

USSR

UDC 612.821

~~CHERNIGOVSKIY, V. N.~~, Chief Editor, Academician, Academy of Sciences USSR,  
Chairman Joint Scientific Council on Neurophysiology and Higher Nervous  
Activity of Animals and Humans, Metodiki Otsenki Svoystv Vysshey Nervnoy  
Deyatel'nosti (Methods of Evaluating the Features of High Nervous Activity),  
Leningrad, "Nauka," 1971, 170 pp

Translation: Foreword: About five years ago, the anthology Metodiki  
Izucheniya Tipologicheskikh Osobnostey Vysshey Nervnoy Deyatel'nosti  
Zhivotnykh (Methods of Studying Typological Features of Higher Nervous  
Activity in Animals) was published. As far as is known, it was favorably  
received among physiologists specializing in the study of types of higher  
nervous activity and among those who, in one way or another, use the descrip-  
tion of typological features of higher nervous activity in their work.

This anthology may be considered a kind of continuation of the previously  
published one. It also presents articles which consider questions of  
method, but it is on a broader plane and uses concrete examples.

With a few exceptions (see the research of L. B. Yermolayeva-Tomina and  
V. K. Rozhdestvenskaya), they are all devoted to studying types of higher  
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CHERNIGOVSKIY, V. N., Chief Editor, Metodiki Otsenki Svoystv Vysshey Nervnoy Deyatel'nosti (Methods of Evaluating the Features of High Nervous Activity), Leningrad, "Nauka," 1971, 170 pp

nervous activity in animals. Only these two articles concern the human. This is understandable because studying the typological features of human higher nervous activity is difficult.

The first successes noted in this area, which promises so much, were arrested by the untimely death of B. M. Teplov, who made an important step in this direction. Unfortunately, the overall situation in the development of the physiology of higher nervous activity is not very favorable to expanding research on the physiology of types of higher nervous activity in animals and humans.

In our time, with the practically universal attraction to instrument-centered neurophysiology, at a time when the attempt is being made to replace the doctor's art, experience, knowledge, and intuition with diagnostic machines, study of the typological features of higher nervous activity appears to some physiologists to be an anachronism and may even call forth a condescending smile.

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While in no way wishing to doubt the necessity of using modern equipment in studying the nervous system, we still see no basis for turning away from other ways of evaluating the traits of the entire nervous system as a whole in animals and humans, procedures which, possibly, do not appear so efficient. One of them is, of course, evaluating the individual features of higher nervous activity or their traits in particular populations.

The research which is included in this anthology belongs in this area. We hope that, like the previous anthology, it will find a welcome and favorable reception among physiologists studying higher nervous activity.

An active part in compiling this anthology was played by Professor Vladimir Konstantinovich Krasuskiy, who devoted many years to studying types of nervous activity and is rightly considered one of the recognized experts in this difficult area. The untimely and unexpected death of Vladimir Konstantinovich did not permit him to see this anthology in finished form.

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The authors of the articles, as well as the writer of these lines, regret this deeply and remember the contribution made by V. K. Krasuskiy to the work of studying types of higher nervous activity which was begun by the work of our great teacher, Ivan Petrovich Pavlov.

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UDC 612.821.6

CHERNIGOVSKIY, V. N., Academician, Academy of Sciences USSR, Fiziologiya Vysshey Nervnoy Deyatel'nosti. Chast' II. Uslovnnyye Refleksy i Adaptivnoye Povedeniye (Physiology of Higher Nervous Activity. Part II. Conditioned Reflexes and Adaptive Behavior), Moscow, "Nauka," 1971, 392 pp

Translation: Annotation: Consideration is given to neuron mechanisms of the conditioned reflex, principles of fixation of time relationships, the physiology of emotions, the characteristic features of innate (instinctive) behavior, and the physiology of sleep and dreams. Basic information is given on the genetics and typology of higher nervous activity and the typical features of higher nervous activity in anthropoids. The basic problems of studying the typological features of human higher nervous activity are considered specially. Aspects of the pharmacology of higher nervous activity and modeling conditioned reflex activity are treated, while the basic methodological questions of I. P. Pavlov's teaching on higher nervous activity are considered.

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"Decisions of the 24th Congress of the Communist Party of the Soviet Union and Development of Physiology During the Next Five Years"

Leningrad, Fiziologicheskiy Zhurnal SSSR, No 7, 1971, pp 1-8

Abstract: By way of carrying out the decisions of the 24th Congress of the CPSU and some of the suggestions made by Communist Party Secretary General Brezhnev and Premier Kosygin as they pertain to physiology, plans have been made for a substantial expansion of research during the next five years in ecological physiology, physiology of the circulatory system, respiration, endocrine system, farm animals, water-salt metabolism, and higher nervous activity. Additional stress will be placed on fundamental research to develop theories that might provide a quantum jump in technology. More efforts will be made to avoid the waste associated with training persons unlikely to make a creative contribution. There will also be attempts to prevent holders of advanced degrees from settling in metropolitan areas and assigning them to schools and research organizations in the more "backward" parts of the country. Efforts will be stepped up to increase cooperation between researchers and practical workers and to shorten the time between scientific discoveries and their practical application in industry. The need for making long-range

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prognoses in several branches of physiology requires a substantial increase in the number of computers and computer centers. Exploration of the oceans and attempts to exploit their resources will undoubtedly be intensified as being more likely to produce material gains in a shorter time and at less cost than spaceflight.

2/2

1/2 008 UNCLASSIFIED ✓ PROCESSING DATE--09OCT70  
TITLE--ON THE POSSIBLE MECHANISM OF PACHINI BODIES EXCITATION -U-  
AUTHOR-(03)-CHERNIGOVSKIY, V.N., MASHANSKIY, V.F., MIRKIN, A.S.  
COUNTRY OF INFO--USSR  
SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 2,  
PP 214-223  
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ROLE OF BIOPHYSICAL AND ULTRASTRUCTURAL PECULIARITIES OF THE PACHINI BODIES AND THE MECHANISM OF THEIR EXCITATION ARE DISCUSSED. THE NEWLY DISCOVERED EFFECT OF BIOMECHANICAL RESONANCE IS COMPARED WITH THE PRESENCE OF ACTIVE SITES OF THE RECEPTIVE SURFACE OF THE NERVE TERMINATION. A MODEL OF A POSSIBLE MECHANISM OF THE APPEARANCE OF EXCITATION IN MECHANORECEPTORS IN THE PACHINI BODIES IS PROPOSED. FACILITY: I. P. PAVLOV INSTITUTE OF PHYSIOLOGY, ACADEMY OF SCIENCES USSR INSTITUTE OF CYTOLOGY, ACADEMY OF SCIENCES USSR.

UNCLASSIFIED

USSR

UDC 612

CHERNIGOVSKIY, V. N., Institute of Physiology imeni I. P. Pavlov, Academy  
of Sciences USSR

"Trends in Physiological Research"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 5, Sep/Oct  
71, pp 661-672

Abstract: Emphasizing that forecasts of the most promising scientific research fields require not only thorough familiarity with the state of the art, but also intuition which may lead to blatant errors as well as brilliant discoveries, the author nevertheless suggests that neurology and myology currently represent the "growth points" in physiological research. The era of the molecular approach and microelectrode techniques, which have revealed many facts, is coming to an end, because attention is beginning to focus on the natural functional unit of nervous tissue: the triad composed of the neuron (fairly well known), glia (less known), and capillaries (least known). Since interaction within this triple system as well as other functional units takes place on membranes, the physiology of membranes is now forming an important trend in research. Repeatedly in the past, attempts (unsuccessful) were made to bridge the gap between knowledge of the properties of the cells and understanding of the living body as a whole. These investigations are likely to be resumed, particularly with regard to sensory per-  
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CHERNIGOVSKIY, V. N., Izvestiya Akademii Nauk SSSR, Seriya Biologiceskaya, No 5, Sep/Oct 71, pp 661-672

ception (natural acuity of receptors reduced by urbanization but assisted by machinery, and central analysis of sensory input probably unchanged since the first homosapiens) and adaptation or ecological physiology. Finally, since "the muscle represents the animal the way the leaf represents the plant," control of motor activity in the earth's gravitation as well as in weaker and stronger gravitational fields is one more probable area of intensive physiological research in the future.

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UDC: 53.07/.08+53.001.5

KOLGIN, Ye. A., CHERNIGOVSKIY, V. V.

"An Economical Gas-Discharge Light Source for Technological Devices"

Izv. Leningr. elektrotekhn. in-ta (News of the Leningrad Electrical Engineering Institute), 1971, vyp. 104, pp 116-123 (from RZh-Fizika, No 4, Apr 72, Abstract No 44270)

Translation: The paper describes designs of glow-discharge lamps filled with neon with a power of 6 W and a brightness of 3000 nits lasting at least 5000 hours. The optimum gas pressure from the durability standpoint is 15 mm Hg. Practical power supply circuits are given. Computations are presented which show the economic advantage of using this type of lamp instead of incandescent lamps, based on an example of the use of the lamps in a phototracking system. Ye. N. Antonov.

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UDC [537.226+537.311.33]:[537+535]

CHERNIK, I. A., and KAYDANOV, V. I.

"Mobility of 'Light' and 'Heavy' Holes and Interband Scattering in Lead Telluride"

Tr. Leningr. politekhnich. in-t (Works of Leningrad Polytechnic Institute), 1971, No 325, pp 43-56 (from RZh-Fizika, No 1, Jan 72, Abstract No 1YE1450 by authors)

Translation: An analysis is made of experimental data on temperature and concentration dependences of coefficient of electrical conductivity, thermo-electromotive force, transverse Nernst-Ettingshausen effect, and Hall coefficient in that range of current carrier concentrations and temperatures where holes of both types make a comparable contribution to transport phenomena. A calculation of hole distribution between extrema of "light" and "heavy" bands is made as a function of their total concentration and temperature. Data are also given regarding the relation of "light" and "heavy" hole mobilities as a function of experimental temperature. At the same time it is shown that in the region of helium temperatures the ratio of "light" to "heavy" hole mobilities is close to unity. As a result of the analysis of concentration dependences  $\sigma$ ,  $\alpha$ , and  $Q$  in the region of two-band conduction at  $T=120^{\circ}\text{K}$  the  $1/2$

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CHERNIK, I. A., and KAYDANOV, V. I., Tr. Leningr. politekhnich. in-t, 1971,  
No 325, pp 43-56

contributions of "light" and "heavy" holes to the kinetic coefficient are determined. The important role of interband scattering is shown, and an evaluation of its intensity is made. Bibliography with 13 titles.

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CHERNIK, I. T.

Surgery in cases of strabismus

J-9605

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THE 617-728-1-029-356-33  
S. M. KATZ  
FOR 1971

SHORT AND LONG-TERM RESULTS OF SURGERY  
IN CASES OF STRABISMUS

I. T. Chernik, M.D., M.S., M.A., Service

In the surgical treatment of non-accommodating strabismus, definitive importance is given to the results of surgical treatment of strabismus in children. The results of surgical treatment over the past 150 years. In all, we operated on 138 persons (134 men and 4 women), aged from 18 to 25. In 73.7 percent of the cases, convergent strabismus was of the convergent variety and 26.3 percent — of the divergent type. Nonilateral strabismus was present in 76.4 percent of the cases, and alternating strabismus — in 23.6 percent. The character of the fixation, convergence, adduction and abduction, were investigated in all patients prior to the operation. Fixation, as established under conditions of cycloplegia, is shown in the following table:

Form of strabismus	Emmetropia	Hypermetropia	Myopia	Form of hypermetropic astigmatism	Form of myopic astigmatism	Mixed astigmatism	Uncorrected astigmatism	TOTAL
Convergent	12	63	3	14	2	6	1	101
Divergent	7	6	16	4	1	1	2	37
TOTAL	19	69	19	18	3	7	3	138

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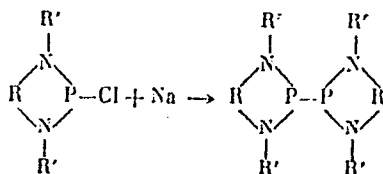
UDC 547.26'118

KOMLEV, I. V., ZAVALISHINA, A. I., CHERNIKEVICH, I. P., PREDVODITELEV, D. A.,  
and NIFANT'YEV, E. YE., Moscow State University imeni M. V. Lomonosov

"Amides of Hypodiphosphorous Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 802-807

Abstract: Metallic sodium was reacted with cyclic amidoacyl chlorides to form the amides and esteramides of the hypodiphosphorous acid as given in the following formula:



The anhydride reactant can be prepared by treating alkylenediamines with  $PCl_3$  in the presence of triethylamine. The structure was confirmed by the NMR spectra of  $P^{31}$  and the IR spectra, especially the intense absorption in the region corresponding to the energy of the N-P vibration. The P-P bond is  $1/2$

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UDC 548.5

BAGDASAROV, KH. S., DOBROVINSKAYA, YE. R., PISHCHIK, V. V., CHERNIK, M. M.,  
KOVALEV, YU. YU., GERSHUN, A. S., ZVYAGINTSEVA, I. F., All-Union Scientific  
Research Institute of Single Crystals

"Low-Dislocation Single Crystals of Corundum"

Moscow, Kristallografiya, Vol 18, No 2, Mar-Apr 73, pp 390-395.

Abstract: The relationship of growth conditions and quality of structure of corundum single crystals is studied. The influence of spatial orientation, temperature gradient and stability of thermal conditions on formation of dislocations in crystals of corundum grown by directed crystallization is studied. Proper selection of orientations minimized the influence of structural defects in an etched crystal and practically eliminated heredity of dislocations arising in the growth process. Investigation and consideration of three-dimensional orientation and crystallization conditions on structural quality allowed the production of low-dislocation single crystals of lucosapphire.

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UDC 621.396.96:621.371

KAPITANOV, V. A., MEL'NICHUK, Yu. V., CHERNIKOV, A. A.

"Spectral Form of Radar Signals from Precipitation"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 373-376 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10G11)

Translation: The spectral shape of signals scattered by precipitation of various types was experimentally investigated. Measurements were made with the previously described radar polarimeter (see Izv. AN SSSR. Fizika atmosfery i okeana -- Atmospheric and Oceanic Physics -- 7, No 1, 1971) in the range of 3.2 cm for small local angles (up to  $6^\circ$ ) in precipitation of average intensity. It was established that the spectra have a near-Gaussian form. The effect of various amplitude phenomena and rapid fluctuations in the velocities of the diffusers on the form of the high-frequency portion of the signal spectrum is estimated. H. S.  
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USSR

UDC 681.327.67

CHERNIKHOV, YU. V., LIBERMAN, V. L., Scientific Research and Experimental Design  
Institute of Automation in Ferrous Metallurgy

"A Memory Cell Based on Thyristors"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 5,  
1970, p 37, patent No 262180, filed 14 Nov 68

Abstract: This Author's Certificate introduces a memory cell based on thyristors with cathode loads connected to the neutral bus of a three-phase network. The unit contains a recording thyristor whose anode is connected to the three phases of the network through rectifier diodes. Also incorporated in the device is a reset thyristor. As a distinguishing feature of the patent, energy demands between reset and record are eliminated and the device is simplified by connecting the reset thyristor in series with one of the rectifier diodes, and connecting its controlling electrode through a resistor to the cathode of the recording thyristor.

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USSR

UDC: 681.325.6

BLYUMIN, S. L., IGNATENKO, A. D., MASHLYKIN, V. G., and CHERNIKHOV, Yu. V.

"Method of Analyzing a Typical Logic Element Using Thyristors"

Moscow, Avtomatika i telemekhanika, No 4, 1972, pp 162-167

Abstract: Although circuits consisting of thyristors for use in logic systems can be investigated graphically, such an analysis requires a good many diagrams. The authors of this article propose a method for analytically investigating stable modes of operation of such thyristor circuits. Using the example of a NOT circuit involving two thyristors, the authors show how the method is used. The example of two NOT circuits connected in series is also treated. This latter example is used to show how the right moment for applying the control pulse as well as the zone of insensitivity to noise can be determined. Thus, the method explained in this article can be used to estimate the time characteristics that must be taken into account for designing stable circuitry.

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USSR

UDC: 681.332.65

CHERNIKHOV, Yu. V., IGNATENKO, A. D., LIBERMAN, V. L., LOBACHEVSKIY, O. V.,  
Scientific Research and Experimental Design Institute of Automation in Fer-  
rous Metallurgy

"A Method of Shaping Multiphase Pulse Supply Voltage for Combination Logic  
Circuits Based on Thyristors"

USSR Author's Certificate No 287119, filed 17 Mar 69, published 21 Jan 71  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct  
71, Abstract No 10B227 P)

Translation: This Author's Certificate introduces a method of shaping a  
multiphase pulse supply voltage for combination logic circuits based on  
thyristors by isolating a unipolar half-wave of sinusoidal voltage, shifting  
it in phase by 120 degrees, and adding the initial and shifted half-waves.  
In order to improve the reliability and noise suppression of the combination  
logic circuits, the aggregate pulse voltage of each phase is shifted by  
120 degrees with respect to the same voltage of the preceding phase.

1/1

USSR

UDC 536.24:532.526

NIKOL'SKIY, Yu. V., PERVUSHIN, G. Ye., CHERNIKOVA, L. G.

"Measurement of Thermal Flows on Spheres and Cones in a Vacuum Wind Tunnel"

V sb. Eksperim. issled. i vopr. modelir. techeniy razrezhen. gaza i plazmy (Experimental Studies and Problems of Modeling Flows of Rarefied Gas and Plasma -- Collection of Works), Novosibirsk, 1971, pp 41-46 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B853)

Translation: Studies of heat exchange of a sphere and a sharp cone in the transition flow region are described. The results were obtained in a vacuum wind tunnel at  $R = 1-100$ ,  $M_\infty = 4.9 - 9.5$  and  $T_w/T_0 \sim 1$  using calorimetric models of diameter 3-5 mm. The good agreement between the results obtained and calculated and experimental data of other authors is noted. 7 ref. B. I. Bakum.

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USSR

UDC 620.17:669.14.018.298:669.151.83

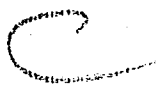
TRUBIN, V. N. and ~~CHERNIKHOVA~~, I. YA. (Scientific Research, Planning and Design Institute of Mining and Concentrating Machinery)

"Mechanical Properties of Construction Steels after Overheating"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 3, 1970, pp 34-37

Abstract: The effect of overheating on the mechanical properties of 38KhS, 38KhGN, and 34KhN3M construction steels was investigated. The overheating conditions were 1295°C for 2 hr, 1300°C for 1.5 hr, and 1315°C for 2 hr for the three steels, respectively, followed by oil hardening at 880, 880, and 850°C, and annealing at various temperatures in air or water. The results of resilience tests are presented in graphs for overheated and regular steels. It is shown that the ductility and the position of the cold brittleness threshold depend on the real grain size, and that the overheating texture does not affect these characteristics. 1 figure, 2 tables, 8 references.

1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--MECHANICAL PROPERTIES OF STRUCTURAL STEELS AFTER OVERHEATING -U-  
AUTHOR--(02)-TRUBIN, V.N., CHERNIKOVA, I.YA.   
COUNTRY OF INFO--USSR  
SOURCE--METALLOVEDENIE I TERM. OBRABOT. METALLOV, 1970, (3), 34-37  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--CHROMIUM NICKEL STEEL, IMPACT STRENGTH, METAL TEXTURE,  
STRUCTURAL STEEL, GRAIN SIZE, BIBLIOGRAPHY, CHROMIUM STEEL, CHROMIUM  
MANGANESE STEEL, METAL BRITTLENESS, COLD SHORT, METAL MECHANICAL  
PROPERTY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/0919 STEP NO--UR/0129/70/000/003/0034/0037  
CIRC ACCESSION NO--AP0133008  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133008

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF OVERHEATING ON THE MECHANICAL PROPERTIES OF CR, CR-MN, AND CR-NI STEELS WAS STUDIED. FOR ALL TYPES OF STEEL STUDIED THE IMPACT STRENGTH AND THE POSITION OF THE COLD BRITTLENESS THRESHOLD DEPENDED SOLELY ON THE ACTUAL GRAIN SIZE; OVERHEATING LED TO THE DEVELOPMENT OF A SPECIAL 'TEXTURE' OR SUPERIMPOSED STRUCTURE, BUT THIS HAD NO SERIOUS EFFECT ON COLD SHORTNESS OR IMPACT STRENGTH.

UNCLASSIFIED

USSR

UDC: 621.372.82

CHERNIKOV, A. S.

"Excitation of Linearly Polarized Waves With Predetermined Parameters"

V sb. Antenny (Antennas--collection of works), vyp. 10, Moscow, "Svyaz'", 1971, pp 61-73 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5B88)

Translation: The author considers a method of excitation of linearly polarized waves with predetermined phase shift and amplitude ratio which are constant over a wide frequency band. Excitation is realized by slots cut on the side wall of a rectangular or circular waveguide with  $H_{mn}$  mode. The excited waves may have any orientation with respect to one another. Eight illustrations, bibliography of four titles. Resumé.

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Theoretical Physics

. USSR

CHERNIKOV, N. A., and SHAVOKHINA, N. S., Joint Institute of Nuclear Research

"The Invariant Box Method in the Quantum Theory of the Spinor Field"

Moscow, Teoreticheskaya i Matematicheskaya Fizika, Vol 15, No 1, Apr 73, pp 91-99

Abstract: Preprint R2-6109, OIYaI 1971 by the same authors formulates the principles of the quantum theory of the spinor field in Riemann spaces. A spherical de Sitter space is of particular interest because it is a space of constant curvature, permitting a 10-parameter isometry group. As the radius becomes infinitely large, this group is transformed into a Poincaré group, just as the de Sitter universe becomes a Poincaré-Minkowski universe. The Fourier integrals required in the latter space are replaced by series in the de Sitter space, because its spatial part is a compact 3-dimensional sphere. Thus the study of the quantum theory of a field in the spherical de Sitter universe leads to the invariant box method for plane space time, as pointed out by Chernikov and Tagirov, Annals of the Institute of Henri Poincaré Vol 9, No 2, Section A, Paris, 1968. This article applies the general principles of the quantum theory of a spinor field to a spherical de Sitter universe, leading to the invariant box method.

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USSR

CHERNKOV, N. A., and SHAVOKHINA, N. S., *Teoreticheskaya i Matematicheskaya Fizika*, Vol 15, No 1, Apr 73, pp 91-99

The first section of the article is a summary of material covered in more detail in preprint R2-6109. It establishes the basic concepts. The second section covers the application of the Dirac equation in the spherical universe, starting from a representation of the de Sitter space as a single cavity hyperboloid in 5-dimensional Poincaré-Minkowski space. This permits the eventual transformation of the Dirac equation for a spinor field as formulated by Fock for Riemann space from the form given by Cartan to forms derived by Dirac in terms of killing vector fields on the hyperboloid  $r = r_0$ . Further simplifications derived by Dirac make it possible to subject all four components of the spinor field to a single second-order equation, yielding great simplifications. The transformed Cartan expression can also be written as a mass-free Dirac equation in 5-dimensional Poincaré-Minkowski space.

The third section considers the effect on the scalar product of the original non-quantized spinor fields of the transformation from the orthogonal basis in the de Sitter space  $f^a$  to the basis  $dx^a$  by orthogonal transforms. The

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USSR

CHERNKOV, N. A., and SHAVOKHINA, N. S., Teoreticheskaya i Matematicheskaya Fizika, Vol 15, No 1, Apr 73, pp 91-99

fourth section is a derivation of the current vector and the energy-impulse tensor with the new basis. The fifth and final section is related to operators in the space of solutions of the Dirac equation. There is a whole group of very interesting operators in the de Sitter case. Various commutation relationships among these operators are derived.

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USSR

UDC 531.36/.1

CHERNIKOV, S. A., Moscow

"Dynamic Stabilization of Undamped Elastic Gyrosystems"

Moscow, Mekhanika tverdogo tela, No 3, May/June 71, pp 11-19

Abstract: It is shown that an undamped gyrosystem with elastic compliance of its structural elements can be stabilized over the entire frequency range of external effects by selecting the optimal parameters of an inertial damper installed in a certain manner on the gyroframe. The effectiveness of the stabilization of an undamped uniaxial gyrosystem is discussed assuming a Lan- chester inertial damper installed on one of the axes of the Cardan suspension and considering the elastic compliance of its structural elements. Optimal parameters of damper tuning are determined for different installations from the aspect of improving the characteristics of the mechanical part of the gyro- frame as a control object in the uniaxial stabilization system. The difficulty in stabilizing conservative gyrosystems with prominent resonance properties is said to consist of determining the stability under a single suppression of the resonance-frequency spectrum of the external effect. Elastic compliance of the structural elements increases this problem even more since additional resonance frequencies appear and if the resonance frequencies are close to one another,

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CHERNIKOV, S. A., Mekhanika tverdogo tela, No 3, May/June 71, pp 11-19

it is very difficult to ensure qualitative stabilization over the entire frequency range with correcting devices of the feedback loop. It is shown that vibrations of a closed system with a frequency of the second resonance peak will be damped by inertialess feedback, the stabilizing moment of which is in counter-phase to the perturbing moment at this frequency. In the general case when stabilization is carried out in conjunction with a correcting feedback loop, the problem of tuning the damper is solved by considering the spectral density of the perturbing moments and the specific parameters of the feedback loop. The spectral density of the disturbances is constant; the damper should be tuned at the second focusing point for nonminimal phase correction. It is concluded that the problem of optimal placement of the damper from the aspect of obtaining a maximum static amplification coefficient should be solved by considering the specific parameters of the gyrogram and their relationship to the partial frequencies of parts of the system separated by an elastic element.

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USSR

UDC 519.41/47

CHERNIKOV, S. N. (Institute of Mathematics, Academy of Sciences, Ukrainian SSR)

"Infinite Non-Abelian Groups in Which Infinite Non-Abelian Subgroups are Invariant"

Kiev, Ukrainskiy Matematicheskiy Zhurnal (Ukrainian Mathematics Journal), Vol 23, No 5, 1971, pp 604-627

Abstract: The author investigates locally finite  $\overline{H}$  groups that are stepped locally to permit local solutions (i.e., have local discrete-valuedness). A locally finite group is one in which any finitely generated subgroup different from zero has a subgroup with a finite index different from unity. Nonmeta-Hamiltonian  $\overline{H}$  groups satisfying this local discrete-valuedness condition are described in detail. Certain results are obtained also for meta-Hamiltonian, locally discrete-valued groups. A meta-Hamiltonian group is an arbitrary, finite or infinite non-Abelian group in which all non-Abelian subgroups are invariant. Under the condition of local discrete-valuedness, the principal results are: 1)  $\overline{H}$  groups are solvable; 2) the commutant of a  $1/2$

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CHERNIKOV, S. N., Ukrainskiy Matematicheskiy Zhurnal, Vol 23,  
No 5, 1971, pp 604-627

meta-Hamiltonian group is primary and finite; 3) a nonperiodic  $\overline{IH}$  group is a meta-Hamiltonian, and its commutant is a finite primary Abelian group; 4) a nonmeta-Hamiltonian  $\overline{IH}$  group  $G$  is a finite expansion of a  $p$ -group  $B$  that decomposes into a straight product of a finite number of quasicyclic groups ( $B$  is a quasicyclic group contained in the center of group  $G$  if the commutant  $G'$  of the latter is finite); 5) for a nonmeta-Hamiltonian  $\overline{IH}$  group  $G$  with an infinite commutant  $G'$ , the factor group  $G/B$  is nilpotent and  $BCG'$ ; and 6) a periodic  $\overline{IH}$  group has an invariant complementary Sylow  $p$ -subgroup with a nilpotent complement containing not more than one non-Abelian Sylow subgroup.

Orig. art. has 21 refs.

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USSR

UDC 620.10

CHERNIKOV, S. P., Engineer

"Effect of Eccentricity of an Axial Compressive Load on the Stability of a Cylindrical Shell Reinforced by Longitudinal Ribs"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Mashinostroyeniye, No 5, 1970, pp 5-9

Abstract: This article contains an investigation of a linear statement of the problem of stability of a cylindrical shell reinforced by longitudinal ribs under the effect of a distributed axially symmetrical compressive load applied to the ends with eccentricity with respect to the middle surface of the shell. The ribs are also arranged eccentrically with respect to the middle surface. By "diffusing" the ribs, the shell is replaced by a structurally orthotropic shell. The effect of eccentricity on the critical magnitude of the load is studied.

From the figures illustrating the calculational results it is clear that both with outside and inside ribs positive eccentricity has a great effect on the critical load, and this effect can turn out to be significant. For example, shifting the line of application of the load within the limits of half of the height of the profile in certain cases leads to a change in the magnitude of the critical load by two times. Solution of the analogous axially symmetrical problem shows

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USSR

CHERNIKOV, S. P., Izvestiya Vysshikh Uchebnykh Zavedeniy -- Mashinostroyeniye,  
No 5, 1970, pp 5-9

that in this case eccentricity has a weak effect on the magnitude of the critical load. It is concluded that if the cylindrical shell reinforced by longitudinal ribs is loaded under axial compressive forces, in order to avoid indeterminacy connected with the effect of the eccentricity of the load, the ends of the shell must be made rigid. If this cannot be done, then the possibility of positive eccentricity must at least be excluded.

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USSR

UDC: 681.332.65

CHERNIKOV, V. I., MAKSIMOV, Yu. V.

"Matrix Potential Decoder"

USSR Authors' Certificate No 250996, Filed 16 January 1967, Published 30 January 1970 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B117P, by N. V.)

Translation: The decoder suggested differs from known decoders in that key and parallel circuits consisting of series-connected resistors and diodes are included between the power supply and the points of connection of the resistors and output buses of the decoder. This increases the speed of operation of the decoder. One illustration.

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USSR

UDC 536.532.088.2

CHERNIKOV, V. N.

"Errors in the Measurement of Temperatures in High-Pressure Chambers With Internal Heating"

Moscow, Izmeritel'naya Tekhnika, No 12, Dec 70, pp 38-40

**Abstract:** The article deals with the calculation of secondary thermoelectric forces generated in thermocouples at the points of their introduction into high-pressure chambers. Cases are dealt with, in which each of the elements of the thermocouple enters the chamber by means of an inverted cone at which a certain temperature gradient  $\Delta T$  is realized, due to which the secondary thermoelectric force originates. 3 figures, 2 bibliographic entries.

1/1

1/3 021 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--MECHANISMS OF QUENCHING THE FLUORESCENCE OF SOME PORPHYRINS -U-

AUTHOR--(03)-BONDAREV, S.L., GURINOVICH, G.P., CHERNIKOV, V.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(3), 641-4

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FLUORESCENCE QUENCHING, PORPHYRIN, ZINC COMPLEX, QUINONE,  
NITROBENZENE, ELECTRON TRIPLET STATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3006/0951

STEP NO--UR/0048/70/034/003/0641/0644

CIRC ACCESSION NO--AP0134670

UNCLASSIFIED



2/3 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134670

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. QUENCHING OF THE FLUORESCENCE OF MESOPORPHYRIN IX (I) AND ITS ZN COMPLEX BY BENZOQUINONE (II), M DINITROBENZENE (III), PHNHNH SUB2 (IV), AND MEI IN PHME SOLNS., PREVIOUSLY DEAERATED AT 2 TIMES 10 PRIME NEGATIVES TORR, WAS STUDIED. SINCE AT LOW CONCNS. (MAX. 10 PRIME NETATIVE2 M) OF III AND FOR HIGH CONCNS. OF THE OTHER QUENCHING AGENTS UNDER STUDY, NO CHANGES IN THE ABSORPTION AND FLUORESCENCE SPECTRA WERE OBSD., THE QUANTUM YIELDS OF FLUORESCENCE WERE ESTD. BY SIMULTANEOUSLY MEASURING THE FLUORESCENCE OF THE PORPHYRIN SOLNS. BOTH ALONE AN/IN THE PRESENCE OF A QUENCHING AGENT. THE CALCD. DEACTIVATION CONSTS. OF THE TRIPLET AND SINGLET STATES AS WELL AS THE QUANTUM YIELDS FOR THE FLUORESCENCE AND TRIPLET FORMATION ARE TABULATED. THE OBTAINED QUENCHING CONSTS., PARTICULARLY IN THE CASE OF I, EXCEEDED THE TRIPLET STATE DEACTIVATION CONSTS. BY SEVERAL ORDERS OF MAGNITUDE, THUS INDICATING HIGHER EFFICIENCY OF THE QUENCHING LESS THAN 0.1 SEC. 2,H SUB2 NC SUB6 H SUB4 COME IN ET SUB2 O ISOPENTANTE,ETOH (5:5:2) SHOWED AN EMISSION AT 445 NM AFTER EXCITATION AT 350 NM, DUE TO A T SUBPIPI SEXTILE YIELDS TRANSITION. CUIF COLLISIONS IN THE SINGLET STATES AS COMPARED WITH THE TRIPLET STATES. IN QUENCHING THE FLUORESCENCE OF ZN-I BY II AND III, THE CONSTS. DIFFERED MUCH LESS THAN IN THE CASE OF METAL FREE I. THE QUENCHING OF THE TRIPLET TRIPLET ABSORPTION IN I BY IV DID NOT FOLLOW THE EXPONENTIAL LAW DUE TO THE FORMATION OF A PHOTOREDUCEED STRUCTURE. IN QUEHCHING THE FLUORESCENCE OF I BY III, THE QUANTUM YIELDS OF THE FLUORESCENCE AND TRIPLET FORMATION WERE NOT IDENTICAL.

UNCLASSIFIED

3/3 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134670

ABSTRACT/EXTRACT--A COMPLEX OF THE EXCITED MOL. WITH THE QUENCHING AGENT WAS PRESUMABLY FORMED, AND THE PROBABILITY OF ITS TRANSITIONS DIFFERED FROM THOSE OF THE STARTING PORPHYRIN MOL. THE TENDENCY OF I TO CREATE A COMPLEX WITH III WAS OBSD. IN THE NON EXCITED STATE. THYS, ON ADDN. OF III AT A CONCN. GREATER THAN 2 TIMES 10 PRIME NEGATIVE2 MOLE-L. TO A SOLN. OF I IN PHME, THE ABSORPTION SPECTRUM CHANGED; ITS ISOBESTIC POINTS AT 486, 524, AND 562 NM SUGGESTED THE SIMULTANEOUS PRESENCE OF 2 KINDS OF ABSORBING CENTERS, I.E., FREE I AND A I-III COMPLEX. THE COMPLEX FORMATION IN THE GROUND STATE WAS ALSO INDICATED BY DEVIATIONS FROM THE STERN VOLMER EQUATION AT THE ABOVE CONCNS. OF III. EFFICIENT FORMATION OF A ZN,I,III COMPLEX EVEN IN THE TRIPLET STATE WAS PRESUMED.

FACILITY: INST. FIZ., MINSK, USSR.

UNCLASSIFIED

USSR

UDC: 621.317.794

CHERNIKOV, V. Z.

"Effect Which the Actuating Circuit and Finite Length of a Bolometer Have on its Inertial Lag"

Tr. VNII fiz.-tekhn. i radiotekhn. izmereniy (Works of the All-Union Scientific Research Institute of Physicotechnical and Radio Engineering Measurements), 1970, vyp. 2(32), pp 155-164 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5A221)

Translation: The article discusses the effect which the actuating circuit and the finite "length" of a bolometer have on its time lag. The proposed analysis can be used to determine inertial lag under conditions close to dispersion. It is shown that "shortening" of the bolometer close to dispersion has no appreciable effect on frequency response, but changes the phase response. One illustration, bibliography of three titles. Resumé.

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USSR

UDC: 621.317:621.391.822

CHERNIKOV, V. Z.

"Errors in Measurement of Low Noise Factors on Low-Frequency Amplifiers"

Tr. VNIi fiz.-tekhn. i radiotekhn. izmereniy (Works of the All-Union Scientific Research Institute of Physicotechnical and Radio Engineering Measurements), 1970, vyp. 2(32), pp 108-118 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5A199)

Translation: The author discusses methods of measurements, and sources of measurement error in determining small noise factors on low-frequency amplifiers. It is shown that the method of cooling the source impedance can be used to measure noise factors down to 1.005. Four illustrations, bibliography of one title.

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USSR

UDC: 621.317.78

CHERNIKOV, V. Z., OZNOBISHIN, V. V.

"Investigation of the Transmission Ratio of a Bolometer in the Hot-Wire Mixer Mode"

Tr. VNII fiz.-tekhn. i radiotekhn. izmereniy (Works of the All-Union Scientific Research Institute of Physicotechnical and Radio Engineering Measurements), 1970, vyp. 2(32), pp 146-154 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5A213)

Translation: The article discusses the quantity which characterizes signal conversion in a hot-wire mixer on a bolometer. An expression is derived for the "transmission ratio" of the mixer on the bolometer. Experimental data are given from an investigation of the "transmission ratio" of a mixer on a platinum bolometer in liquid nitrogen. Three illustrations, bibliography of one title. Resumé.

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USSR

UDC: 621.317.794

CHERNIKOV, V. Z.

"A Normalized Characteristic for Bolometers"

Tr. VNII fiz.-tekhn. i radiotekhn. izmereniy (Works of the All-Union Scientific Research Institute of Physicotechnical and Radio Engineering Measurements), 1970, vyp. 2(32), pp 165-169 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5A204)

Translation: A bolometer is most conveniently characterized by the relative change in impedance as a function of the current through the instrument. Formulas are derived which relate this function to the conventionally used parameters of the bolometer. This relationship can be used to get around measuring the parameters of bolometers which differ with respect to initial impedance. Experimental results are given for a platinum bolometer. One illustration, bibliography of two titles. Resumé.

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1/2 014 UNCLASSIFIED PROCESSING DATE--02JCT70  
TITLE--THE PHOTOGRAVITATIONAL RESTRICTED THREE BODY PROBLEM -U-

AUTHOR--CHEFNIKOV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ASTRONOMICHESKIY ZHURNAL, VOL. 47, NO. 1, 1970, PP.  
217-223

DATE PUBLISHED-----70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS

TOPIC TAGS--THREE BODY PROBLEM, SUN, PLANET, COSMIC DUST, PARTICLE MOTION,  
LIBRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1991/1296

STEP NO--UR/0033/70/047/001/0217/0223

CIRC ACCESSION NO--AP0110890

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--02JCT70

CIRC ACCESSION NG--AP0110890

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHOTOGRAVITATIONAL RESTRICTED THREE BODY PROBLEM ARISES FROM THE CORRESPONDING CLASSICAL PROBLEM IF AT LEAST ONE OF THE INTERACTING BODIES IS INTENSIVELY RADIATING. IT WAS FORMULATED AND EXAMINED FOR THE FIRST TIME FOR THREE SPECIFIC BODIES: SUN-PLANET-DUST PARTICLE BY V. V. RADZIYEVSKIY (ASTRON. ZH., 27, 1950, 250). IT WAS FOUND THAT ALLOWANCE FOR THE DIRECT LIGHT PRESSURE OF SOLAR RADIATION LEADS TO A CHANGE IN POSITIONS AND TO THE APPEARANCE OF NEW LIBRATION POINTS IN COMPARISON WITH THE CLASSICAL PROBLEM (V. V. RADZIYEVSKIY, ASTRON. ZH., 30, 1953, 265). IN THIS PAPER THE PHOTOGRAVITATIONAL RESTRICTED CIRCULAR PROBLEM OF THREE BODIES, SUN-PLANET-PARTICLE IS EXAMINED IN MORE GENERAL FORM WITH THE POYNTING ROBERTSON EFFECT TAKEN INTO ACCOUNT. THIS MADE IT POSSIBLE TO CONSIDERABLY SUPPLEMENT THE RESULTS GIVEN IN THE TWO EARLIER STUDIES. THE AUTHOR DERIVES DIFFERENTIAL EQUATIONS OF MOTION OF THE PARTICLE AND IT IS SHOWN THAT DESPITE THE ABSENCE OF THE JACOBI INTEGRAL IT ALLOWS PARTICULAR SOLUTIONS CORRESPONDING TO SIX LIBRATION POINTS. A. M. LYAPUNOV'S FIRST METHOD (A. M. LYAPUNOV, GENERAL PROBLEM OF STABILITY OF MOTION, SOBR. SOCH. (COLLECTED WRITINGS), 2, IZD-VO AN SSSR, 1956) IS USED IN DEMONSTRATING THE INSTABILITY OF SOLUTIONS SIMILAR TO THE LAGRANGIAN SOLUTIONS IN THE CLASSICAL VARIANT OF THE PROBLEM. FACILITY: IVANOVO ENERGY INSTITUTE.

UNCLASSIFIED



UDC: 669.715'5'721'3:539.3/5

USSR

ANAN'IN, S. N., YEFREMOV, P. T., CHERNIKOVA, E. A.

"Influence of Silicon on Properties of Alloys in the System Al-Zn-Mg-Cu"

Tekhnol. Legkikh Splavov. Nauch.-Tekhn. Byul. VILSa [Technology of Light Alloys. Scientific and Technical Bulletin of All-Union Institute of Light Alloys], 1973, No 3, pp 21-26 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8I695, by the authors).

Translation: The influence of Si on the mechanical and corrosion properties of alloys in the system Al-Zn-Mg-Cu is studied. As Si is introduced, the mechanical properties of the alloys after hardening, natural and artificial aging decrease. The level of mechanical properties of alloys in the system Al-Zn-Mg-Cu + Si can be increased by increasing the heating temperature before hardening from 470 to 500°. The corrosion properties of the alloys are not reduced in this case. Si helps to increase the corrosion properties of alloys in the system Al-Zn-Mg-Cu in the hardened and naturally aged states. The structure of alloys in the system Al-Zn-Mg-Cu + Si was studied after various aging modes. 4 figures, 4 tables, 3 biblio. refs.

1/1

USSR

BELOV, K. P., NIKITIN, S. A., TALALAYEVA, YE. V., ~~CHEBNIKOVA, L. A.~~  
KUDRYAVTSEVA, T. V., TIKHONOV, V. V., and IVANOVSKIY, V. I., Moscow State  
University

"Determination of the Exchange Interaction of Ferrite-Gadolinium Garnet  
Sublattices Based on the Magnetocaloric Effect"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 3,  
Sep 71, pp 1101-1105

Abstract: Ferrite-rare earth garnets  $R_3Fe_5O_{12}$  have a trisublattice magnetic structure. In the majority of cases within the framework of molecular field theory it is possible to examine such ferrite-garnets as having a bisublattice structure. In this case both a and d iron sublattices are examined as a single  $Fe_{a-d}$ -sublattice, in the effective exchange field of which are found rare earth ions. The author determined the effective exchange field acting on the  $R^{3+}$  ions from the side of the  $Fe^{3+}$  ions. Based on the measurement data of the magnetocaloric effect, the susceptibility of the paraprocess, and the specific heat in the region of the temperature of compensation, the authors determined the exchange field in the garnet structure. The measurements showed that for the  $Gd_3Fe_5O_{12}$  garnet the field

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USSR

BELOV, K. P., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki,  
Vol 61, No 3, Sep 71, pp 1101-1105

$H_{2eff} = 258$  kOe, and for  $Gd_3Ga_{0.3}Fe_{4.7}O_{12}$  the field  $H_{2eff} = 232$  kOe,  
which is 10% less than for the gadolinium garnet. The article contains  
3 illustration and 6 bibliographic entries.

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USSR

UDC: 536.24:532.526

NIKOL'SKIY, Yu. V., PERVUSHIN, G. Ye., CHERNIKOVA, L. G.

"Experimental Investigation of Heat Transfer on Spheres and Thin Cones in a Hyper-sonic Rarefied Gas Flow"

Uch. zap. Tsentr. aerogidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1970, 1, No 1, pp 71-77 (from RZh-Mekhanika, No 9, Sep 70, Abstract No 9B832)

Translation: The paper is dedicated to experimental investigation of heat transfer on spheres and thin cones at a zero angle of attack. The study was done in a vacuum wind tunnel at Mach numbers of 4.9-9.5 and Reynolds numbers  $R_0 = 35-1$  for spheres and  $R_0 = 100-4$  for cones, which corresponds to the region of transition between free molecular flow and the flow of a continuous medium. Use was made of the method of measurements of the overall heat flux in the steady state with compensation of heat losses in the holder and independent measurement of the radiant heat flux. The resultant data are compared with the results of theoretical calculation. Resumé.

1/1

1/2 043 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--CAUSES OF THE BRITTLENESS OF HOT ROLLED TRANSFORMER STEEL -U-

AUTHOR--(03)-DRUZHININ, V.V., CHERNIKOVA, N.V., POLZUNOVA, YE.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(2), 333-5

DATE PUBLISHED-----70

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

TOPIC TAGS--TRANSFORMER STEEL, GRAPHITE, METAL BRITTLENESS, GRAIN SIZE,  
SHEET METAL, SURFACE ROUGHNESS, ALLOY DESIGNATION, HOT ROLLING, ALLOY  
COMPOSITION, PLASTIC DEFORMATION, SILICON STEEL/(U)E43 TRANSFORMER  
STEEL, (U)E42 TRANSFORMER STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1528

STEP NO--UR/0048/70/034/002/0333/0335

CIRC ACCESSION NO--AP0120309

UNCLASSIFIED

2/2 043

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0120309

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THREE MELTS OF STEELS E42 AND E43  
CONTG. SI 4.15-4.25, C 0.08-0.09, AL 0.08-0.10, AND S 0.002-0.003PERCENT  
WERE STUDIED. OUT OF EACH MELT, 288 SAMPLES WERE TAKEN, AND THE NO. OF  
BENDS OF THE SAMPLES AS WELL AS THE THICKNESS OF THE METAL SHEET WERE  
DETD. THE GRAIN SIZE AND THE AMT. OF GRAPHITE WERE DETD. ON THE FRONT  
SECTIONS. THE EFFECT OF THE METHOD OF SCALE REMOVAL ON THE PLASTIC  
PROPERTIES WAS ALSO STUDIED BY: (A) ETCHING IN SOLNS. OF (200 G H SUB2  
SO SUB4 PLUS 40 G NACL)-L., AND 120 G FE SUB2 (SO SUB4) SUB3.9 H SUB2  
O-L.; (B) THE MECH. METHOD, AND (C) POLISHING OF SAMPLES IN A SOLN. OF  
90 ML H SUB2 O SUB2 PLUS 10 ML H SUB3 PO SUB4 PLUS OXALIC ACID. THE  
FOLLOWING EQUATION WAS OBTAINED ON THE BASIS OF DETN. OF THE NO. OF  
BENDS N DEPENDING ON THE THICKNESS T, GRAIN SIZE Z, AMT. OF GRAPHITE G,  
AND THE SURFACE ROUGHNESS P:  $N \text{ EQUALS } 5.5 Z \text{ MINUS } 5.8 T \text{ MINUS } 0.086 G$   
MINUS 0.079 P. FACILITY: VERKH ISET-SKII MET. ZAVOD, USSR.

UNCLASSIFIED

USSR

UDC 678.746.45.01:537.226

TROSTYANSKAYA, YE. B., BEL'NIK, A. R., CHERNIKOVA, O. D., and POYMANOV, A. M.,  
Moscow Aviation Technology Institute

"Causes of Resite Property Changes in Aqueous and Alkaline Media"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 9, No 2, 1973, pp 37-40

Abstract: The degree of effect of low-molecular polar impurities on the properties of resite was investigated by comparing the characteristics of the initial material with its characteristics after extended aqueous extraction at room temperature. Equilibrium sorption, coefficient of diffusion, dielectric loss, and modulus of elasticity of the resite were measured for different degrees of relative humidity. With increased relative humidity and in water the effect of resite plastification by the absorbed water is spanned by swelling stresses. The presence of low-molecular polar impurities in the resite leads to a sharp growth of swelling stresses and dielectric losses while the strain on the polymeric lattice and volume of absorbed water vapor are lowered. Resite breakdown in aqueous solutions of an alkali occurs under the action of swelling stresses which grow sharply as a result of increased hydrophilicity from replacement of hydrogen in the phenol chains by metal ions. 3 figures, 1 table, 11 bibliographic references.

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Acc. Nr.: AP0042558



Ref. Code: UR0293

JPRS 50162

Effect of Spaceflight on Seeds of Crepis Capillaris

(Abstract: "Effect of Spaceflight Factors on Seeds of Crepis Capillaris," by L. G. Dubinina and O. P. Chernikova; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 156-158)

A study was made of the effect of spaceflight factors on the seeds of higher plants. Seeds of Crepis capillaris, stored in test tubes over KOH in a dry state, were carried on a satellite-spaceship with a maximum distance of about 300 km from the earth's surface. The experiment lasted five days. The material was partially analyzed six days after landing of the ship and part of it was used in an experiment involving post-flight storage of the seeds. The storage times were 12, 20, 32, 40 and 50 days. The experiment revealed a small but statistically reliable increase in the number and chromosomal rearrangements. Differences between the control and experiment were reliable. A special experiment was run to determine the effect of ethyleneimine on seeds which had been exposed to spaceflight factors and for clarifying any possible change in their sensitivity. The results indicated an increase in sensitivity with respect to the mutagenic effect of ethyleneimine on those seeds which had been exposed to spaceflight. In this experiment the spectrum of aberrations revealed an increase in the relative number of chromosomal rearrangements. There were no differences

Reel/Frame

19760530

66



AP0042558

in the experiment and control with respect to germination and sprouting times. The only difference was in the experiment with storage and additional processing with ethyleneimine. In this case the sprouting of seeds on the 24th-50th days decreases greatly in comparison with the control.

19760531

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1/2 032 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--EFFECT OF THE SHAPE AND SIZE OF THE CROSS SECTION OF EXTRUDED PARTS  
MADE FROM ALUMINIUM ALLOY U16T ON THE ANISOTROPY OF THEIR MECHANICAL  
AUTHOR--(02)-MIKLYAYEV, P.G., CHERNIKOVA, S.R.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METALLY, MAR. 1970, (3), 58-63

DATE PUBLISHED----MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINUM ALLOY, MECHANICAL PROPERTY, X RAY ANALYSIS,  
ANISOTROPY, METAL EXTRUSION/(U)D16T ALUMINUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1920

STEP NO--UR/0136/70/000/003/0058/0063

CIRC ACCESSION NO--AP0132182

UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132182

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANICAL PROPERTIES OF A NUMBER OF EXTRUDED AL ALLOY (D16T) PARTS WITH CROSS SECTIONS OF VARIOUS SHAPES AND SIZES WERE STUDIED WITH SPECIAL REF. TO THE RELATION BETWEEN THE ANISOTROPY OF THE MECHANICAL CHARACTERISTICS AND THE GEOMETRICAL PARAMETERS OF THE CROSS SECTION. THUS THE DIFFERENCE IN STRENGTH ALONG AND ACROSS SUCH SAMPLES TENDED TO INCREASE WITH INCREASING WIDTH PER THICKNESS RATIO OF THE CROSS SECTION, ALTHOUGH THE GENERAL PICTURE OF THE MICROSTRUCTURE AS INDICATED BY X RAY AND METALLOGRAPHIC ANALYSIS ONLY VARIED A LITTLE.

UNCLASSIFIED

CHERNIKOVA, V. S.

SO:OPRS 54539  
23 NOV 71

UDC: 616.13-036.12:036.21(470.1)

CHRONIC PROGRESSIVE LUNG DISEASE AS A REGIONAL PATHOLOGY IN SOME NORTH-EASTERN PARTS OF THE USSR

616.13(470.1)

Article by A.P. Avetisyan, R.I. Bizova, L.K. Britvinsk, A.A. Zhavoronkov, E.F. Kenia, A.G. Mozgacheva, V.S. Chernikova, Institute of Human Teratology of the USSR Academy of Medical Sciences, Kazan, Sagadumekaya Obshch Hospital; Moscow, Vestnik Akademi Meditsinskikh Nauk SSSR, Kazan, No 10, 1971, pp 3-12.

At the present time, the attention of pathologists and clinicians is being drawn more and more to chronic progressive diseases of the lungs resulting in fibrosis and emphysema. For many years, chiefly in England, they were called chronic bronchitis which, since the times of Bouham (1808), has been considered practically a traditional English disease. It is not by chance that Stokes (1837) in his classical textbook on thoracic pathology devoted much more attention to it than to tuberculosis. English researchers have authored many works dealing with the symptomatology, x-ray diagnosis, and possible etiology of chronic bronchitis. Its traditional link with the humid climate of the British Isles, exacerbation of the disease during the cold season have become firmly fixed in the consciousness of many physicians.

A comprehensive monograph dealing with chronic bronchitis has been published by a team of English physicians and edited by Oswald (1978). This author demonstrated, in particular, that in England and Wales, 70,000 people died of bronchitis in 1953, which constitutes 7 percent of all causes of death. To this we should add 21,000 deaths due to pneumonia, 2,000 deaths due to bronchiectasia, and 3,000 deaths because of asthma. It is not by chance that we compare these indices, since bronchitis, asthma, bronchiectasia, as well as emphysema are often combined, and it is only the chief clinical syndrome that makes it possible to separate them into different categories.

The incidence of chronic bronchitis is described in contradictory ways. However, there is no doubt that under specific climate conditions this disease could be one of the chief causes of disability. Evidently, the sickness begins at an early age (20-30 years), but most deaths are referable to the elderly and aged (Oswald). Among the victims there is prevalence of individuals in specific professions, but metallurgical, transportation, and communications workers are stricken particularly often. In England, bronchitis does not spare agricultural workers, unskilled laborers, and representatives of other occupational groups.

USSR

UDC 615.371:576.851.42]-015.4:612.015.1

KASYMOVA, Kh. A. and ~~CHEBNIKOVA, Z. S.~~ Scientific Research Institute of Regional Pathology, Ministry of Health, Kazakh SSR

"State of Natural Immunity in Persons Inoculated Several Times With Live Brucellosis Vaccine BA-19. III. The Effect of Vaccine Strains on the Lysozyme Content Under Experimental Conditions and in Vaccinated Persons"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971, pp 91-95

Abstract: Inoculation of guinea pigs with BA-19 vaccine or Brucella strains 16 or 998/102 lowered the lysozyme titer on day 7. It rose slightly by day 30 but continued to decrease thereafter, reaching the lowest point by day 60. In humans, BA-19 vaccine likewise decreased the lysozyme titer in the blood, the maximum decrease occurring 2 months after inoculation. However, the lysozyme titer in saliva after decreasing for 15 days increased sharply thereafter and by day 30 reached or exceeded the original level. The greatest decrease in lysozyme titer coincided with the maximum accumulation of specific agglutinins in both guinea pigs and humans.

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1/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--SENSITIVITY OF DORSAL ROOT FIBRES TO POTASSIUM IONS AND THE  
HYPOTHESIS OF THE PERIPHERAL MECHANISM OF PAIN -U-  
AUTHOR-(02)-KHAYUTIN, V.M., CHERNILOVSKAYA, P.YE.  
COUNTRY OF INFO--USSR  
SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,  
NR 3, PP 3-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--POTASSIUM, PAIN, REFLEX, HEART, SMALL INTESTINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1982/0863 STEP NO--UR/0219/70/069/003/0003/0006  
CIRC ACCESSION NO--AP0052297  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0052297

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POTASSIUM IONS ARE CAPABLE OF EXCITING DORSAL ROOT FIBRES GIVING RISE TO NOCICEPTIVE REFLEXES. THE THRESHOLD CONCENTRATION OF THIS EFFECT IS 20 MM-L, WHICH IS LOWER THAN THE THRESHOLD NOCICEPTIVE CONCENTRATION FOR THE REFLEXOGENIC ZONES OF THE EPICARDIUM AND SMALL INTESTINE. THE DATA OBTAINED ARE CONSIDERED AS CONFIRMING THE CONCEPTION THAT NOCICEPTIVE REACTIONS ARE THE RESULT OF EXCITATION OF THE UNMYELINATED FIBRES THEMSELVES, AND NOT OF SPECIAL PAIN RECEPTORS.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--TWO LAYER ROOFING MATERIAL -U-

AUTHOR--(05)-DANTSIN, M.I., ARONOV, KH.I., CHERNIN, G.B., BLYAKHER, M.A.,  
SHTOFENMAKHER, B.M.  
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 260,880  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--06JAN70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR, BIOLOGICAL  
AND MEDICAL SCIENCES  
TOPIC TAGS--POLYVINYL CHLORIDE, CONSTRUCTION MATERIAL, INSULATING  
MATERIAL, MICROBIAL DEGRADATION, AMMONIUM COMPOUND, FLUORIDE, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1997/0987 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0119856  
UNCLASSIFIED



2/2 029

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0119856

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE ROOFING MATERIAL  
CONSISTS OF LINOLEUM WITH A POLY(VINYL CHLORIDE) FACING LAYER ON A HEAT  
AND SOUND INSULATING BASE. TO INCREASE THE DURABILITY, THE HEAT AND  
SOUND INSULATING PROPERTIES, AND THE DECAY RESISTANCE OF THE LINOLEUM, A  
COMP. WAS PREPD. CONSISTING OF 60-70PERCENT REPROCESSED WOOL FIBERS,  
30-40PERCENT SYNTHEITC FIBERS, AND 2PERCENT (NH SUB4) SUB2 SIF SUB6  
BASED ON THE FIBER WT. FACILITY: ALL UNION SCIENTIFIC RESEARCH  
INSTITUTE OF NEW CONSTRUCTION MATERIALS.

UNCLASSIFIED

USSR

UDC: 535.217

TUL'CHINSKIY, V. M. and CHERNIN, S. M.

"Equipment for Investigating Effect of Infrared Radiation on the Speed of Chemical Processes"

Moscow, Pribory i tekhnika eksperimenta, No. 1, January-February, 1971, pp 208-211

Abstract: In the absence of lasers to supply variable radiation in the 2-5 micron range, the authors have developed equipment for studying resonance effects of infrared radiation in that range on valence bonds in the molecules of organic compounds. The material to be investigated is placed in a thermostated oven and subjected to the amplified image of a graphite infrared source, with a liquid filter in the upper part of the oven to select the wanted frequencies and reject the others. The irradiated material is then dissolved and placed in a standard container and analyzed through the resultant spectrum. A sectional diagram of the oven is shown. The graphite source operates in an argon atmosphere under a pressure of 10 atmospheres for one to two hours, a time sufficient for several experimental runs. A sample of the type of spectrum that can be obtained with this procedure is shown. The authors are members of the Moscow State University Chemistry Department.

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USSR

UDC 621.438-253-71:536.5

CHERNIN, V. M.

"Calculating a Temperature Field of the Cooled Wheel of an Axial Turbine With Deflector Blades"

V sb. Gazoturbin. i kombinir. ustanovki (Gas-Turbine and Combination Unites — collection of works), Moscow, 1971 (1972), pp 229-235 (from RZh-49. Turbostroyeniye, No 4, Apr 73, Abstract No 4.49.120)

Translation: Results are presented from calculating the temperature field of a turbine wheel operating at rated conditions at the following gas parameters: temperature before the turbine  $T = 1100^{\circ}\text{C}$ ,  $n = 25270\text{rpm}$ , external wheel diameter of 350mm, gas consumption  $G = 4.45\text{kg/sec.}$ , air consumed for cooling =  $0.07\text{kg/sec.}$ , and number of blades on the wheel  $\nu = 51$ . Original article: 3 illus.

1/1

USSR

UDC 669.712.1.05

AGRANOVSKIY, A. A., BERKH, V. I., KAVINA, V. A., LEVIN, M. V., LYAPUNOV, A. N.,  
MONTVID, A. E., MUNITS, I. N., and CHERNIN, V. N.

"Spravochnik metallurga po tsvetnym metallam" (Metallurgist's Handbook of  
Non-Ferrous Metals); Moscow, Izd-vo "Metallurgiya," 1970, 320 pp

Translation of Annotation: Data on the physico-chemical properties of the  
most important aluminum compounds and aluminum solutions are presented,  
phase diagrams of chemical systems determining the processes of alumina  
production by alkali methods are given, and standards and technical con-  
ditions are reviewed.

Various alumina production methods and reference data on the technology and  
equipment of alumina production are described.

The handbook is intended for engineers and technicians engaged in the alumi-  
num industry. Ninety-one figures, 116 tables, 176 references.

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AGRANOVSKIY, A. A., et al., "Spravochnik metallurga po tsvetnym metallam" (Metallurgist's Handbook of Non-Ferrous Metals), Moscow, Izd-vo "Metallur-giya," 1970, 320 pp

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USSR

AGRANOVSKIY, A. A., et al., "Spravochnik metallurga po tsvetnym metallam" (Metallurgist's Handbook of Non-Ferrous Metals), Moscow, Izd-vo "Metallur-giya," 1970, 320 pp

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USSR

UDC 624.07:534.1

CHERNISHEV, V. M.

"Evaluating the Effectiveness of Damping Bending Oscillations of Beams With Viscoelastic Coatings"

V sb. Rasseyaniye energii pri kolebaniyakh mekh. sistem (Energy Scattering and Fluctuations of Mechanical Systems -- Collection of Works), Kiev, "Nauk. dumka", 1972, pp 236-245 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V255)

Translation: The efficiency in damping forced bending oscillations of a beam with the aid of viscoelastic coatings is evaluated. The differential equation for forced vibrations of the beam with a connected layer of viscoelastic material was obtained under the assumption that the coating is sufficiently rigid and behaves as a portion of the entire beam. Steady-state forced oscillations of the beam are found in the form of an expansion in terms of natural forms of the corresponding homogeneous problem in the absence of forces of inelastic resistance. The distributed load is also represented in the form of an expansion in terms of natural forms. It is assumed that the elastic modulus and the coefficient for loss of the viscoelastic material depends in the general case on frequency. Graphs are given

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USSR

CHERNISHEV, V. M., Rassevaniye energii pri kolebaniyakh mekh. sistem, Kiev, "Nauk. dumka", 1972, pp 236-245

showing the dimensionless equivalent damping coefficient as a function of the relative rigidity of the viscoelastic material for different values of the loss coefficient. Expressions of the relative rigidity for two-sided and one-sided coatings are given. 8 ref. Yu. A. Belyayev.



USSR

UDC 634.852

KASHEVSKIY, V. V. and CHERNITSER, V. M.

"Some Particulars on the Use of Transposing Units Based on Magnetic Tape for Accelerated Correlation and Spectral Analysis"

Tr. Taganrog. radiotekhn. in-ta (Works of the Taganrog Radio Engineering Institute), 1972, vyp.28, pp 31-42 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 V74)

Translation: This survey is dedicated to the above problem. Various design variants of instruments are studied which are used in the analysis of signals. Original article: four illustrations and 15 bibliographic entries. V.K.

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USSR

UDC 621.317.757

CHERNITSER, V. M., PETROV, N. S., KNYAZEV, YU. M., and SAL'NIKOV, B. A.

"Phase System for Distortion Compensation in Heterodyne Analyzers With Preliminary Time Compression"

Tr. Taganrog. radiotekhn. in-ta (Works of the Taganrog Radio-Engineering Institute), 1972, vyp.28, pp 43-50 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 A287)

Translation: The described phase system for compensation with respect to the type of closed automatic control system is designed to eliminate a series of difficulties which arise during the technical realization of this type of compensation system (readout ambiguity, the necessity of using two expensive high-stability generators for recording and producing the reference signal). The system is also designed to raise compensation stability. The basic element of the system is a pulse, phase discriminator. A trigger was used as the discriminator, terminated on a low frequency filter. The conducted experiments showed a sufficiently high effectiveness of the phase system for compensating distortions which were evoked by rate variation in the time compressors. The use of a phase system for compensation raises the permissible discrimination capacity of a spectra analyzer which is coupled to a time compressor. A.K.

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USSR

CHERNITSEV, V. M., PETROV, N. S., and KNYAZEV, YU. M.

UDC 534.852

"Electronic Methods of Compensation in Instruments for Fine Magnetic Recording"

Tr. Taganrog. radiotekhn. in-ta (Works of the Taganrog Radio Engineering Institute),  
1972, vyp.28, pp 22-30 (from RZh-Radiotekhnika. No 11, Nov 72, Abstract No 11 V75)

Translation: This is a survey of various methods for compensating the effect of  
recording rate variation and of nonuniformity in carrier sensitivity including  
during spectral analysis. Original article: six illustrations and 12 bibliographic  
entries. V.K.

1/1

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USSR

CHERNOBROD, L. V.

"Review of Basic Concepts of the SETL Programming Language"

Sistemnoye i Teor. Programirovaniye [Systems and Theoretical Programming -- Collection of Works], Novosibirsk, 1972, pp 236-277 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V661, by the author).

Translation: SETL is a high-level programming language, the basic concepts of which are taken from set theory. The language is designed for construction of algorithms dealing with objects with complex structure.

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USSR

UDC:621.438.536.2

CHERNOBROVKIN, A. P. and SHABAROV, A. B.

"On Calculation of Closed Cycle Taking Into Account Real Properties of Working Fluid"

Moscow, Sb. Gasoturbin. i Kombinir. Ustanovki (Symposium on Gas Turbine and Combined Installations), 1971 (1972), pp 37-45 (from Referativnyy Zhurnal-Turbostroyeniye, 1973, Abstract No 3.49.89)

Translation: In order to take into account the real properties of gases it is necessary to consider the effect of pressure as well as of temperature on the specific heat and to replace the clapeyron equation of state  $PV=RT$ , which is true for ideal gas only, by the Bitti-Bridgeman semi-empiric equation of state  $PV=\gamma RT$ , which has low errors in the wide range of states for gases used as working fluids in closed cycle gas turbine installations (He, N<sub>2</sub> and CO<sub>2</sub>);  $\gamma$  is the compressibility factor.

1/1

1/2 015  
UNCLASSIFIED  
TITLE--PHENYLTRIALKYL SILOXANE OLIGOMERS WITH BRANCHED MOLECULAR STRUCTURE  
-U- PROCESSING DATE--30OCT70  
AUTHOR--(05)-TYERSKAYA, S.A., ANDRIANOV, K.A., CHERNOBROVKINA, M.N.,  
TIKHONOV, V.S., ALANICHEV, V.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 339-46  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--SILOXANE, HETEROCYCLIC OXYGEN COMPOUND, CONDENSATION REACTION,  
MOLECULAR STRUCTURE, BENZENE DERIVATIVE, CHEMICAL STABILITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1992/1735 STEP NO--UR/0079/70/040/002/0339/0346  
CIRC ACCESSION NO--AP0112725  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112725

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDROLYTIC POLYCONDENSATION OF  
PHSICL SUB3 GAVE (PHSIO SUB1.5) SUBN (I), MOL. WT. SIMILAR TO 3 TIMES 10  
PRIME4. THE DEPOLYMN. OF I WITH ME SUB3 SIOK, ET SUB3 SIOK, ME SUB2 (F  
SUB3 C-CH SUB2 CH SUB2)SIOK, OR THEIR MIXTS. IN XYLENE AT 140DEGREES,  
FOLLOWED BY REACTION OF THE OLIGOMERS WITH ME SUB3 SICL GAVE OLIGOMERS,  
SUCH AS ((ME SUB3 SIO) SUB2 SIPH) SUB2 O, II, III, OR IV. THE OLIGOMERS  
WERE PURIFIED BY DISTN. MORE COMPLEX OLIGOMERS GAVE ONLY LOW DISTN.  
YIELDS AND THEIR STRUCTURES WERE NOT ESTABLISHED. THESE OLIGOMERS ARE  
STABLE TO SIMILAR TO 350DEGREES. FACILITY: MOSK. INST. TONKOI  
KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

Power, Turbine, Engine, Pump

UDC: 621.438:538.4

~~CHEENOBROVSKIN~~ A. P., OSIPOV, M. I.

"Combined Power Installations With MHD-Generators and Gas-Turbine Units"

Tr. Mosk. vyssh. tekhn. uch-shcha im. N. E. Baumana (Works of the Moscow Higher Technical Academy imeni N. E. Bauman), 1970, No 134, pp 146-155 (from RZh-Turbostroyeniye, No 8, Aug 70, Abstract No 8.49.92)

Translation: One of the ways of using high temperatures is to build combined installations with a magnetohydrodynamic generator and a gas-turbine unit with the working medium under high pressure. Such installations are capable of fairly high efficiency (50-53%) and excellent maneuverability with low capital expenditures on the gas turbine section as compared with a combined installation with MHD generator and steam-turbine unit. In order to make the proposed combined installations with MHD generator and gas-turbine unit, it is necessary to achieve high pressures (130-150 abs. at.) in the compressors, and to make heat exchangers which operate at high temperatures under considerable pressure differentials (about 100 abs. at.). The appropriate design of the gas-turbine section of the combined installation should be selected with regard to the overall technical and economic indices, which requires a valid estimate of the cost of the basic equipment for a magnetohydrodynamic generator for such an installation.

i/1



1/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--DATA OF ENDORADIOPROBING OF THE INTRAGASTRIC PRESSURE IN PATIENTS  
WITH ULCER DISEASE -U-

AUTHOR--CHERNOBROVYY, V.N.

COUNTRY OF INFO--USSR

SOURCE--VRACHEBNOYE DELO, 1970, NR 6, PP 64-67

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIGESTIVE SYSTEM DISEASE, LESION, DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1607

STEP NO--UR/0475/70/000/006/0064/0067

CIRC ACCESSION NO--AP0127098

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSIGN NO--AP0127098

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NORMAL VALUES OF THE INTRAGASTRIC PRESSURE AS DETERMINED BY ENDORADIOPROBING EQUALLED 5 MM HG OR LESS, WHEREAS IN PATIENTS WITH ULCER DISEASE THEY WERE MORE THAN 15 MM HG. THE VALUES OF THE MAIN INTRAGASTRIC PRESSURE WERE IN A CERTAIN CORRELATION WITH THE STAGE AND CLINICAL VARIANTS OF ULCER DISEASE. THE LARGEST MEAN VALUES OF THE MAIN INTRAGASTRIC PRESSURE WERE OBSERVED IN THE TYPICAL CLINICAL VARIANT OF ULCER DURING EXACERBATION. THE SMALLEST VALUES WERE OBSERVED IN PATIENTS WITH THE GASTRITIC AND TROPHIC VARIANTS OF ULCER. FACILITY: KAFEDRA FAKUL'TETSKOY TERAPII CHERNOVITSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--THERMOPHYSICAL PROPERTIES OF UNPLASTICIZED POLY(VINYL CHLORIDE)  
PVKHS-5 -U-  
AUTHOR--(03)-CHERNOBYLSKIY, I.I., PIVEN, A.N., GRECHANAYA, N.A.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. UKR. 1970, (1) 27-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--HEAT CONDUCTIVITY, SPECIFIC HEAT, ENTHALPY, POLYVINYL  
CHLORIDE, LEAD COMPOUND, TEMPERATURE DEPENDENCE, POLYMER PHYSICAL  
PROPERTY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REFL/FRAME--1992/1511 STEP NO--UR/0435/70/000/001/0027/0029  
CIRC ACCESSION NO--AP0112505  
UNCLASSIFIED

272 025

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112505

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHANGES OF HEAT COND. COEFF. (LAMBDA), TEMP. TRANSFER COEFF. (A), D., SP. HEAT (C SUBP) AND ENTHALPY WITH TEMP. IN 0-200DEGREES INTERVAL WERE DETD. FOR THE UNPLASTICIZED POLY(VINYL CHLORIDE) (I) CONTG. PBCO SUB3 5, PB STEARATE 3, AND STEARIN 0.5 PARTS IN 100 PARTS I. THE RESULTS ARE PRESENTED IN GRAPHS. THE INCREASE IN THE DETN. PRESSURE FROM 5 TIMES 10 PRIME5 TO 50 TIMES 10 PRIME5 N-H PRIME2 INCREASED LAMBDA BY 6PERCENT, A BY 5-6PERCENT, D. BY 2-3PERCENT, AND C SUBP BY 2-3PERCENT WITHOUT ALTERING THE CHARACTER OF THE PROPERTY TEMP. DEPENDANCE.

UNCLASSIFIED

**CHERNOGAYEVA, G.M.**

JRS 58011  
18 Jan 73

- 91 -

The concept of water exchange, proposed by us, which characterizes the time taken to replace all the water of a given part of the hydrosphere in the process of circulation, permits revealing important and interesting regularities of that phenomenon (Table 1). The activity of exchange of the saline parts of the hydrosphere-ocean and deep ground waters, the main volumes of which are brines, is numbered in thousands of years. On the other hand, comparison of the separate parts of the stationary reserves of the hydrosphere with the corresponding elements of the water balance shows that the fresh water reserves most available to people, in the presence of very low stationary reserves, are characterized by an exceptionally dynamic character. Thus the simultaneous reserve of water in the beds of all rivers is very small in comparison with other parts of the hydrosphere and does not exceed 1200 km<sup>3</sup> (the volume of all lake waters is

The earth's water resources are composed of stationary water reserves and resources renewed in the process of its circulation. The total volume of stationary resources is almost 1.5 billion cubic kilometers, of which the fresh water accessible for use, including ground, lake, and river water and also soil moisture and atmospheric vapor, amounts to 4-7 billion km<sup>3</sup>, according to our calculations. From these figures it follows that the earth apparently is not poor in fresh water resources. But the needs of mankind are assured only to a small degree through these reserves. The most reliable and constant source is water renewed in the process of such a colossal phenomenon as the water cycle. This is why in counting the fresh water resources the basic method is that of the water balance, which permits quantitatively considering the cycle and its separate elements and also estimating the continuous renewal of fresh water resources.

THE WORLD'S FRESH WATER RESOURCES

Article by Professor M. I. L'vovich, Moscow, Vsesoyuzniy Nauch SSSR, Russian, Vol 42, No 11, November 1972, pp 70-76

UDC: 551.48(100)

112C. 531. 48 (1959)

calculated the river runoff by 7- and 10-degree boxes of latitude, generalizing for each of them all the available data on river runoff, others (M. I. Badysko, 1959; L. I. Zubenok, 1970; 1972; E. Albrecht, 1961) took as a basis evaporation (if it is deducted from precipitation) it is possible to obtain an approximate concept of the river runoff), and a third group (M. I. L'vovich, 1945; 1966; 1968) started from the first compiled (later refined) world maps of river runoff.

All work on the water balance, including the world calculation, was formerly constructed on the equation  $P = R + E$  (precipitations = runoff + evaporation). That equation created a whole epoch in hydrology, since in the course of 7-8 decades it served as the basis of water-balance investigations of river basins and territories in general, but it reflects the interconnection of only three elements of the water balance and this does not satisfy contemporary science.

Hydrology

Last year in the Institute of Geography of the AS USSR, under the leadership of the author of this article and with the participation of N. N. Dreyev, G. Ya. Kuznitskiy, G. M. Nikolayeva and G. M. Chernogayeva work on the water balance of the continents of the world was completed. The basis of the investigations was the following system of differentiated equations, proposed by us (1959):

$$R = U + S; P = U + S + E; W = P - S - E + E;$$

$$K_1 = \frac{U}{P}; K_2 = 1 - K_1 = \frac{S + E}{P};$$

where R is the total river runoff; U is the underground and S is the surface (high-water) runoff into rivers, P is the atmospheric precipitation, E is the evaporation, W is the grass watering of a territory, and  $K_1$  and  $K_2$  are the coefficients of feeding of rivers by underground waters and of evaporation.

The system of differentiated equations differs from those used earlier by increase in the number of elements of the water balance from 3 to 6, including genetically different parts of the river runoff which are of different practical value and are determinable by analysis of the course of runoff during the year, which permits distinguishing the runoff of underground origin by means of calculations based on the new equations. It is possible to arrive also at a general estimate of the reserve of soil moisture -- an important component of soil fertility.

The water balance of our country has been studied by that method in the Institute of Geography of the AS USSR, in the State Hydrological Institute, and in the Institutes of Geography of the AS Azerbaijan and Georgian SSR. That method has been used in investigations of Romanian, Bulgarian and Yugoslav specialists.

USSR

UFG: 629.7.036.3:621.822.200

DEMIDOVICH, V. M. and CHERNOGLAZOV, V. A.

"Studying Gas Turbine Roller Bearings Under a Heavy Load"

Tr. Kazan. aviats. in-ta (Works of the Kazan Aviation Institute), 1971, No 136, pp 59-65 (from IZh-34. Aviatcionnye i Raketynye Dvigateli, Moscow, No 3, Mar 1972, Abstract No 3.24.65)

Translation: A stand is proposed for measuring the total moment due to the forces of resistance in bearings and the number of revolutions of the shaft and case, along with the operating temperature of the bearing and the oil temperature at the input and output of the bearing shells. Original article: two illustrations and eight bibliographic entries.

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USSR

UDC 669.715'782:[620.186 + 539.531]:669.781'779

GORSHKOV, A. A., SAP'YAN, V. G., SIL'CHENKO, T. V., CHERNOCORENKO, V. B., and GREBENKIN, V. S.

"Influence of Phosphides A<sup>III</sup>B<sup>V</sup> on the Structure and Certain Properties of Hypereutectic Silumins"

V sb. Modifitsir. siluminov (Modification of Silumins -- Collection of Works), Kiev, 1970, pp 77-82 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 1749 by I. NABATOVA)

Translation: By microanalysis and microhardness methods the authors investigated the modifying and alloying action of phosphides of the type A<sup>III</sup>B<sup>V</sup> (BP, AlP, GaP, ZnP) on hypereutectic Silumins containing (in %): Si 18, Cu 2.08, Mg 0.4, Ni 1.05, Mn 0.12, Zn up to 0.3, and Fe 0.42. Phosphides were introduced at melt temperature of 800° in an amount constituting 0.4% of the weight of the alloy. Modification time, 2-3 minutes; subsequent homogenization time at 800°, 30 minutes. BP and AlP significantly reduce alloy structure; GaP has less effect on structure, and ZnP very slight effect, which is due to the different phosphorus content of the phosphides. BP and AlP occur in silicon in the form of solid solutions and increase the microhardness of primary silicon  
1/2



USSR

GORSHKOV, A. A., *et al.*, *Modifitsir. siluminov* (Modification of Silumins -- Collection of Works), Kiev, 1970, pp 77-82 (from *RZh-Metallurgiya*, No 12, Dec 70, Abstract No 12 1749 by I. NABATOVA)

crystals to H 50/5 1600 and 1460 respectively. GaP and ZnP raise H 50/5 to 1190 and 1170 due to the formation of AlP, which becomes part of the silicon lattice. Total hardness of alloys does not vary after modification. One illustration. Two tables. Bibliography of 23 titles.

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- 14 -

Analysis and Testing

USSR

UDC 543.062:546.3-19'87'657

~~CHERNOCORENKO, V. B.~~, and VEREYKINA, L. L., Institute of Problems of Metal Science, Academy of Sciences Ukr SSR

"Chemical Analysis of Alloys of Bismuth With Rare-Earth Elements"

Kiev, Ukrainskiy Khimicheskii Zhurnal, Vol 36, No 12, Dec 70, pp 1296-1298

Abstract: A procedure was developed for the analysis by titration of a solution of Bi and a rare-earth element that were present in relatively high concentrations (e.g., a solution in 250 ml dilute HNO<sub>3</sub> of 0.5 g of an alloy containing Bi 5-95%, Nd

5-95%). In 20 ml of the solution brought to pH 1.1, Bi was titrated with an 0.01 M solution of complexon III (di-Na salt of EDTA, Trilon B), using xylenol orange as indicator. Upon change of the color of the solution from red to yellow, the solution was brought to pH 5.1-5.3 by adding ammonia dropwise. Ten ml of a 40% urotropine solution were added as a buffer and the rare-earth element was titrated with the same complexon III solution. An acetate-ammonia buffer solution with pH 5.2-5.4 could also be

1/2

USSR

CHERNOGORENKO, V. B., and VEREYKINA, L. L., Ukrainskiy Khimicheskiy Zhurnal, Vol 36, No 12, Dec 70, pp 1296-1298

used. This method of determination was suitable for solutions containing Bi and any of the trivalent rare-earth elements, but  $Ce^{4+}$  had to be reduced to  $Ce^{3+}$  with  $H_2O_2$ : the excess of  $H_2O_2$  decomposed by boiling. Ascorbic acid was then added to prevent oxidation of  $Ce^{3+}$  to  $Ce^{4+}$  by  $O_2$  of the air. To separate Bi present in an amount  $< 2\%$  in a Bi-Nd alloy, 20 ml of a solution of 0.2 g of the alloy in 250 ml dilute HCl were brought to pH 2-3 and extracted with  $CCl_4$  in the presence of sodium diethyldithiocarbamate. By treating the  $CCl_4$  solution with  $HNO_3$ , Bi was transferred from this solution into the aqueous phase. It was then determined spectrophotometrically with KI.

2/2

1/2 016

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--EFFECT OF CASTING SHRINKAGE ON THE MECHANISM OF SCAB FORMATION -U-

AUTHOR--(03)--KIM, G.P., NIKIFOROV, A.P., CHERNOGOROV, P.V.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, 2, 33-5

DATE PUBLISHED-----70

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

TOPIC TAGS--METAL SHRINKAGE, CAST STEEL, METAL CASTING, FOUNDRY MOLD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1374

STEP NO--UR/0128/70/002/000/0033/0035

CIRC ACCESSION NO--AP0116823

UNCLASSIFIED