970, P.
DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--ELECTRIC CURRENT, IONOSPHERE, TIME SPACE, CURRENT DENSITY,
GEOPHYSICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1085   STEP NO--UR/0000/70/000/000/0136/0174

CIRC ACCESSION NO--AT0124742
                          UNCLASSIFIED

CIRC ACCESSION NO--AT0124742

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. REVIEW OF PUBLISHED STUDIES
DEALING WITH MEASUREMENTS OF ELECTRIC CURRENTS IN THE IONOSPHERE BY
DIRECT AND INDIRECT METHODS.   SPECIAL ATTENTION IS GIVEN TO THE TIME
SPACE DISTRIBUTION OF THE CURRENTS PRESENT IN THE OUTER PORTION OF THE
SQ FIELD. THE RESULTS OF ROCKET DATA ARE ALSO CONSIDERED. THE
MECHANISM OF INDUCTION OF THESE CURRENTS, THE CURRENT DENSITIES
DETERMINED BY IONOSPHERIC OBSERVATIONS, AND THE EFFECTS OF CURRENTS ON
THE CHARACTERISTICS OF THE IONOSPHERE ARE ALSO DISCUSSED.

UNCLASSIFIED

1/2   025   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--IONOSPHERIC DISTURBANCES -U-

AUTHOR-(02)-BENKOVA, N.P., ZEVAKINA, R.A.

COUNTRY OF INFO--USSR

SOURCE--IN: IONOSPHERIC STUDIES. NUMBER 19 (IONOSFERNYE ISSLEDOVANIIA.
   NUMBER 19). (A70-32076 15-13), MOSCOW, IZDATEL'STVO NAUKA, 1970, P.
DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--IONOSPHERIC DISTURBANCE, F LAYER, ELECTRON DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1077   STEP NO--UR/0000/70/000/000/0041/0052

CIRC ACCESSION NO--AT0124734
                         UNCLASSIFIED

CIRC ACCESSION NO--AT0124734

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BRIEF REVIEW OF THE RESULTS OF
PUBLISHED STUDIED CONCERNING THE OCCURRENCE OF IONOSPHERIC DISTURBANCES.
THE PLANETARY DISTRIBUTION OF NEGATIVE AND POSITIVE DISTURBANCES IN THE
F REGION IS DISCUSSED. VERTICAL VARIATIONS IN THE ELECTRON
CONCENTRATION DURING DISTURBANCES ARE ANALYZED ON THE BASIS OF SATELLITE
AND GROUND DATA. CURRENT HYPOTHESES CONCERNING THE MECHANISM OF
ELECTRON CONCENTRATION DECREASES DURING IONOSPHERIC DISTRUBANCES ARE
APPRAISED.

UNCLASSIFIED

Acc. Nr: AP0046366

Ref. Code: UR0000

PRIMARY SOURCE: Razdel V, Ionosfernyye Issledovaniya, 1970, Nr 19, pp /36-174/

N. P. Ben'kova, M. N. Fatkullin. Currents in non-disturbed ionosphere and their geophisical effects. . . . .

The paper presents a short survey of the studied currents in the ionosphere conducted by direct and indirect methods. The paper discusses the peculiarities of space-time currents distribution, which can be discovered when analysing the outer part of the S_q-field. The rocket researches of currents in the ionosphere are analysed. The dynamomechanism of currents excitation is discussed in detail, the evaluations of currents density are carried out according to the data of ionospheric research. The influence of currents on the peculiarities of the ionosphere is considered.

REEL/FRAME
19781531

/2-

TITLE--USE OF THE ANALYTICAL GEOMAGNETIC FIELD IN A STUDY OF MAGNETIC
ANOMALIES -U-

AUTHOR-(04)-BENKOVA, N.P., GORSHKOVA, T.A., SIMONENKO, T.N., TYURMINA,
L.O.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, GEOMAGNETIZM I AERONOMIYA, VOL X, NO 3, 1970, PP 505-512

DATE PUBLISHED------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--MAGNETIC ANOMALY, GEOMAGNETIC FIELD, MAP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0504   STEP NO--UR/0203/70/010/003/0505/0512

CIRC ACCESSION NO--AP0132709
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132709
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ANALYTICAL REPRESENTATION OF
THE GEOMAGNETIC FIELD IS CLOSELY RELATED TO THE PROBLEMS INVOLVED IN
MAGNETIC CARTOGRAPHY. IT CAN BE USED BOTH FOR REPRESENTING THE MAIN
GEOMAGNETIC FIELD AND AS A NORMAL FIELD FOR STANDARDIZING MAPS OF
MAGNETIC ANOMALIES. THE PROBLEM OF THE NORMAL FIELD IN GENERAL AND THE
NORMAL FIELD REPRESENTED BY SPHERICAL HARMONIC SERIES HAS BEEN DEVELOPED
IN DETAIL BY BULLARD. THIS ARTICLE IS A FURTHER DEVELOPMENT OF SOME OF
HIS CONCLUSIONS, WITH WHICH THE AUTHORS ARE IN GENERAL FULLY IN
AGREEMENT. AS THE OBSERVED FIELD THE AUTHORS USED THE RESULTS OF
SURVEYS OF THE MODULUS OF TOTAL STRENGTH T, FREED FROM THE EFFECT OF
LOCAL ANOMALIES. THE ONLY SURVEYS EMPLOYED WERE THOSE MADE WITH PROTON
MAGNETOMETERS DURING THE LAST 5-10 YEARS. ALL THE EXPERIMENTAL DATA
FELL INTO TWO CATEGORIES: 1) MEASUREMENTS OF T ALONG MOST GROUND, OCEAN
AND AEROMAGNETIC PROFILES, REDUCED TO 1965 AND THE EARTH'S SURFACE.
CONTINUOUS T MEASUREMENTS ALONG THE PROFILES WERE FIRST SUBJECTED TO
MOVING AVERAGING WITH A BASE OF 400 KM AND A 5 KM INTERVAL; 2) MAPS OF
NORMAL FIELDS OF EXTENSIVE REGIONS COMPILED BY DIFFERENT METHODS USING
SURVEY DATA FOR THESE REGIONS. THE ACCURACY OF T VALUES IS ESTIMATED
FOR DIFFERENT REGIONS FROM 15 TO 50GAMMA. FIG. 1 IN THE TEXT SHOWS THE
GEOGRAPHICAL DISTRIBUTION OF PROFILES AND THE AREAS COVERED BY REGIONAL
MAPS. FIGS. 2 AND 3 SHOW DELTA T CURVES, THE DIFFERENCES BETWEEN
OBSERVED AND ANALYTICAL T VALUES. IT IS SHOWN THAT ANALYTICAL
EXPRESSION OF THE FIELD REPRESENTED BY THE SUM OF NINE HARMONICS CAN BE
USED AS THE NORMAL FIELD.

UNCLASSIFIED

CIRC ACCESSION NO—AP0132709
ABSTRACT/EXTRACT—FIG. 5 IN THE TEXT IS THE AUTHORS' FINAL WORLD TO MAP
(THE MAXIMUM DELTA T VALUES USUALLY FALL TO THE SOUTH OF 40DEGREESS,
THAT IS, WHERE THE GREATEST GAPS IN MAGNETIC SURVEYING EXIST).
FACILITY: INSTITUTE OF TERRESTRIAL MAGNETISM, IONOSPHERE AND RADIO WAVE
PROPAGATION.

UNCLASSIFIED

USSR

UDC 621.371.029.55 /O

BENEDIKTOV, Ye. A., GETMANTSEV, G. G., YEZHOV, A. I., KOROBKOV, Yu. S., MALYSHEV, S. K., MATYUGIN, S. N., MITYAKOV, N. A., SAZONOV, Yu. A., CHERNOV, V. A., BEN'KOVA, N. P., BEREZIN, Yu. M., BUKIN, G. V., KOLOKOLOV, L. Ye., and PEREKHVATOV, Yu. K.

"Results of an Experiment in Shortwave Radio Propagation"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 3. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 3—collection of works) "Nauka," 1972 pp 73-76 (from RZh—Radiotekhnika, No 10, 1972, Abstract No 10A367)

Translation: Results of experiments on investigating the characteristics of wave propagation in the decameter range (5.7-15.0 MHz) are analyzed; the communications took place between the following magnetically adjacent points: an ionospheric station in Gor'kiy and two science research ships in the Indian Ocean. In particular, the possibility of communication over the Peterson beam was estimated. Two illustrations, bibliography of one. N. S.

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Public Health, Hygiene and Sanitation

USSR   UDC 612.014.32

BEN'KOVICH, B. I.

"Visual Fatigue Behind the Control Panel of a Locomotive"

Minsk, Izvestiya Akademii Nauk VSSR, No 1, 1973, pp 143-144

Translation of Russian abstract: The article presents data on a study of the visual analysor (the threshold of receptivity of the analysor to the critical frequency of light flashes) in trips of varying duration, at different times of the day, and in different seasons. A total of 60 engineers and their assistants were examined while on the job. The process of increasing fatigue of the visual analysor is influenced by the length of the trip, circadian rhythms, and season of the year. Giving such examinations in a real-life situation will help to determine more precisely the initial stages of eye fatigue and result in the institution of the practical measures needed to control fatigue.

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USSR

BENTKUS, R., RUTKAUSKAS, V.

"The Asymptote of the First Two Moments of Spectral Second Order Estimates"

Translation: Suppose $X(t)=\{X_a(t)\}$, $a=1,\ldots,r$, $t \in T$ is an r-dimensional random field, homogeneous in the broad sense, with zero mean and real components, where parameter t may be continuous, $T=R^p$, or discrete $T=\{(t_1,\ldots,t_p):t_j=\ldots,-1,0,1,\ldots\}$. Suppose, further, $I_N(\lambda)=\{I_{ab}^{(N)}(\lambda)\}$,

$a,b=1,\ldots,$, is a second order matrix of periodograms, constructed from the sample $\{X(t),<0<t_j\leq N_j$, $j=1,\ldots,p$, ϕ is a certain limited function, while ϕ_N is a certain kernel. This work studies the asymptotic behavior as $\min_{1\leq j \leq p} N_j \to \infty$ of the first two components of the estimates

$$\int \phi(\lambda) I_{ab}^{(N)}(\lambda)d\lambda \text{ and } \int \phi_N(\lambda) I_{ab}^{(N)}(\lambda)d\lambda.$$ The conditions of the theorems are placed on first and third order spectral densities and on the kernel ϕ_N.

USSR   UDC: 519.2

BENTKUS, R.

"Concerning the Error in Estimating the Spectral Function of a
Stationary Process"

Lit. mat. sb. (Lithuanian Mathematics Collection), 1972, 12, No
1, pp 55-71 (from RZh-Kibernetika, No 10, Oct 72, abstract No
10V234 [author's abstract])

Translation: Let $X(t) = \{X_k(t)\}$, $k = 1,\ldots,r$ (time t may be both
discrete, $t = 0, \pm 1,\ldots$, and continuous, $-\infty < t < \infty$) be a measurable
random process which is stationary in the broad sense, and for
which $X_k(t) \in R^1$ and $EX(t) = 0$. As an estimate constructed with
respect to the sample $\{X(t)\}$, $0 \leqslant t < T$, for an a priori unknown
spectral function $F_{k_1 k_2}(\lambda)$, which is assumed to be absolutely

continuous, $F'_{k_1 k_2}(\lambda) = f_{k_1 k_2}(\lambda)$, we take the integral $\int \phi(\lambda) I_{k_1 k_2}^{(T)}(\lambda) d\lambda$

where $\phi(\lambda)$ is some bounded function, $I_{k_1 k_2}^{(T)}(\lambda)$ is a second order

periodogram, and integration is done from $-\pi$ to π in the case of

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BENTKUS, R., Lit. mat. sb., 1972, 12, No 1, pp 55-71

discrete time, and from $-\infty$ to ∞ in the case of continuous time. This paper considers the asymptotic behavior as $T \to \infty$ of the first two moments of the random quantities

$$\xi^{(T)}_{k_1 k_2}(\varphi) = \sqrt{T}\left[\int \varphi(\lambda)\, I^{(T)}_{k_1 k_2}(\lambda)\, d\lambda - E \int \varphi(\lambda)\, I^{(T)}_{k_1 k_2}(\lambda)\, d\lambda\right]$$

$$\zeta^{(T)}_{k_1 k_2}(\varphi) = \sqrt{T}\left[\int \varphi(\lambda)\, I^{(T)}_{k_1 k_2}(\lambda)\, d\lambda - \int \varphi(\lambda)\, f_{k_1 k_2}(\lambda)\, d\lambda\right].$$

The conditions of theorems are imposed on the spectral densities of first and third orders. The results are a further development of certain theorems of papers by I. A. Ibragimov (RZhMat, 1964, 8V130) and D. R. Brillinger (RZhMat, 1970, 2VZ59).

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USSR

BENTKUS, R.

"Asymptotic Normality of the Estimate of a Spectral Function"

Lit. mat. sb. [Lithuanian Mathematics Collection], 1972, Vol 12, No 3, pp 5-18 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V223 by the author).

Translation: The asymptote of the estimate of a parameter defining the spectral function of a multivariate stable process is studied, when the volume of the sample increases without limit. Conditions are found when this estimate is asymptotically normal.

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BENTKUS, R.

"Asymptotic Behavior of the Estimate of the Spectral Function of a Multidimensional, Stable Gaussian Sequence"

Lit. mat. sb. [Lithuanian Mathematics Collection], Vol 11, No 4, 1971, pp 745-760, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V158 by the author).

Translation: The asymptotic behavior of an n^2-dimensional complex random process $\xi_N(\lambda) = \sqrt{N} \, |F_N(\lambda) - F(\lambda)|, \ 0 \leqslant \lambda \leqslant \pi$, defining random element ξ_N with values in the Cartesian product of $2n^2$ metric spaces $C[0, \pi]$ is studied as $N \to \infty$. It is proven that if

$$\int_{-\pi}^{\pi} f'_{kk}(\lambda) \, d\lambda < \infty, \ 1 \leqslant k \leqslant n, \tag{1}$$

then ξ_N converges in its distribution to random element ζ, corresponding to the Gaussian process $\zeta(\lambda) = |\zeta(kl; \lambda)|, \ k, l = 1, \ldots, n, 0 \leqslant \lambda \leqslant \pi$, for which

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BENTKUS, R., Lit. mat. sb., Vol 11, No 4, 1971, pp 745-760.

$$M\zeta(\lambda) \equiv 0, \ M\zeta(k_1 l_1; \ \lambda) \ \overline{\zeta(k_2 l_2; \ \mu)} =$$

$$= 2\pi \int_0^{\min(\lambda, \ \mu)} f_{k_1 k_2}(\alpha) \ \overline{f_{l_1 l_2}(\alpha)} \ d\alpha,$$

$$M\zeta(k_1 l_1; \ \lambda) \ \zeta(k_2 l_2; \ \mu) = 2\pi \int_0^{\min(\lambda, \ \mu)} f_{k_1 l_2}(\alpha) \ \overline{f_{l_1 k_2}(\alpha)} \ d\alpha,$$

where $k_1, \ l_1, \ k_2, \ l_2 = 1, \ \ldots, \ n$.

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USSR

RETTER, E. I., and BENTS, V. A.

"Constricted Convective Flows with Asymmetric Positioning of Heat Sources"

Sb. nauchn. tr. Chelyab. politekhn. in-ta (Collection of Scientific Works
of Chelyabinsk Polytechnic Institute), 1970, No 60, pp 4-24 (from Rzh-
Mekhanika, No 1, Jan 71, Abstract No 1B1045 by T. A. Girshovich)

Translation: The article describes results of an experimental investigation
of excess-temperature and air-velocity distribution on the axis of a plane
constricted convective jet with asymmetric positioning of heat sources.
The investigation was conducted on a two-dimensional model of a cross sec-
tion of a building. Heat sources were flat electric furnaces installed on
the floor of the model. Successive switching on and off of the furnaces
made it possible to examine the influence of the positioning of heat sources.
Holes were made in the bottom of the model, through which air intake occurred,
while an exhaust opening was put on the axis of symmetry of the model at
the top. In addition to the above-indicated quantitative investigation of
flow characteristics, a qualitative investigation was conducted by filling
the premises with smoke and sketching the pattern of the flow. It was
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RETTER, E. I., and BENTS, V. A. , Sb. nauchn. tr. Chelyab. politekhn. in-ta
1970, No 60, pp 4-24

established, as was to be expected, that with asymmetric positioning of heat
source the recirculating zones on both sides of the convective jet are
different, and the authors found the coefficient of separation of the re-
circulating air according to flow weight rate and heat content. Further,
empirical formulas were obtained for axial excess temperatures and air
velocities.

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USSR   UDC 615.371:576.851.49).03;616.34-022-084).036.8

KHEYFETS, L. B., LEVINA, L. A., BENTSIANOVA, T. G., and SALMIN, L. V., Moscow
Institute of Vaccines and Sera imeni Mechnikov

"Protective Activity of Various Antigenic Complexes of Typhoid Vaccines and Pros-
pects on Improving the Chemical Vaccines"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 5, 1970, pp 89-98

Abstract: New possibilities for studying the role of individual antigens in the
formation of postvaccinal immunity were discovered in connection with the existence
of vaccine samples with a known efficacy for man. Experimental study of these
vaccines failed to demonstrate any correlation between the quantitative content of
Vi-antigen and the protective capacity for man. However, qualitative differences
in O-antigen were revealed in vaccines with a different efficacy for man, which
can be detected by immunoelectrophoresis and metachromatic staining. A direct
correlation was found between the efficacy of the vaccine and the quantitative
content of H-antigen. This is one of the indirect indications of the presence of
typhoid protective labile antigen (LP-antigen). The content and activity of LP-
antigen in the vaccine is determined by the capacity of the preparation to stimu-
late the formation of H-antibodies during immunization of human beings and experi-
mental animals. In production and improvement of the chemical vaccines, sufficiently
.... be employed to preserve all the components of the Vi-, H-

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KHEYFETS, L. B., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii,
No 5, 1970, pp 89-98

and LP-antigens contained in the initial microbial suspensions in a natural condi-
tion (as far as possible).

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BENYA, Yu. Yu.

AIR CUSHION - Vehicles

TECHNICAL TRANSLATION

FSTC-HT-23-496-71

ENGLISH TITLE: Basic Theories of Air Cushion Vehicles

FOREIGN TITLE: Osnovye Teorii Sudov na Vozdushnoy Podushke

AUTHOR: Yu. Yu. Benya, V. K. D'yachenko, et al.

SOURCE: BASIC THEORIES OF AIR CUSHION VEHICLES

Translated for FSTC by Techtran

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Acc. Nr. AP0041731 — Abstracting Service: Ref. Code
              CHEMICAL ABST. 4-70   UR 0096

68593n Heat transfer during the condensation of moving vapors of hydrocarbon liquids. Dvoiris, A. D.; Ben'yaminovich, O. A. (USSR). *Teploenergetika* 1970, 17(1), 59-61 (Russ). The heat transfer during condensation of C_3H_8 was studied in the presence of CH_4 and C_2H_6 mixts. in the concn. range 0-5%. The exptl. data were correlated by the equation of Kutateladze or, with a higher degree of precision by the relation proposed by Boiko and Kruzhilin (1966). This relation was obtained by expanding the Reynolds analogy to 2-phase flows. M. Shelef

REEL/FRAME
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Inorganic Compounds

MOTORNAYA, G. A., and BEN'YASH, Ye. Ya., All Union Scientific Research
Institute of Mining and Metallurgy of Non-Ferrous Metals, Ust'-Kamenogorsk

"Coefficients of Activity of Lead and Cadmium Nitrates in Mixed Aqueous
Solutions at 25°C"

Abstract: The activity coefficients and osmotic coefficients at 25°C were
calculated from the isopietic determinations of the activity of water in
mixed solutions of $Pb(NO_3)_2$ and $Cd(NO_3)_2$.

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