

CHAVCHANIDZE, V.V.

Use of random testing techniques for calculating intranuclear cascades.
Izv.AN SSSR Ser.fiz.19 no.6:629-638 N-D '55. (MIRA 9:4)

1.Institut fiziki Akademii nauk Grus.SSR.
(Cosmic rays) (Nuclear physics)

~~CONFIDENTIAL~~

USSR/Nuclear Physics - Neutron distribution

FD-1855

Card 1/1 Pub. 146-15/25

Author : Chavchanidze, V. V., and Cheyshvili, O. D.

Title : Letter to the editor. Finding the energy distribution function of neutrons by the Markov method

Periodical : Zhur. eksp. i teor. fiz. 28, 369-371, March 1955

Abstract : The authors attempt to discuss certain problems in the theory of slowing of neutrons in the case where the slowing occurs as a result of elastic collisions with the nuclei of the moderator (A. I. Akhiezer and I. Ya. Pomeranchuk, Nekotoryye voprosy teorii yadra (Certain problems of nuclear theory), GIFML, 1950), namely by the use of the Markov method (V. V. Chavchanidze, ZhETF 26, 179, 185, 1954). Their results are also convenient for the case of thin layers of the moderator, where the number of elastic collisions is small (less than 25-30). Eight references; e.g. V. V. Chavchanidze, Dissertation, Tbilis State University, 1953).

Institution: Tbilis State University

Submitted : July 28, 1954

CHAVCHANIDZE, V. V.

✓ 1140

ON INTERACTION OF BOSON-FERMION FIELDS. V. V. Chavchanidze. (Georgis Inst. of Phys.). Doklady Akad.

✓ Math S.S.R. 164, 205-8(1956) Sept. 11. (In Russian)

Basic equations for nucleon-meson dynamics are developed. (R.V.J.)

CHAVCHAVADZE, Y. V.

Release

✓ Chavchavadze, Y. V. - On the equations of quantum electro-
dynamics. Soobšt. Akad. Nauk Gruzin. SSR 17 (1956),
15-20. (Russian)

On the basis of certain assumptions, such as that the
electromagnetic vector potential is expressed in terms of
a scalar "photomeson" field, a set of field equations for
the electron-positron and "photomeson" fields is ob-
tained.

N. Rosen (Haifa).

1 20
W. J.

*CHAVCHANIDZE, V. V.*AUTHOR
TITLEMARIANASHVILI, M.M., CHAVCHANIDZE, V.V., KAMALADZE, Yu.G., 56-5-38/55
On the Nature of the Field Function.

(O prirode polevyy funktsii -Russian)

PERIODICAL

Zhurnal Eksperim.i Teoret.Fiziki, 1957, Vol 32, Nr 5, pp 1236-1237 (USSR)

ABSTRACT

The neutrality or the state of being charged of a given wave field, i.e. the neutrality or the state of being charged of the particles corresponding to it, are closely connected with the character of the field functions (be they real or complex). At the present stage of investigations it is not possible to determine from the form of the field functions, i.e. from their algebraic structure, whether a given wave function enters into interaction with any nonelectromagnetic field. Thus, at the present stage of theory, the fact of the existence of a nonelectromagnetic interaction between the given alternating fields does not impose any conditions on the character of the relevant field quantities. But in the interaction with the electromagnetic field there exists such a condition (i.e. the field function is then complex). The authors of the paper under review use as an example a spinor field that can be characterized by a four-component spinor. The interaction with a mesonic field is introduced (contrary to the interaction with the electromagnetic field) in such a way that no conditions are imposed on the field function of the spinor field (or of any other field). This, however, means that in present theory of the wave fields the electromagnetic field occupies a special position. From this fact two conclusions can be drawn: Ei-

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ther this special position of the electromagnetic field is recognized or the following concession is made: The present theory has not yet been able to find an adequate apparatus for expressing the particularities of the really existing wave fields by imposing additional conditions upon the field quantities of the fields standing in interaction. The first conclusion can not be accepted, because it does not provide for any way out of the dead end of the present mesonic theory. The second conclusion could serve as basis for an attempted generalization of the concept of the wave function. In other words, such conditions must be obtained which must be imposed on the relevant field functions in order to realize the one or the other interaction. Thus it would be possible to make the hypothetical presupposition that the field function of the wave field must be a hypercomplex number, in particular a quaternion. The paper under review outlines these lines of thought in somewhat greater detail.

(No reproductions).

ASSOCIATION Institute for Physics, Academy of Sciences of the Georgian SSR.
PRESENTED BY
SUBMITTED 5.11.1956
AVAILABLE Library of Congress.
Card 2/2

CHAVCHABIDZE, V.V.

Primary "alphabet" of desoxyribonucleic acid. Biofizika 3 no.4:
391-395 J1-Ag '58 (MIRA 11:8)

1. Fizicheskiy fakul'tet Tbilisskogo gosudarstvennogo universiteta
im. I.V. Stalina.
(DESOXYRIBONUCLEIC ACID)

56-34-4-20/60

AUTHORS: Chavchanidze, V. V., Shaduri, R. S., Kumsishvili, V. A.

TITLE: The Calculation of the Electron-Photon Cascade in Lead by the Monte Carlo Method (Raschet metodom Monte-Karlo elektronno-fotonnogo kaskada v svintse)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 912 - 915 (USSR)

ABSTRACT: This work describes the statistical probability molding based on the method of random trials (a modification of the method by Monte Carlo). This work only describes the scheme of the calculation of the cascade omitting details. The range of the γ -quantum in lead until the first process of interaction is "drawn". The "drawing" is made for the integral curve of the dependence of the total cross section on the energy of the quantum. Then the "fate" of the γ -quantum is drawn. In the case of pair production the energy of the positron is drawn and from it then the energy of the electron is ascertained. Subsequently the amounts of the ionization losses and thus also of the energy of the components of the pair before the following

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The Calculation of the Electron-Photon Cascade in Lead 56-34-4-20/60
by the Monte Carlo Method

collisions are determined. Simultaneously also the correction for the multiple scattering is "drawn". The energy of the bremsstrahlung quantum was ascertained by the method of the construction of non-normalized integral curves with unequal argument scales. The scattering angles were "drawn" without consideration of the correlation between the scattering angles of the quantum of the electron. In the case of destruction the scattering angle of the one γ -quantum in the center of mass system is "drawn". From the data obtained by this also the scattering angle of the second quantum is ascertained. The results thus obtained are plotted in form of curves for the energy distribution and for the angular distribution of the electrons, positrons, and γ -quanta (as functions of the generating angle of the observation cone). The computation of the electron-photon cascade is unusually long. For the factual performance of the computations electronic high-speed computers are necessary. The existing machines need not be rebuilt at all but a correspondingly performed programming is sufficient. Here 2 of such programming methods are shortly described. It is a particularity

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by the Monte Carlo Method

of the first method that in the constant memory the arguments of the given probability functions are stored in a certain order. The second programming method allows the introduction of these functions into the storing device. According to the opinion of the authors the whole efficiency of the calculations by the method of random trials shows up only in case of the application of electronic computers and in case of adapted programming. The authors thank A. V. Tagviashvili, B. I. Bondarevich, L. L. Esakiya, G. A. Goradze, M. Ye. Perel'man, G. A. Almanov for their participation in the practical performance of the computations. This work was performed on the suggestion by Professor V. P. Dzhelepov in connection with the necessary estimation of the probability of the non-emission of electrons and positrons from lead plates of little thickness. The authors thank Professor Dzhelepov and his collaborators for his attentiveness and his interest in this work. There are 3 figures and 7 references, 4 of which are Soviet.

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The Calculation of the Electron-Photon Cascade in Lead 56-34-4-20/60
by the Monte Carlo Method

ASSOCIATION: Institut fiziki Akademii nauk Gruzinskoy SSR (Institute of Physics
AS, Georgian SSR)

SUBMITTED: September 23, 1957

1. Lead--Nuclear reactions

Card 4/4

AUTHORS: Chaychanidze, V. V., Perel'man, M. Ye. SOV/56-35-1-50/59

TITLE: On the Theory of the Neutrino (K teorii neytrino)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
Vol. 35, Nr 1, pp. 296 - 298 (USSR)

ABSTRACT: This paper demonstrates that all the experimental results described by the two-component theory (Ref 1) may be explained without the introduction of a longitudinal unsymmetric neutrino. The authors suggest that this hypothesis be replaced by the assumption that a quantum mixture of 2 light neutral Dirac (Dirac) particles flies off in the β -, μ , and π -decays. These Dirac (Dirac) particles have opposite parities. The relation between them is that of particle and antiparticle and therefore a new rule for the conjugation particle- antiparticle is introduced. For the sake of simplicity the authors investigate only the β -decay which is characterized by the Hamiltonian

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$H = \sum_{i=1}^5 c_i (\bar{\psi}_n 0_i \psi_p) (\bar{\psi}_e 0_i \Phi)$. In the two-component theory there is
 $\Phi \rightarrow \Phi(\pm) = (1 \mp \gamma_5) \psi_\nu / \sqrt{2} = (\psi_\nu \mp \gamma_5 \psi_\nu) / \sqrt{2}$, and the authors

On the Theory of the Neutrino

SOV/56-35-1-50/59

for the sake of definiteness put $\psi_{\nu} = \psi_{\nu}^{\dagger}$. The authors' hypothesis may be reduced to the hypothesis that $\psi_{\bar{\nu}}(E) = \psi_{\nu}(-E) = -\gamma_5 \psi_{\nu}(E)$ behaves like the wave function $\bar{\psi}$, whereas $\psi_{\nu} = \psi(E)$ is the wave function ψ . For a neutrino the transition from $[\hat{\alpha}\hat{p} + E]\psi_{\nu}(E) = 0$ to the corresponding equation for the antiparticle $[\hat{\alpha}\hat{p} - E]\psi_{\bar{\nu}}(E) = 0$ may be carried out by means of the above mentioned relation. The wave function of the real antiparticle is different from zero also in the non-relativistic limit. According to the above-mentioned relation, the Hamiltonian mentioned in the beginning of this paper with $\Phi(\pm) = (\psi_{\nu} \pm \psi_{\bar{\nu}})/\sqrt{2}$ gives the same cross sections of the decay phenomena as in the two-component theory. The asymmetry of the decays is not interpreted as a consequence of the properties of any particle, but as a consequence of the properties of interaction itself, i.e. - of the non-conservation of the lepton charge. The selectivity of the interaction is expressed by the choice of the phase factor of the quantum mixture which flies away. The author expresses his thanks to V.I.Mamasakhlisov for his useful discussions and for his

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On the Theory of the Neutrino

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interest in this paper. There are 5 references, 3 of which
are Soviet.

SUBMITTED: December 24, 1957

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CHAVCHANIDZE, V.V.; SHADURI, R.S.

Method of statistical-probabilistic modeling applied to the
calculation of functional integrals of the Feynman type.
Wiener and Fresnel measures. Trudy Inst. fiz. AN Gruz.SSR
7:105-111 '60. (MIRA 14:10)

(Sampling(Statistics))
(Integrals)

S/194/62/000/006/055/232
D295/D308

16,4000

AUTHOR: Chavchanidze, V.V.

TITLE: The use of statistical-probability models as a possible design principle of control systems

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-2-130 v (V sb. Primeneniye vychisl. tekhn. dlya avtomatiz. proiz-va, M., Mashgiz, 1961, 52-62)

TEXT: A design principle of control system is considered based on the method of statistical-probability modelling. The Monte Carlo methods are the basis of this principle. The direct and inverse Monte Carlo methods are considered as well as the method of random tests. These methods make it possible to simulate various processes and, what is particularly important, processes that do not lend themselves to analytical design. A typical feature is the fact that no model is constructed for a determined object but the designed system constructs, regenerates and stores a model of the object. [Abstracter's note: Complete translation.]

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S/621/61/000/000/006/014
D234/D303

16.6100 (also 1031, 1253, 2403)

AUTHORS: Chavchanidze, V.V., and Kumisishvili, V.A.

TITLE: On determining distribution laws on the basis of a small number of observations

SOURCE: Nauchno-tekhnicheskoye obshchestvo priborostroitel'noy promyshlennosti. Primeneniye vychislitel'noy tekhniki dlya avtomatizatsii proizvodstva. Trudy soveshchaniya, provedennogo v oktyabre 1959, g. Ed. by V.V. Solodovnikov. Moscow, Mashgiz, 1961, 129 - 139

TEXT: The authors propose an empirical method of constructing the distribution function of a random quantity X in the case when the number of its observed values is very small (not larger than 10). According to the usual method which the authors call classical, the density of the distribution function is considered as infinitely large at all $x = x_i$ ($i = 1, 2, \dots, n$) and equal to 0 at all other points, i.e. it is supposed that only these specified values of x could appear in the test and the probability of any other values is

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On determining distribution laws ...

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S/621/61/000/000/006/014
D234/D303

0; this seems to be unjustified if the number of data is small. The authors assume a priori that: A) The true distribution function $f(x)$ of a random quantity X is larger than 0 in the interval between $x = a$ and $x = b$ and equal to 0 outside it; B) $f(x)$ is continuous and has no excessively steep rises or descents within the interval. If there are no observed values of X one can still indicate the form of $f(x)$ corresponding to the information already available. The only possibility consistent with the information is $f_0(x) = 1/(b - a)$ inside the interval and $f_0(x) = 0$ outside, i.e. when no value of X has been observed one can only assume that all values have the same probability inside (a, b) . If there is one observed value x_1 the classical formula would be

$$f_1(x) = \delta(x - x_1) \quad (7)$$

which cannot be considered as the best approximation to the true $f(x)$; it is farther away from the latter instead of being closer than $f_0(x)$. One should not construct about x_1 a delta function, but

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some continuous function which may be any one that is symmetric. The authors choose this function (called the insertion function) equal to $1/d$ in the interval $(x_1 - d/2, x_1 + d/2)$ and to 0 outside it. To obtain a new approximation to $f(x)$ one must add the above function to $f_0(x)$, both being multiplied by corresponding weight factors; the latter are equal to $1/2$ as there are no reasons for selection. If there are 2 observed values the reasoning is analogous. For n observed values

$$f_n(x) = \frac{1}{n+1} \left\{ f_0(x) + \sum_{i=1}^n \psi_{x_i}(x) \right\}; \quad (16)$$

the insertion functions here must be corrected so as to give $f_n(x) = 0$ outside (a, b) . The formula was checked by the authors with the aid of the Monte-Carlo method for two different laws of distribution; the results are described. It is stated that the authors found the form of the insertion function X

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On determining distribution laws ...

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$$\psi_{x_i}(x) = \frac{k_i}{(x - x_i)^2 + d^2} \quad (20)$$

to be sufficiently close to the optimum form; k_i is the normalizing constant depending on x_i and d a parameter which must be found empirically. After every experiment one can extract the most reliable information and use it in the appropriate way; the full information will be the sum of corresponding variations X

$$I = \Delta I_0 + \Delta I_1 + \dots + \Delta I_n. \quad (21)$$

There are 2 tables, 4 figures and 4 Soviet-bloc references.

Card 4/4

SKHIRTLADZE, R.L.; CHAVCHANIDZE, V.V.

Synthesis of discrete stochastic units. Soob. AN Gruz. SSR
27 no.5:529-536 N '61. (MIRA 15:1)

1. Akademiya nauk Gruzinskoy SSR, Institut kibernetiki, Tbilisi.
Predstavleno akademikom V.I. Mamasakhlisovym.
(Cybernetics)

CHAVCHANIDZE, V.V., kand.fiziko-matematicheskikh nauk; KVINIKHIDZE, K.S.,
mladshiy nauchnyy sotrudnik

Model of the "hydrogen atom" of biology. Nauka i zhizn' 29
no.4:31-32 Ap '62. (MIRA 15:7)
(Cells--Models)

CHAUCHANIDZE, V.

Living model or a model of a living being? Znan.-sila 37
no.6:19 Je '62. (MIRA 15:9)

1. Direktor Instituta kibernetiki AN Gruzinskoy SSR.
(Cybernetics)

CHAVCHANIDZE, V.V.

Stochastic aggregates and problems of information theory. Trudy
Inst.fis.AN Grus.SSR 8:277-285 '62. (MIRA 16:2)
(Aggregates) (Information theory)

CHAVCHANIDZE, V.V.

The inverse Monte Carlo method. Trudy Inst.fiz.AN Gruz.SSR
8:287-293 '62. (MIRA 16:2)
(Distribution (Probability theory))

CHAVCHANIDZE, V.V.; BUKREYEV, I.N.; MIKELADZE, Z.N.; KUMSISHVILI, V.A.

A new method for adding and subtracting binary digits by
high-speed digital computers. Trudy Inst.fis.AN Grus.SSR
8:313-321 '62. (MIRA 16:2)

(Electronic digital computers)

ACCESSION NR: AR4020777

S/0271/64/000/002/B016/B016

SOURCE: RZh. Avtomat., telemekh. i vy*chislitel. tekhnika, Abs. 2B93

AUTHOR: Chavchanidse, V. V.

TITLE: Statistical probability of simulating physical processes and structures

CITED SOURCE: Tr. In-ta kibernetiki, AN GruzSSR, v. 1, 1963, 13-18

TOPIC TAGS: functional isomorphism, probability, statistical probability, process simulation, structural simulation, physical simulation, cybernetics

TRANSLATION: The concept of functional isomorphism is examined and it is noted that there are many objects whose fundamental principles of existence can not be described by a functionally isomorphic model in terms of classical Lagrangian formalism and which include probability phenomena, many-particle phenomena, etc. A basis is drawn for using a random test method for simulating complex physical processes and structures. The possibilities of using statistical probability simulation and the range of its applicability are examined. The work done in

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ACCESSION NR: AR4020777

this field at the In-t kibernetiki AN GruzSSR [Inst. of Cybernetics, Acad. Sci.
Georgian SSR] is reviewed. Orig. art. has 7 refs. I. V.

DATE ACQ: 03Mar64

SUB CODE: MM, IE

ENCL: 00

Card 2/2

ACCESSION NR: AR4039311

S/0044/64/000/003/V055/V055

SOURCE: Ref. zh. Matematika, Abs. JV236

AUTHOR: Chavchanidze, V. V.

TITLE: Entropy operations on digital systems

CITED SOURCE: Tr. In-ta kibernetiki. AN GrusSSR, v. 1, 1963, 19-23

TOPIC TAGS: digital system entropy operation, Boolean variable ordered totality, Boolean aggregate, logical function, logical function ordered sequence

TRANSLATION: An ordered totality (x_1, \dots, x_n) of Boolean variables is called a Boolean aggregate. The author discusses operations on Boolean aggregates, which reduce to obtaining new Boolean aggregates. Each variable of the new aggregate is obtained by applying a certain logical function to corresponding variables of aggregates which take part in the operation; the selection of the logical function for a given position can depend on values of the defined variables. The author considers operations on aggregates of the form

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ACCESSION NR: AR4039311

$$\{c\} = \{a\}F_n(b),$$

where the operator F_n is an ordered sequence taken from n logical functions of two variables. The author discusses the generation of sequences of Boolean aggregates by the application of operators of the form F_n . It is noted that the selection of operators affects the entropy of the obtained sequences. V. Martyⁿnyuk.

DATE ACQ: 22Apr64

SUB CODE: MA

ENCL: 00

Card 2/2

ACCESSION NR: AR4035563

S/0271/64/000/003/B010/B010

SOURCE: Ref. zh. Avtomat., telemekh. i vy*chisl. tekhn. Av. t. , Abs. 3B50

AUTHOR: Bokuchava, I. T.; Chavchanidze, V. V.; Kumsishvili, V. A.

TITLE: Stochastic-logical generation of digital aggregates

CITED SOURCE: Tr. In-ta kibernetiki. AN GruzSSR, v. 1, 1963, 25-35

TOPIC TAGS: stochastic process, stochastic process generation, Markov chain generation, stochastic logical generation

TRANSLATION: Generation of stochastic processes, particularly, of a simple homogeneous Markov's chain with a discrete time by means of functions of the algebra of logic is considered. Four generator types developing one and n symbols per unit of time are presented. For each generator, probabilities of P_{ij} - transitions from the i-th state to the j-th state are calculated; the maximum probabilities R_i of the transitions are needed for estimating the process entropy. It is proven that by selecting suitable values of probability of using various logical functions, random processes with the required p_{ij} and R_i can be obtained, i. e., the stochastic process can be controlled in a certain sense. An example is

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ACCESSION NR: AR4035563

given. Bibliography: 5 titles.

DATE ACQ: 17Apr64

SUB CODE: MA

ENCL: 00

Card 2/2

ACCESSION NR: AR4031086

S/0044/64/000/002/V013/V013

SOURCE: Referativnyy zhurnal. Matematika, Abs. 2V77

AUTHOR: Namoradze, N. Z.; Chavchanidze, V. V.; Kumsishvili, V. A.

TITLE: A statistical-probability simulation for making linear polymeric chains conformal in strongly diluted openings

CITED SOURCE: Tr. In-ta kibernetiki, AN GruzSSR, v. 1, 1963, 93-103

TOPIC TAGS: statistical-probability simulation, conformal linear polymeric chain, polymer configurational statistics, vinyl polymer chain

TRANSLATION: The authors consider a new method for studying the configurational statistics of polymers and they demonstrate the fundamental possibility of a statistical-probability simulation for polymeric chains. They compare an algorithm for calculating, by means of the Monte-Carlo method, the conformation of separate chains of vinyl polymers with massive weights. Authors' abstract

DATE ACQ: 19Mar64

SUB CODE: CH

ENCL: 00

1/1

ACCESSION NR: AR4020785

8/0271/64/000/002/2044/2045

SOURCE: RZh. Avtomat., telemekh. i vy*chislitel. tekhnika, Abs. 2B281

AUTHOR: Bakreyev, I. N.; Chavchanidze, V. V.; Manukyan, Yu. S.; Sergayenko, N. D.

TITLE: Circuit for distinguishing numbers in modulus in high speed electronic accumulators

CITED SOURCE: Tr. In-ta kibernetiki, AN GruzSSR, v. 1, 1963, 105-110

TOPIC TAGS: absolute comparator, accumulator, high-speed accumulator, absolute value comparison, computer, comparator circuit absolute value

TRANSLATION: A device is described for comparing the absolute values of two numbers A and B without subtraction operations or analysis of the result. The operation of the differentiator is based on a known method of comparing the absolute values when positional notation is used for the numbers. The method is roughly stated thus: the number whose left-hand digit is the top digit has the greater modulus. In the binary system the algorithm for comparing

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ACCESSION NR: AR4020785

the absolute values of two numbers A and B appears as follows: the identical bits of the numbers A and B are scanned sequentially beginning with the left-hand digit until the bits having different digits are found (10 or 01); the number having 1 in the indicated bit has the greater absolute value. The schematic diagram for realizing this principle is given (see enclosure). Four AND circuits in each bit are controlled by input triggers of the registers containing the numbers A and B. They determine the binary digit combinations 11, 00, 10, and 01. Signals from the AND circuits travel over two paths. When $A < B$ a signal appears at the output of the first path; when $A > B$ at that of the second. When neither of these signals is present, it means that $A = B$. Use of this number comparison method in accumulators makes it possible to add algebraically without having to convert the numbers into an auxiliary or inverse code. Orig. art. has 2 figs., 1 table, and 5 refs.

G. K.

DATE ACQ: 03Mar64

SUB CODE: AI

ENCL: 01

Card 2/3

CHAVCHANIDZE, V.V.; BONDAREV, B.I.

The n-level theory of probability. Soob. AN Gruz. SSR 31
no. 3:537-542 S '63. (MIRA 17:7)

1. Institut kibernetiki AN GruzSSR. Predstavleno chlenom-
korrespondentom AN GruzSSR L.P.Gokiyeli.

ACCESSION NR: AP4011472

S/0251/63/032/002/0281/0287

AUTHOR: Chavchanidze, V. V.

TITLE: Theory of information functions (Characteristic functions of Markov-Chandrasekar type for the description of discrete events) (Presented by L. P. Gokiyeli, corresponding member of the Academy 28 June 1963)

SOURCE: AN GruzSSR. Soobshcheniya, v. 32, no. 2, 1963, 281-287

TOPIC TAGS: Markov process, game theory, utility function, decision theory, information function, eigenvalue, cybernetics, stochastic process.

ABSTRACT: The author defined the concept of an "information function" in a Markov process and associated the function with the description of two fields: the field of probability distribution over events (A_1, A_2, \dots, A_n) and the field of payoffs for the same events. The general form of the information function is, for the case of two possible alternative events for given i (A_1 or \bar{A}_1 , binary outcome situation)

Card: 1/3
$$A_n(\rho) = \prod_{i=1}^n (P_i e^{i\rho\varphi_i} + \bar{P}_i e^{i\rho\bar{\varphi}_i}) = \prod_{i=1}^n \left(\sum_{j=1}^2 P_{ij} e^{i\rho\varphi_{ij}} \right)$$
 for all events A_i

ACCESSION NR: AP4011472

where P_1 is the probability associated with A_1 and \bar{P}_1 is that associated with the complementary event \bar{A}_1 , n denotes the number of "steps" of the process, and φ_1 and $\bar{\varphi}_1$ are payoff elements as defined previously by the author (Stokhasticheskiye metody v primeneni k issledovaniyu mnogokratnogo rasseyaniya i poter'. Trudy Instituta Fiziki AN Gruzinskoy SSR, t. II, 1954). The molecular information function (MIF) was defined as the vector element

$$\vec{A}(\rho, i) = \begin{pmatrix} P_i \\ 0 \end{pmatrix} e^{i\rho\varphi_1} + \begin{pmatrix} 0 \\ 1 - P_i \end{pmatrix} e^{i\rho\bar{\varphi}_1} = \begin{pmatrix} P_i e^{i\rho\varphi_1} \\ (1 - P_i) e^{i\rho\bar{\varphi}_1} \end{pmatrix}$$

the MIF in turn may be written as

$$\vec{A}(\rho, i) = P_i \begin{pmatrix} 1 \\ 0 \end{pmatrix} e^{i\rho\varphi_1} + (1 - P_i) \begin{pmatrix} 0 \\ 1 \end{pmatrix} e^{i\rho\bar{\varphi}_1} = A(\rho, i) + \bar{A}(\rho, i)$$

from which $A(\rho, i)$ and $\bar{A}(\rho, i)$ were defined as the atomic information functions. Further transformation established the conditions for identifying a "damaged" information function. The effect of process observation in establishing the initial (original) IF was discussed, both for the case of no knowledge of atomic IF probability distribution and for the case of posterior probabilities gained through observation. The author states that for the general case damaged or complete IF's

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ACCESSION NR: AP4011472

can be constructed by multiplicative means from past IF, future IF, and present damaged IF for an arbitrary point along the process trajectory. Orig. art. has: 21 equations.

ASSOCIATION: Akademiya Nauk Gruzinskoy SSR Institut kibernetiki Tbilisi (Academy of Sciences, Georgian SSR, Institute of Cybernetics)

SUBMITTED: 28Jun63

ENCL: 00

SUB CODE: MA

NO. REF SOV: 003

OTHER: 000

Card

3/3

CHAVCHANIDZE, V. V.

"Les homeomorphismes du cerveau."

report submitted for 4th Intl Cong, Cybernetics, Namur, Belgium, 21-25 Oct 64.

ACCESSION NR: AP4018349

S/0251/64/033/001/0027/0034

AUTHOR: Chavchanidze, V. V.

TITLE: Basic relations of analytic theory of propositional algebra (Presented by L. P. Gokiyeli, correspondent-member of the Academy, 28 June 1963)

SOURCE: AN GrusSSR. Soobshcheniya, v. 33, no. 1, 1964, 27-34

TOPIC TAGS: propositional algebra, logical variable, truth value, vector of state, logical operation

ABSTRACT: Let propositions $x^1, x^2, x^3, \dots, w^1, w^2, \dots$ be variable propositions in the usual sense and the propositions $A^1, A^2, \dots, B^1, B^2, B^3, \dots, C^1, C^2$ denote fixed propositions. Assume that there is a complete class $S(x^1, x^2, x^3, \dots)$ of propositions describing a universe R in a language L . A new analytic method for describing the characteristics of logical variables and compound propositions is considered which is different from the traditional description of propositional algebra. Orig. art. has: 46 formulas.

ASSOCIATION: Akademiya nauk Grusinskoy SSR, Institut kibernetiki, Tbilisi (Academy of Sciences, Georgian SSR, Institute for Cybernetics)

Card 1/2

ACCESSION NR: AP4018319

SUBMITTED: 28Jun63

ENCL: 00

SUB CODE: MA

NO REF SOV: OOL

OTHER: 002

Card 2/2

CHAVCHANIDZE, V.V.

Theory of information functions. Soob. AN Gruz. SSR 32 no.2:281-287
'63. (MIRA 18:1)

1. Institut kibernetiki AN Gruzinskoy SSR, Tbilisi.

CHAVCHANIDZE, V.V.; KVINIKHIDZE, K.S.

Interpretation of the DNA code. Soob. AN Gruz. SSR 34 no.2:
291-295 My '64. (MIRA 18:2)

1. Institut kibernetiki AN Gruzinskoy SSR, Tbilisi. Submitted
October 27, 1963.

L 54866-65 ENT(d)/EEC(x)-2/EEC(f)/EEC-4/EED-2/EWP(1) Pn-4/Pn-4/Pq-4/Pg-4/
Pk-4/Pl-4 IJP(c) BB/GG

ACCESSION NR: AP5018006

UR/0251/64/036/001/0041/0045

AUTHOR: Chavchanidze, V. V.; Skhirtladze, I. S.

TITLE: Computing second order moments of information

SOURCE: AN GruzSSR. Soobshcheniya, v. 36, no. 1, 1964, 41-45

TOPIC TAGS: data processing, information theory

ABSTRACT: ¹⁶⁰ Second order moments of information are computed for the purpose of comparing them with information efficiency and to suggest a reason for the relationship between the carrying capacity of a channel and the correlation factors of the channel's input and output. Orig. art. has: 2 graphs, 4 formulas.

ASSOCIATION: Institut kibernetiki Akademiya nauk Gruzinskoy SSR (Institute of Cybernetics, Academy of Sciences Georgian SSR)

SUBMITTED: 11Jan64

ENCL: 00

SUB CODE: DP

NR REF SOV: 003

OTHER: 000

JPRS

Card ^{Jim} 1/1

I 34078-65

ACCESSION NR: AR5002995

S/0299/64/000/021/A004/A004

SOURCE: Ref. zh. Biologiya. Svodnyy tom, Abs. 21A37

14
B

AUTHOR: Chavchanidze, V. V.

TITLE: Data on the axiomatics of trichromatic vision

CITED SOURCE: Tr. In-ta kibernetiki. AN GruzSSR, v. 1, 1963, 157-165

TOPIC TAGS: human, color vision, trichromatic vision theory, brightness

TRANSLATION: In the theory of trichromatic vision it is generally assumed that any trichromatic state can be represented as a superimposition of the three primary colors R, G, B with a definite combination of r , g , b brightnesses. Assuming that the space of chromatic states is three dimensional linear space, the author states the basic axioms of linear space and clarifies their meaning in the theory of trichromatic vision. Thus, the color black is explained as a zero point, a complementary color is explained as a contrasting element, and the color white is explained as a point with

Card 1/2

L 34078-65

ACCESSION NR: AR5002995

coordinates $(1/3, 1/3, 1/3)$ and others. Then, linear conversion of three dimensional space is examined from the position of the trichromatic vision theory. Use of a light filter is explained in terms of linear conversion as described by the given theory. A ray emanating from the origin of coordinates for a three dimensional chromatic space is called the brightness ray. All points of the brightness ray represent the same color with brightness of a point increasing the greater its distance from the origin of coordinates; brightness grows proportionally to distance from the origin of coordinates. The origin of coordinates is the point of zero brightness - the color black. The cone emanating from the origin of coordinates is known as the color cone of brightness; this trihedral convex color cone of brightness is determined separately with the trihedral angle at the origin of coordinates. At a later date the author plans to use the proposed theory to explain Land's effect (*Scientific American*, 1959, 5, 200), and also to "solve the theoretical problems of cybernetics." Bibliography 5 titles.
A. Zaslavskiy.

SUB CODE: LS, PH

ENCL: 00

Card 2/2

L 36733-65 EWT(d)/EEC-4/EED-2/EWP(1) Po-4/Pq-4/Pg-4/Pk-4 IJP(c)
BB/GG/GS

ACCESSION NR: AT5008646

S/0000/64/000/000/0365/0394

AUTHOR: Chavchanidze, V. V.

51
B+

TITLE: Scientific models and cybernetics 160

SOURCE: Kibernetika, myshleniye, zhizn' (Cybernetics, thought processes, and life).
Moscow, Izd-vo Mysl, 1964, 365-394

TOPIC TAGS: physical model, gnoseological meaning, mathematical model, model
improvement, cybernetics

ABSTRACT: The author begins by emphasizing the fact that one of the basic methods for the study of natural sciences consists of the establishment and subsequent perfection of a model of the object under consideration. Such models are afterwards made quantitatively exact with the help of the apparatus of contemporary mathematics. Consequently, any explicit or implicit resistance to the introduction of the mathematical apparatus in biology, medicine, psychology, economics, and the like is actually depriving the particular science of an extremely important research tool. Next, the author discusses in detail the models used in the physical sciences, the particularities of the process of establishing a physical model, the gnoseological meaning of models, and the evolution

Card 1/2

L 36733-65
ACCESSION NR: AT5008646

of models. The concluding section deals with the mathematical models utilized in science. Throughout the article the author tries to be persuasive rather than to present any new material or substantial body of knowledge.

ASSOCIATION: none

SUBMITTED: 03Nov64

ENCL: 00

SUB CODE: DP

NO REF SOV: 022

OTHER: 000

Card 2/2 *lo*

L 34815-65 EWT(1)/EWA(h) Feb

ACCESSION NR: AP5007466

S/0286/65/000/004/0084/0084

AUTHORS: Chavchanidze, V. V.; Shekriladze, V. I.; Chkheidze, M. V.; Karumidze, G. V.; Georgadze, A. Kh.; Sharashidze, A. D.

TITLE: Random pulse sequence generator. Class 42, No. 168525

23
B

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 4, 1965, 84

TOPIC TAGS: pulse generator 25

ABSTRACT: This Author Certificate presents a random pulse sequence generator containing a noise generator, pulse shaper, and coincidence circuit. To extend the variation region of probability of pulse occurrence at the generator output and to control the probability, the generator contains a noise voltage limiter with an adjustable limiter threshold. The limiter output is connected through the pulse shaper to one input of the coincidence circuit (see Fig. 1 on the Enclosure). The coincidence circuit output is connected to a shaper-extender to exclude input pulses supplied through the shaper-extender to the other input of the coincidence circuit. Orig. art. has: 1 diagram.

ASSOCIATION: Institut kibernetiki, AN Gruzinskoy SSR (Cybernetics Institute, AN Georgian SSR)

1/4

USSR/Human and Animal Physiology. Blood. Formed Elements
of Blood.

T-4

Abs Jour: Ref Zhur-Biol., No 12, 1958, 55422.

Author : Sulkhanishvili, S.D., ~~Chavchavadze, S.M.~~

Inst : Scientific Research Institute for the health-
protection of Mothers and Children.

Title : The Dynamics of the Hemogram, of the Sedimentation
Erythrocyte Reaction, and of Blood Pressure in
Physiological Childbirth.

Orig Pub: Sb. tr. N.-i. in-t okhrany materinstva i detstva
GruzSSR, 1956, 7, 73-75.

Abstract: The observation of 40 parturient women (9 primipara
and 31 multipara) during physiological childbirth
revealed the presence of leukocytosis, as well as an

Card : 1/3

USSR/Human and Animal Physiology. Blood. Formed Elements of
of Blood.

T-4

Abs Jour: Ref Zhur-Biol., No 12, 1958, 55422.

increase in the number of neutrophils in the peripheral blood, which developed at the expense of lymphocytes and eosinophils. A relative and an absolute neutrophilic leukocytosis with a slight displacement to the left was observed during the second delivery period (of maximal labor pains), whereby the erythrocytic sedimentation reaction (ESR) was considerably faster. During the third period (2 hours after delivery), the number of leukocytes in the peripheral blood decreased, and multinuclear neutrophils predominated. A relative and an absolute eosinopenia was observed during the second as well as during the third periods. A rela-

Card : 2/3

42

USSR/Human and Animal Physiology. Blood. Formed Elements
of Blood.g

T-4

Abs Jour: Ref Zhur-Biol., No 12, 1958, 55422.

tive monocytosis was noted on the 8th day after
delivery. ESR remained accelerated until the 8th
day after delivery. i remained normal until

Card : 3/3

CHAVCHAVADZE, Ye.; KHUDAYBERDYEV, R.

Nature of pores in the wood parenchyma cells of some conifers.
Usb. biol. zhur. no. 4:18-24 '60. (MIRA 13:10)

1. Botanicheskiy institut imeni V.L. Komarova AN SSSR i Institut
botaniki AN UzSSR.

(WOOD—ANATOMY)

CHAYCHAYADZE, Ye.S.

Analysis of diagnostic characteristics of conifer wood; pits in
the cross-fields of some trees of the family Taxodiaceae. Dokl.
AN SSSR 133 no.5:1235-1238 Ag '60. (MIRA 13:8)

1. Botanicheskiy institut im. V.L. Komarova Akademii nauk SSSR.
Predstavleno akademikom V.M. Sukachevym.
(Wood--Identification) (Taxodiaceae)

YATSENKO-KHMELEVSKIY, A.A.; CHAVCHAVADZE, Ye.S.

Contribution to the methods of the description of conifer wood.
Bot. zhur. 48 no.12:1799-1803 D '63. (MIRA 17:4)

1. Leningradskaya ordena Lenina lesotekhnicheskaya akademiya imeni
Kirova i Botanicheskiy institut imeni Komarova AN SSSR, Leningrad.

GHAVCHAVADZE, Ye.S.

Morphology of the horizontal and tangential cell walls of the
wood rays of conifers; their nomenclature and classification.
Bot. zhur. 50 no.4:558-563 Ap '65.

(MIRA 18:5)

1. Botanicheskiy institut imeni Komarova AN SSSR, Leningrad.

BAKHTEYEV, F.Kh.; CHAVCHAVADZE, Ye.S.

Museum of the V.L. Komarov Botanical Institute of the Academy of
Sciences of the U.S.S.R. Bot.zhur. 50 no.10:1486-1490 0 '65.

(MIRA 18:12)

1. Botanicheskiy institut imeni Komarova AN SSSR, Leningrad.

SAPRONOV, V.A.; KURPICHEVA, T.N.; TOKAREVA, L.T.; CHAVCHICH, T.A.;
LEVIT, G.M.; BORODUSHKINA, Kh.N.; BOGUSLAVSKIY, D.B.

Effect of some formula and technological factors on the quality
of butyl rubber diaphragms for the forming and vulcanizing
equipment. Kauch. i rez. 23 no.5:14-19 My '64.

(MIRA 17:9)

1. Dnepropetrovskiy shinnyy zavod.

L 13814-65 EWT(m)/EPF(c)/EPR/EWP(j) Pc-4/Pr-4/Ps-4 WW/RM

ACCESSION NR: AP4047669

S/0138/64/000/010/0012/0016

AUTHOR: Chaychich, T. A., Levit, G. M., Sapronov, V. A., Borodushkina, Kh. N.,
Boguslavskiy, D. B., Omel'chenko, K. Ya.

TITLE: Some peculiarities in the vulcanization of butyl rubber with alkyl-
phenolformaldehyde resins

SOURCE: Kauchuk i rezina, no. 10, 1964, 12-16

TOPIC TAGS: butyl rubber, alkylphenolformaldehyde resin, vulcanization, polyvinyl chloride, vulcanization accelerator, polymer aging, polymer cross-linking, metal oxide

ABSTRACT: The effect of polyvinyl chloride derivatives, copolymer 40, Nairit A, and Nairity (chloroprene) on the vulcanization of butyl rubber with alkylphenolformaldehyde was investigated. The composition and method of preparation of the polymers are given. The physico-mechanical properties of rubbers with different chlorine-containing polymers (0.65 parts by wt. of accelerator calculated for chlorine, at a vulcanization temperature of 170C) are plotted and show that all polymers (except Nairit) accelerate the vulcanization of butyl rubbers. In contrast to neoprene W, Nairit A does not accelerate the vulcanization, but favorably affects the modulus during thermal aging. With an increasing

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L 13814-65
ACCESSION NR: AP4047669

amount of polymer, the difference between the two polymers is more pronounced. A very special feature of mixtures prepared with chlorosulfopolyethylene is the more rapid vulcanization in the initial period and the lower modulus values when the vulcanization time is increased. This is apparently due to the variation in the conditions of dehydrochlorination at different temperatures. Tabulated data show that all polymers tested improve the heat stability of butyl rubber vulcanizates but (except for Nairit A) considerably increase the modulus and decrease the relative elongation of rubbers during heat aging. Depending on the type of catalyst used, the degree of cross-linking can be controlled during aging with metal oxides or organic compounds containing a certain number of functional groups. The effect of ZnO and Zn(OH)₂ on the degree of vulcanization and of MgO and PbO on the modulus during vulcanization for 45 min. at 170C is plotted. By replacing ZnO with Zn(OH)₂ the degree of vulcanization is decreased; in equimolecular amounts, PbO is more effective. The addition of 6-ethoxy-2,2,4-trimethyl-1,2-dihydroquinoline to mixtures with chlorosulfopolyethylene and copolymer 40 gives a degree of cross-linking identical to that of rubber containing Nairit A, but with a more favorable rate of vulcanization. The fatigue strength of butyl

Card 2/3

L 13814-65

ACCESSION NR: AP4047669

rubbers containing chlorinated polymers with different additives under thermal aging at 60C and for 48 hrs. (100% elongation, 250 cycles/min., 20C) showed that by varying the content of accelerators and inhibitors, rapidly vulcanizing rubbers with good dynamic properties can be obtained. Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: Dnepropetrovskiy shinnyy zavod (Dnepropetrovsk Tire Plant)

SUBMITTED: 00

ENCL: 00

SUB CODE: 0C

NO REF SOV: 001

OTHER: 009

Card

3/3

L 39769-65 EWT(m)/EWP(j)/T Pc-4 RM
ACCESSION NR: AP5005389

S/C138/65/000/002/0002/0007

AUTHORS: Saprionov, V. A.; Boguslavskiy, D. B.; Chavchich, T. A.; Kupriyanova,
O. N.; Levit, G. M.; Borodushkina, Kh. N.

TITLE: The use of alkylphenolformaldehyde resins for vulcanization of general
purpose rubber

SOURCE: Kauchuk i rezina, no. 2, 1965, 2-7

TOPIC TAGS: rubber, resin, vulcanization, formaldehyde/BSK rubber, SKD rubber,
SKS 30 1 rubber

ABSTRACT: The authors have presented experimental results on the vulcanization of a number of varieties of general-purpose rubber (BSK, SKD, SKS-30-1) by alkylphenolformaldehyde resins. Various combinations were employed, and the resulting materials were tested for standard properties. It was found that the resinous vulcanizates of these general-purpose rubbers (butadiene-styrene, carboxyl-bearing, cis-butadiene) out-perform rubber vulcanized by sulfur. They have greater resistance to prolonged exposure to heat, have greater durability, and have higher endurance during repeated bending. With equivalent concentration

Card 1/2

L 39769-65

ACCESSION NR: AP5005389

of crosslinkage in resinous vulcanizates, as compared with sulfur vulcanizates, higher strength characteristics are obtained. Rubber mixtures of general-purpose rubber containing n-alkylphenolformaldehyde resin as the structuring agent also surpass mixtures with sulfur vulcanizates in resistance to scorching. Orig. art. has: 0 figures and 4 tables.

ASSOCIATION: Dnepropetrovskiy shinny zavod (Dnepropetrovsk Tire Factory)

SUBMITTED: 00

ENGL: 00

SUB CODE: MT, OC

NO REF SOV: 006

OTHER: 005

2/2

L 01149-66 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5022000 UR/0200/65/000/010/0070/0070
678.043.040

AUTHOR: Boguslevskiy, D. B.; Borodubskina, Kh. N.; Malinovskiy, N. S.;
Kolenskaya, A. I.; Kupriyanova, O. N.; Romanov, A. S.; Sapronov, V. A.; Trakay,
S. P.; Chavchhava, A. A.; Turilina, L. N.; Kovalova, V. F.

TITLE: A method for vulcanizing rubber. Class 39, No. 172900 15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 76

TOPIC TAGS: vulcanization, rubber, polymer, polyester plastic

ABSTRACT: This Author's Certificate introduces a method for vulcanizing rubber by using alkylphenolformaldehyde resins in the presence of chloride-containing polymer accelerators. A wider selection of accelerators is provided by using polyester resins--products of condensation of glycerine e-monohydrochloride with phthalic and/or maleic anhydride.

ASSOCIATION: none
SUBMITTED: 16Nov63 ENCL: 00 SUB CODE: NT
NO REF SOV: 000 OTHER: 000

Card 1/1. DP

L 7883-66 EWT(m)/EWP(j) RM
ACC NR: AP5025013

SOURCE CODE: UR/0286/65/000/016/0079/0079

AUTHORS: Bogoslavskiy, D. B.; Borodushkin, Kh. N.; Kuzriyanova, O. N.; Mal'tsev, V. N.; ~~Sapozhkov, V. A.~~; Chavchich, T. A.

ORG: none

TITLE: A method for the vulcanization of rubbers by alkylphenolformaldehyde resins. Class 39, No. 173921

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 79

TOPIC TAGS: rubber, vulcanizing agent, halogen organic compound, vulcanizate, resin, formaldehyde, vulcanization

ABSTRACT: This Author Certificate presents a method for vulcanizing rubbers by alkylphenolformaldehyde resins in the presence of vulcanizing accelerators—halogen-containing organic substances. To improve the method, the halogen-containing organic compounds are added in the form of halogenated esters of aromatic and aliphatic carboxylic acids.

SUB CODE: // / SUM DATE: 12Apr63

Card 1/1

REC: 678.026.294:678.044:547.29'26

L 44175-66 EWT(m)/EWP(j) IJP(c) RM

ACC NR: AP6011230 (A) SOURCE CODE: UR/0413/66/000/006/0073/0073

34
B

INVENTOR: Boguslavskiy, D. B. ; Borodushkina, Kh. N. ; Kupriyanova, O. N. ;
Malinovskiy, M. S. ; Sapronov, V. A. ; Chavchich, T. A.

ORG: none

TITLE: Method of vulcanizing synthetic rubbers by alkylphenolformaldehyde resins.
Class 39, No. 179915

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 6, 1966, 73

TOPIC TAGS: vulcanization, synthetic rubber, phenolformaldehyde, benzene, resin

ABSTRACT: An Author Certificate has been issued for a method of vulcanizing synthetic rubbers by alkylphenolformaldehyde resins in the presence of haloid-containing compounds. To speed up the vulcanization process, α, β -dibromethyl benzene is used as the haloid-containing compound. [Translation] [NT]

SUB CODE: 11,13/SUBM DATE: 30Jan65/

Card 1/1 all

UDC: 678.7.028.294.044:547.539

CHERNOBYL'SKIY, I.I., professor; KREMNEV, O.A., kandidat tekhnicheskikh nauk;
CHAYDAROV, A.S., inzhener.

Investigation of an experimental laboratory lithium-chloride unit for
air conditioning by means of low-potential heat. Trudy Inst. topl. USSR
no.12:150-168 '55. (MIRA 9:7)

(Air conditioning) (Lithium chloride)

CHERNOBYL'SKIY, I.I., professor; KREMOEV, O.A., kandidat tekhnicheskikh nauk;
CHAVDABOV, A.S., inzhener.

Investigating the operation of a heat-using unit for lowering the
heat content of air by treating it with an aqueous solution of calcium
chloride. Trudy Inst.tepl.URSR no.12:169-181 '55. (MIRA 9:7)

(Air conditioning) (Calcium chloride)

* CHAYDAROV, A.S.

RABINOVICH, M.I.; CHAYDAROV, A.S.

Determining the hydraulic resistance of a layer of fine-grained material. Trudy Inst.tepl.AN URSS no.13:135-143 '56. (MIRA 10:5)
(Gases, Flow of)
(Combustion)

SOV/124-57-7-8115

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 7, p 102 (USSR)

AUTHORS: Rabinovich, M. I., Chavdarov, A. S.

TITLE: The Determination of the Hydraulic Resistance of a Layer of Fine-grained Material (Opredeleniye gidravlicheskogo soprotivleniya sloya melkozernistogo materiala)

PERIODICAL: Sb. tr. In-t teploenerg. AN UkrSSR, 1956, Nr 13, pp 135-143

ABSTRACT: An experimental investigation of the hydraulic resistance of a layer consisting of particles of semicoke of lignite (brown coal). The experiments were made with a fill composed of fractions of 1.68 - 0.84 mm, 0.84 - 0.59 mm, 0.210 - 0.149 mm and 0.149 - 0.105 mm grain size. The test results are expressed in the form of the following graphic relationships: The dependence of the pressure drop on the flow velocity; that of the resistance coefficient of a channel equivalent to the layer of fill of a given porosity on the Reynolds number; and that of the resistance coefficient of the layer on the corresponding Reynolds number. Two regimes of motion were observed which corresponded to a stable unbroken layer and an unstable, quickened or boiling layer. In the first regime the motion observed corresponded exactly to the linear

Card 1/2

SOV/124-57-7-8115

The Determination of the Hydraulic Resistance of a Layer of Fine-grained Material

law of the velocity dependence of the resistance. Once the critical velocity is exceeded, the motion exhibits an unsteady, pulsating character and the resistance of the fill declines sharply. In the first approximation the law of resistance for a boiling layer is expressed by the formula

$$\lambda = A / R^n$$

where the Reynolds number R is taken with respect to the steady unbroken layer and $n \approx 2$. Experiments showed that a quick condition in a layer arises even for the largest fraction of 0.84 - 1.68 mm with a critical velocity of the order of 0.38 - 0.40 m/sec, which corresponds to a seepage velocity of 0.20 - 0.25 m/sec. Bibliography: 7 references.

Ye. M. Minskiy

Card 2/2

CHERNOBYL'SKIY, Iosif Il'ich; KREMNEV, Oleg Aleksandrovich; CHAVDAROV,
Aleksandr Savvich; FIATYSHKIN, N.M., kand.tekhn.nauk, otv. red.;
FEMENNIK, T.K., red.izd-va; SIVACHENKO, Ye.K., tekhn.red.

[Heat operated air conditioning equipment] Teploispol'suiushchie
ustanovki dlia konditsionirovaniia vozdukha. Kiev, Izd-vo Akad.
nauk USSR, 1958. 267 p. (MIRA 11:12)
(Air conditioning--Equipment and supplies)

ACCESSION NR: AT4042315

S/0000/63/003/000/0371/0376

AUTHOR: Kremnev, O.A., Rozhen, A.P., Chavdarov, A.S.

TITLE: The effect of the circulation of ferromagnetic particles, caused by a rotating magnetic field, on convective heat transfer

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga, 1962. Voprosy* magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady* soveshchaniya, v. 3. Riga, Izd-vo AN LatSSR, 1963, 371-376

TOPIC TAGS: hydromagnetics, heat transfer, convection, convective heat transfer, rotating magnetic field, turbulation, boundary layer, stator

ABSTRACT: The authors propose a method for the artificial turbulation of the laminar boundary layer on the inner surface of tubes by means of the circulation of ferromagnetic particles. Small particles of ferromagnetic material are injected into the tube, and the latter, either alone or together with other tubes, is placed in the stator of a three-phase asynchronous motor. When the windings of the stator are connected to the power source, a rotating magnetic field is generated in the immobile circular core of the stator, and at the same time, by means of their currents, the stator windings magnetize the ferromagnetic particles. In each of these ferromagnetic particles, at the moment the rotating magnetic

Card

1/3

ACCESSION NR: AT4042315

field is cut in, induced magnetic poles occur. As the currents which feed the working windings of the stator change, the axis of the stator poles begins to turn in space, while, on the other hand, because of the pronounced hysteresis of the magnetosolid material, the poles of the ferromagnetic particles during the initial stage of the process remain motionless in space; that is, the axis of the particle poles is shifted with respect to the axis of the stator poles and lags by a certain spatial angle. Thus, forces arise which tend to place the particles in rotation. Meanwhile, as a result of inertia on the part of the particles and friction against the surface of the tube, their velocity cannot compare with the velocity with which the stator field rotates, an asynchronous rotational regime sets in, during which the ferromagnetic particles are subjected to a cyclic remagnetization at a frequency proportional to the slippage. Under the influence of the centrifugal forces which come into being with the rotation of the particles, the latter are pressed against the wall of the tube. This gives rise to an artificial agitation of the boundary layer, thus leading to a reduction in thermal resistance from the inner side of the tube; that is, to an increase in the heat transfer factor. The experimental technique and associated instrumentation employed in the testing of this method is described in some detail in the article. The results of these tests confirmed the high degree of efficiency of this method of heat-transfer

2/3

Card 1

ACCESSION NR: AT4042315

intensification. The results are processed and presented in the article in the form of graphs with the ratio between the heat-transfer factor during circulation of the ferromagnetic particles and the same factor with no ferromagnetic particles present serving as the criterion for the determination of the intensification achieved in the heat-transfer process. Intensification was studied at velocities of 0.4 - 2.5 m/sec. An analysis was made of the heat-transfer factor during ferromagnetic particle circulation as a function of the magnitude of the current passing through the stator windings. This function was found to be complex in character, and an attempt to interpret it is made in the article. Heat-transfer intensification was also found to depend on the material of the ferromagnetic particles, the number of polar pairs of the electromagnet generating the rotating magnetic field, the frequency of the current, and certain other parameters. Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: none

SUBMITTED: 04Dec68

ENCL: 00

SUB CODE: TD, ME

NO REF SOV: 000

OTHER: 000

3/3

Cord

CHAYDAROV, A. S. and KREMNEV, O. A. (Institute of Technical Thermal Physics of Academy of Sciences of Ukrainian SSR)

"Investigations of heat exchange in electric and magnetic fields".

Report presented at the Section on Heat Exchange in Single Phase Medium, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

L 58381-65 EWT(1)/EPF(c)/EPF(n)-2/ENG(m)/EFR Pr-4/Ps-4/Pu-4 WTT
ACCESSION NR: AP5018283 UR/0314/65/000/007/0029/0031
536.24

39
B

AUTHOR: Dolinskiy, A. A. (Candidate of technical sciences); Chavdarov, A. S.
(Engineer); Prihodchenko, G. P. (Engineer)

TITLE: Some special features of ²¹heat transfer in an atomizing jet

SOURCE: Khimicheskoye i neftyanoye mashinostroyeniye, no. 7, 1965, 29-31

TOPIC TAGS: heat transfer, atomizing jet, fuel droplet, heat exchanger

ABSTRACT: Special features of heat transfer in an atomized fuel jet are studied by analyzing the motion of fuel droplets injected at a given angle into a parallel turbulent stream of air. K. N. Yerastov's method (Investigation of the evaporation of fuel jet droplets at high temperatures, v. 2. Moscow, Izd-vo AN SSSR, 1960) is used. A formula is established which permits determination of the volumetric heat transfer coefficient for liquid droplets moving in a counter current gas flow. High experimental values of the heat transfer coefficient obtained in the heat exchanger demonstrate the possibility of increasing the mass transfer coefficient in the mixer and of its application to fast reactions between the

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L 58381-65

ACCESSION NR: AP5018283

gases, vapors, and liquid droplets. It may also be used as an absorber in cases when sorption is controlled by the velocity of gas supply to the surface of the liquid. Orig. art. has: 3 figures, 1 table, and 11 formulas. [AC]

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: FP, ME

NO REF SOV: 004

OTHER: 000

ATD PRESS: 4046

AR
Card 2/2

L 4005-66 EWT(d)/EWT(1)/EPF(c)/EPF(n)-2/ETC(m) WW

ACCESSION NR: AP5024422 ^{44.55} UR/0286/65/000/015/0125/0126 ⁶⁹

AUTHORS: Zozulya, N. V.; ^{44.55} Minyaylenko, N. A.; ^{44.55} Sokolov, A. A.; ^{44.55} Chavdarov, A. S. ^{47.5}

TITLE: Ribbed surface for tubular and plate heat exchangers. Class 46, No. 173546

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15, 1965, 125-126 ^{71.44.55}

TOPIC TAGS: heat exchanger, heat diffusion, heat exchange panel

ABSTRACT: This Author Certificate presents a ribbed surface for tubular and plate heat exchangers containing parallel rows of tubes or plates (see Fig. 1 on the Enclosure). To decrease the area of its frontal section and to increase its coefficient of heat exchange, the ribs on the adjacent rows of tubes or plates are axially shifted in respect to one another, while the rows of tubes or plates are separated by deflectors. The tubes or plates and the deflectors form defusers, convectors, and gas ducts. The ribs may be longitudinal (smooth or corrugated), or they may be made of wires of desired diameters. The tubes may be flattened. Orig. art. has: 1 figure.

ASSOCIATION: Institut teploenergetiki, AN UkrSSR (Institute of Heat Power Engineering, AN UkrSSR)

Card 1/3 ^{44.55}

UDC: 621.565.94

L 4005-66
ACCESSION NR: AP5024422

SUBMITTED: 13Sep63

ENCL: 01

SUB CODE: IE, TD

NO REF SOV: 000

OTHER: 000

Card 2/3

L 4005-66

ACCESSION NR: AP5024422

ENCLOSURE: 01

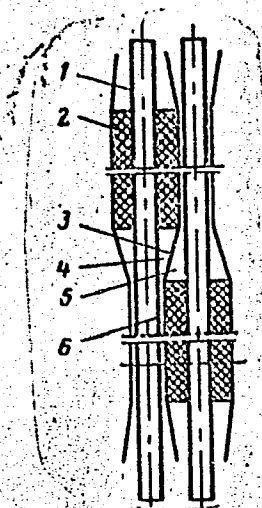


Fig. 1. 1- tube; 2- ribbed portion; 3- deflector;
4- diffuser; 5- convector; 6- gas duct

Card 3/3

KREMNEV, O.A.; BOROVSkiY, V.R.; CHAVDAROV, A.S.; ROZHEN, A.P.;
SHIMKO, I.G.

Oxidation of alkali cellulose by ozonized air. Khim. volok.
no.4:34-37 '63. (MIRA 16:8)

1. Institut teploenergetiki AN UkrSSR (for Kremnev, Borovskiy,
Cavdarov, Rozhen). 2. Kiyevskiy kombinat iskusstvennogo
volokna (for Shimko).

TENEV, St.; CHAVDAROV, D.

A bronchospirograph for general and individual studies on external respiration. Khirurgia, Sofia 14 no.4:415-420 '61.

1. Vissh meditsinski institut, Katedra po bolnichna khirurgia, Sofiia. Zav. katedrata: prof. St. Dimitrov.

(SPIROMETRY equip & supply)

DOBROVOL'SKIY, V.; CHAVDAROV, D.; SHOR, Ya.

Readers' letters. Avt.transp. 41 no.11:50-51 N '63.

(MIRA 16:12)

1. Chleny Soveta veteranov avtomobil'nogo transporta Leningrada.

Plant Genetics

BULGARIA

DJELEROV, K., CHAVDAROV, G., Institute of Wheat and Sunflower, General Toshevo, Bulgaria.

"Inducing Dominant Mutations of Type Compactum and Spelta in Triticum Aestivum L. Emend Thell. Ssp. Vulgare With EMS"

Sofia, Doklady Bolgarskoy Akademii Nauk, Vol 20, No 1, 1967, pp 57-60

Abstract: [English article] It is known that the species of the hexaploid group of wheat are of mutational origin. During the winter of 1965 the authors subjected seeds of Triticum aestivum ssp. vulgare var. Lutescence of the Bezostaya 1 variety to ethylmethanesulphonate in concentrations of 0.1, 0.2, 0.4, and 0.6%. Ten ml of solution was provided per 100 seeds. After wetting with the solution, they were held in a thermostat at 25 °C for 24 hours and were stirred every 2 or 3 hours. The seeds were then rinsed with running water for 10 to 15 minutes and were sown immediately. The paper describes the new dominant mutations of compactum and spelta types obtained and gives their morphological characteristics. References: 1 Soviet and 10 Western. (Manuscript received, 5 Sep 66.)

1/1

CHAVDAROV, G.

For a new, up-to-date textbook on general selection and seed growing. Sel'skoston nauka 2 no.8:1028-1031 '63

CHAVDAROV, Stanko, inzh.

Underground waters of the Eastern Kazanluk Plain and their utilization.
Khidrotekh i melior 7 no.4:112-114 '62.

CHAVDAROV, Stanko

Role and importance of scientific and technical information in
geology. Spis Bulg geol druzh 25 no.3:308-309 '64.

1. Central Institute of Scientific and Technical Information,
Sofia.

С.С. ЧИСТЯКОВ

FRANCE I BOOK EXPLANATIONS 807/3336

Академия наук СССР, Научно-исследовательский институт по проблеме геомагнетизма и геофизического года. V раздел программы НИИ: Ионосфера

Ионосферная ионосфера (Ionospheric Research) Москва, Изд-во АН СССР, 1960. 112 p. (Series: Its Sbornik state, no. 5) 2,000 copies printed.

Бесп. Ма: О.Н. Коробкина, Candidate of Physics and Mathematics; Ма: А.Д. Федоскин; Tech. Ма: Т.В. Полежаева.

FRANCE: This publication is intended for geophysicists, meteorologists, and communication specialists.

CONTENTS: This collection of 12 articles on the ionosphere, published by the Soviet ION Committee, presents some of the results of vertical soundings made at 25 Soviet stations in the period 1971-1979. Individual articles deal with the geographic distribution of ionospheric absorption and its relation to solar flares and magnetic storms, the altitudinal distribution of ionization calculated with electronic computers, and ionospheric observations in the Arctic and Antarctic. An English resume accompanies each article. No personalities are mentioned. References follow individual articles.

Коробкина, О.Н. Dependence of the Maximum Frequency of the Sporadic E Layer on the Characteristics of the Ionosphere System	30
Чистяков, С.С. Sporadic E Layer According to Observations in Middle Latitudes	64
Белкина, Т.И. The Problem of Interpretation of the Perturbed and Eo Layer With Great Perturbation	69
Сидоров, С.С. Some Peculiarities of the Geographical Distribution of Critical Frequency in the F2 Layer During High Solar Activity	74
Богданович, А.А. Estimating F2 Layer Disturbances in High Latitudes	81
Богданович, А.А. Calculating the Altitudinal Distribution of Ionization With Electronic Computers	95
Малин, О.П. Ionospheric Observations on Board the Motor Ship "Malinka" During the Voyage to the Antarctic	100
Малин, О.П. Preliminary Results of Testing an Aircraft Ionospheric Station in the Arctic	106

AVAILABLE: Library of Congress

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21/Nov/87
7-28-81

6

CHAVDAROV, S.S., otv. red.; SVECHNIKOV, A.M., red.; CHASOVITIN, Yu.K.,
red.; SHKORINOV, V.P., red.; PAVLICHENKO, M.I., tekhn. red.

[Reports of the Scientific Symposium on the Ionosphere] Doklady;
V razdel programy MGG (ionosfera). Rostov-na-Donu, Izd-vo Rostovskogo
univ., 1961. 149 p. (MIRA 14:12)

1. Nauchnyy simpozium po ionosfere, Rostov-on-Don, 1960.
(Ionosphere—Congresses)

DANILKIN, N.P.; KOCHENOVA, N.A.; SVECHNIKOV, A.M.; CHAVDAROV, S.S.;
YAROSHEVA, A.I.

State of the ionosphere over Rostov-on-Don during the total
solar eclipse of Feb. 15, 1961. Geomag. i aer. 1 no.4:612-615
Jl-Ag '61. (MIRA 14:12)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, kafedra
eksperimental'noy i teoreticheskoy fiziki.

(Ionosphere)

(Eclipses, Solar--1961)

33218

S/141/61/004/006/004/017
E032/E114

9.9/10

AUTHORS: Chavdarov, S.S., and Chasovitin, Yu.K.

TITLE: An estimate of the stability of radio-wave reflection from the sporadic E-layer

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.4, no.6, 1961, 1020-1024

TEXT: The authors report an analysis of the results obtained in vertical sounding of the ionosphere in 1958 at the following stations: Rostov on Don (April-December), Moscow (March-December), Murmansk (June-September), Juliusruh/Rügen (East Germany, January-August) and Wakkanai (Japan, January-December). In accordance with the IGY classification, the sporadic E-layer was divided into nine types depending on the form of the corresponding ionograms. The most frequently occurring types for the above stations are f, l, c, h, r. The distribution of the relative number of continuous reflections with the length of these reflections was evaluated for the latter five types. Detailed analysis of the distributions enabled the authors to establish the character of
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An estimate of the stability of ...

the seasonal variation in the duration τ of continuous reflections. It was found that for the middle-latitude stations (Rostov, Moscow, Rügen and Wakkanai), the more stable continuous reflections during the summer months are those due to sporadic layers of types f and c. In the winter, the duration of the continuous reflections is roughly the same for all five types. It is noted that the duration of the reflections at Murmansk is smaller, and this is associated with the specific properties of the ionosphere at high latitudes. The authors introduce the concept of probability of appearance of the E_{spor} layer

$P_{\tau > \tau_0}(E_s) = \sum N_i \tau_i / T$, where N_i is the number of continuous reflections with duration $\tau_i > \tau_0$ and T is the total time of the observations. Plots of this quantity are shown in Fig.2. Acknowledgments are expressed to G.A. Vakulenko for assistance in the analysis of the observations.

There are 2 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The English language reference reads as follows:

Card 2/3

33218

An estimate of the stability of ...

S/141/61/004/006/004/017
E032/E114

Ref.2: J.A. Thomas, E.K. Smith.
J. Atm. Terr. Phys., v.13, 295 (1959).

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet
(Rostov on Don State University)

SUBMITTED: March 8, 1961

Card 3/1 3

CHAVDAROV, S.S.; CHASOVITIN, Yu.K.

Stability of radio wave reflection from the sporadic E layer
according to observations in Rostov-on-Don. Geomag. 1 ser.
2 no.2:249-256 Mr-Apr '62. (MIRA 15:6)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.
(Ionospheric radio wave propagation)

S/904/61/000/000/010/011
D218/D308

AUTHORS: Chavdarov, S. S., and Svechnikov, A. M.

TITLE: Some results of simultaneous vertical sounding at Krasnodar and Rostov-on-Don during the total solar eclipse of June 30, 1954

SOURCE: Doklady Nauchnogo simpoziuma po ionosfere, Rostov-na-Donu, 21-22 aprelya 1960 g. V razdel programmy MGG (ionosfera). Rostov on the Don, Izd-vo Rostov. univ., 1961, 121-126

TEXT: Measurements were carried out of effective heights and critical frequencies on June 30, 1954 at Krasnodar and Rostov-on-Don. The aim was to study changes in the ionization of the upper air. At Krasnodar, the apparatus consisted of a specially constructed, manually operated ionospheric station giving 2 kW per pulse. At Rostov, there was a stationary radiosonde giving 5 kW per pulse. The state of the ionosphere during the observa-

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Some results of...

S/904/61/000/000/010/011
D218/D308

tions was sufficiently quiet, but there was considerable thunderstorm activity giving rise to considerable interference. Nevertheless, continuous recording of ionograms was successfully accomplished, and graphs are now reproduced showing the effective heights and critical frequencies during the eclipse. The behavior of the ionosphere at the two points was very similar. The critical frequencies of the F layer during the eclipse were higher than the median values before the eclipse and very nearly equal to them after sunset. A considerable reduction in $f^{\circ}E$ was noted 6 hours before the eclipse, reaching a maximum reduction at 3 hours before the maximum phase. A time plot of $\cos^{1/4} \chi$ was found to be approximately the same as the course of $f^{\circ}E$ up to about 12 hours. Thereafter there was a considerable discrepancy. There are 2 figures and 1 table.

ASSOCIATION: Rostovskiy gosudarstvennyy universitet (Rostov State University)

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ACCESSION NR: AT5009243

5/20/87 047000/012/001

AUTHOR: Chavdarov, S. S.; Chasovitin, Yu. K.

48
B+1

TITLE: Stability of radio-wave reflection from the sporadic E_s -layer during the day

12

SOURCE: AN SSSR. Mezhdudevomstvennyy geofizicheskiy komitet. V razdel programmy MGG: Ionosfera. Sbornik statey, no. 13, 1964, 24-28

TOPIC TAGS: radio wave, sporadic layer, reflection stability, appearance probability, exponential function

ABSTRACT: The continuous reflection of radio waves from the sporadic E_s -layer is determined by a parameter τ which expresses the stability of reflection. Analysis of data obtained during 1958 and 1959 made it possible to characterize the duration of the reflection but did not fix the time of day when the reflection starts and when it ends. A probability $(pE_s)_{\tau_0}$ at $\tau_0 = 0$ represents the general probability of the appearance of the E_s -layer at a fixed hour of the day with a longer continuous reflection of waves. τ' means a time duration of

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