

ACC NR: AT6011934

electromotors. A detailed exposition of the mechanical characteristics of the motor is followed by the establishment of pertinent equations of motion, a description of the procedures for the establishment of optimum control systems, and the application of these procedures to the case of optimum control in the presence of a variable coefficient of viscous friction. Orig. art. has: 30 formulas, 1 figure, and 2 tables.

SUB CODE: 09, 13/ SUBM DATE: 29Nov65/ ORIG REF: 003/ OTH REF: 001

Card 2/2 JS

VASIL'YEV, Aleksy Ivanovich; POMIN, A.P., redaktor

[Store fresh cabbage until the next harvest] Svezhuia kapustu
khranit' do novogo urozhaiia. Moskva, Gos.izd-vo torg.lit-ry.
1956. 7 p. (MIRA 10:10)
(Cabbage--Storage)

▲ISTOV, I.M.; VASIL'YEV, A.I., redaktor

[Storage of potatoes] Khranenie kartofelia. Moskva, Gos. izd-vo
torg. lit-ry, 1956. 18 p. (MLRA 10:2)
(Potatoes--Storage)

LAGUTIN, Ivan Aleksandrovich; ~~VASIL'YEV, A.I.~~, redaktor; MAKSIMOVICH, A.I.,
redaktor; SUDAK, D.M., tekhnicheskiy redaktor

[Gathering and processing of mushrooms] Zagotovka i pererabotka
gribov. Pod red. A.I.Vasil'eva. Moskva, Gos. izd-vo trgovoi lit-ry,
1956. 36 p. (MLRA 10:1)
(Mushrooms)

USATYUK, Maksim Klement'yevich; BARANOV, Ivan Pavlovich; VASIL'YEV, A.I.,
red.; MAKSIMOVICH, A.G., red.; ROSLOV, G.I., tekhn. red.

[Pickling fruits and vegetables] Marinovanie plodov i ovoshchei.
Pod red. A.I. Vasil'eva. Izd. 3., dop. i perer. Moskva, Gos.
izd-vo torg. lit-ry, 1956. 38 p. (MIRA 11:8)
(Canning and preserving)

DMITRIYEVSKIY, Semen Petrovich; ~~VASIL'YEV~~, redaktor; GRANOVSKAYA, I.I.,
redaktor; ROSLOV, G.I., ~~tehnicheskii~~ redaktor

[Pickling and preserving cabbage] ~~Kвашenia i khraneniye kapusty.~~
Pod red. A.I. Vasil'eva. Moskva, Gos. izd-vo torg. lit-ry, 1956. 52 p.
(Cabbage--Preservation) (MLFA 10:10)

YEREMENKO, Vladimir Danilovich; VASIL'YEV, A.I., redaktor

[Storage of onions and garlic] Khrenenie luka i chesnoka. Moskva,
Gos.izd-vo torgovoi lit-ry, 1956. 54 p. (MIRA 10:8)
(Onions--Storage) (Garlic--Storage)

AUTHORS: Pivovarov, A.T., Aristov, D.V., Shapiro, I.Ye., and Vasil'yev, A.K. SOV/19-58-6-648/685

TITLE: A Machine for Packing Objects Into Cellophane and Similar Packets (Mashina dlya upakovki predmetov v tsellofanovyye i. t. p. pakety)

PERIODICAL: Byulleten' izobreteniy, 1958, Nr 6, pp 143-144 (USSR)

ABSTRACT: Class 81a, 7²⁰. Nr 113972 (559273 of 18 Oct 1956). Submitted to the Committee for Inventions and Discoveries at the Ministers Council of USSR. A machine for packing objects into cellophane bags; consisting of a feed device for a cellophane band, a device making a longitudinal seam on the cellophane band and so forming a cellophane pipe and at the same time putting the objects to be packaged into this pipe at set intervals, a device for making transverse seams to form closed bags and cutting them across the separate single bags; the seams

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SOV/19-58-6-648/685

A Machine for Packing Objects Into Cellophane and Similar Packets

are made by electrically heated rollers.

Card 2/2

YEFREMOV, Tamir Filippovich; SUSHCHINSKIY, Mikhail Mikhaylovich; VASIL'YEV,
A.K., inzh., retsenzent; DUGINA, N.A., tekhn. red.

[The KAVZ-651A motorbus; construction and operation] Avtobus KAVZ-
651A; ustroistvo i ekspluatatsiia. Moskva, Gos. nauchno-tekhn. izd-
vo mashinostroit. lit-ry, 1961. 350 p. (MIRA 14:11)
(Motorbuses)

VASIL'YEV, A.L.

BALABUKHA, D.K.; VASIL'YEV, A.L.

Relay protection of galvanometers. Izv. vuzov. Tekhn. Ser. Elektromekhanika. No. 4:36-37 J1-Ag '55.
(Galvanometer) (MIRA 8:10)

VASIL'YEV, A.L.

Monograms for the determination of geometrical characteristics of transverse sections of box-type and undulated bulkhead corrugations. Trudy LKI no.16:87-95 '55.

(MIRA 13:4)

1. Kafedra konstruktsei sudov Leningradskogo korablestroitel'nogo instituta.

(Bulkheads (Naval architecture))

VASIL'YEV, A L

Name: VASIL'YEV, A. L.

Dissertation: Experimental study of the transverse shear strain of a bulkhead with U-corrugation

Degree: Cand Tech Sci

Defended at
~~Affiliation~~: Leningrad Shipbuilding Inst

Publication
~~Defense~~ Date, Place: 1956, Leningrad

Source: Knizhnaya Letopis', No 51, 1956

VASIL'YEV, A.L., inzhener; GLOZMAN, M.K., inzhener.

Testing corrugated bulkheads in use. Sudostroenie 22 no.9:21-24 S'56.
(Bulkheads (Naval architecture)) (MLSA 10:1)

SOV/135-59-6-9/20

18(5,7)

AUTHOR: Vasil'yev, A. L., Engineer

TITLE: The Effect of Clearance Size in Welded Angle Joints on the Depth of Penetration

PERIODICAL: Svarochnoye Proizvodstvo, 1959, Nr 6, pp 30-33 (USSR)

ABSTRACT: According to the instructions for ocean-liner building, an additional quantity of weld metal is necessary, besides the calculated weld metal, for the clearances in angle joints. According to his experimental investigations, the author denies the need for an extra quantity of weld metal for clearances. A special series of investigations has been carried out at the Ship-building Institute, Leningrad, under Candidate of Technical Sciences, Lecturer V. D. Matskevich, on T-beam-models, size of sides: 200 mm, size of belt: 300 mm. Altogether there have been constructed 9 T-beams with 1 mm, 2 mm and 3 mm clearances. T-beams Nr 4 and 6, in the form of steps, have been welded semi-automatically, the others by hand welding-torch. The hand welding has

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The Effect of
of Penetration

SOV/135-59-6-9/20
Clearance Size in Welded Angle Joints on the Depth

been accomplished by UONI-13/45, diameter: 4 mm, according to GOST 2523-51, and the semi-automatic welding by electrode-wires of a small C-hydrate percentage under OS-224-flux. Table 1 gives a detailed description of the welding conditions. The results of the experiment prove that an additional quantity of weld material is not necessary. There are 14 graphs, 5 diagrams and 1 table.

ASSOCIATION: Leningradskiy korablestroitel'nyy institut (Leningrad Ship-building Institute)

Card 2/2

VASIL'YEV, A.L.

Intersection joint of bottom longitudinals of tankers with
transverse bulkheads. Trudy LKI no.32:19-34 '60. (MIRA 15:2)

1. Kafedra konstruksii sudov leningradskogo korablestroitel'nogo
instituta.

(Hulls(Naval architecture))(Tank vessels)

VASIL'YEV, Aleksey Leonidovich; GLOZMAN, Moisey Kalmanovich;
PAVLINOVA, Yevgeniya Alekseyevna; FILIPPEO, Maksim
Valentinovich; GOMBERG, Ye.M., inzh., retsenzent;
KOROTKIN, Ya.I., kand. tekhn. nauk, retsenzent;
KONTOROVICH, B.M., nauchn. red.; KLIORINA, T.A., red.

[High-strength corrugated ship bulkheads] Prochnye sudovye gofrirovannye pereborki. [By] A.L.Vasil'ev i dr.
Leningrad, Sudostroenie, 1964. 315 p. (MIRA 12:3)

DOLUKHANOV, Mark Pavlovich; VASIL'YEV, A.M., redaktor; VERKHOVINA, T.M.,
redaktor; LEDNEVA, N.V., ~~tekhnicheskiy~~ redaktor

[Introduction to the theory of transmitting information through
electric communication channels] Vvedenie v teoriyu peredachi
informatsii po elektricheskim kanalam svyazi. Moskva, Gos.izd-vo
lit-ry po voprosam svyazi i radio, 1955. 125 p. (MLRA 9:3)
(Telecommunication)

AID P - 4537

Subject : USSR/Electronics

Card 1/1 Pub. 90 - 10/10

Author : Vasil'yev, A. M.

Title : Geometrical derivation of a formula for the capacity of a noisy communication channel connected to a special receiver.

Periodical : Radiotekhnika, 2, 77-79, F 1956

Abstract : The author presents a geometrical (vectorial) derivation of a formula for the capacity of a noisy communication channel connected to a special receiver. He applies the Shannon theorem for the capacity of a channel. Two references (1953-1955) (one Soviet).

Institution : None

Submitted : D 9, 1955

VASIL'YEV, A.M.

Noiseproof features of a receiver with final recovery time.
Elektrosvias' 11 no.3:3-7 Mr '57. (MLRA 10:5)
(Electric cables--Noise)

Vasil'yev, A. M.

AUTHOR: VASIL'YEV, A.M. PA - 2294
TITLE: The Probability of Signal Reception by Means of a Receiver with
Finite Time of Regeneration. (Veroyatnost' priyema signala priyemnikom,
obladayushchim konechnym vremenem vosstanovleniya, Russian)
PERIODICAL: Radiotekhnika, 1957. Vol 12, Nr 2, pp 28-38 (U.S.S.R.)
Received: 4 / 1957 Reviewed: 4 / 1957

ABSTRACT: An impulse connection line, which is subject to the influence of disturbance, is investigated. If a relaxation generator is used at the output of the receiver or on the occasion of the reception of strong signals which overtax the receiver, it is necessary to take finite regeneration time into account. The equation for the density of the probability $p(t)$, which determines the probability of signal reception within the period of time of from t to $t+dt$ is set up. A second equation determines the required density at the moment t . A general solution for the equation of the moment t is now derived, and it is shown that for the most interesting case, where $\pi(t)$ - a periodic function (presence of a signal) and where the regeneration time of the receiver τ is less than the period T , computation of the required probability $p_k(t, \tau)$ according to a formula derived here must always be carried out by means of numerical integration. As the here derived general solution is of minor value in practice, another form of the equation for the density of the probability of signal reception at the moment t is derived. This

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PA - 2294
The Probability of Signal Reception by Means of a Receiver with
Finite Time of Regeneration.

is attained by considering that, in the case of a great t , transition is ended and the solution becomes "stabilized", i.e. becomes infinitely near a certain function $p_{\infty}(t)$. This function is described as stabilized solution and is derived here in the next chapter. As stabilized solution is also found for a case, which is of practical interest, if $\Delta t = \Delta \tau$, $T = 2 \Delta \tau$ and $T = 3 \Delta \tau$. The theory expounded here can also be used for the evaluation of the immunity from disturbance of a receiver with finite regeneration time. (No illustrations).

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 11.6.1956
AVAILABLE: Library of Congress

Card 2/2

AUTHOR: Vasil'yev, A. M.

108-1-7/10

TITLE: Effect of an Arbitrary Voltage on a Slow-Acting Relay
With two Stable States of Equilibrium (Vozdeystviye
sluchaynogo napryazheniya na zhdushcheye rele s dvumya
ustoychivymi sostoyaniyami ravnovesiya)

PERIODICAL: Radiotekhnika, 1958. Vol. 13, Nr 1, pp. 69-76 (USSR)

ABSTRACT: With the same assumptions as in refs. 2 and 3 the author investigates the effect of an arbitrary voltage on the slow-acting relay with two stable states of equilibrium. As an example of its use in practice the author points at the use of such a relay within the scheme of the demodulator at an pulse transmission line with phase modulation (ref. 5).- The author first gives the mathematical formulation of the problem subject to certain assumptions. The mathematical problem consists of the determination of the functions $p_1(t)$ and $p_2(t)$ according to the given intensities of the pulse flows

$$\Gamma_1(t) \text{ and } \Gamma_2(t).$$

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Effect of an Arbitrary Voltage on a Slow-Acting Relay With
two Stable States of Equilibrium

108-1-7/10

The functions $p_1(t)$ and $p_2(t)$ denote the voltage at the output of the relay, which can take only two values +1 and -1. $\varphi_1(t)$ and $\varphi_2(t)$ denote the arbitrary voltages applied to the first or second network, respectively. The equations obtained make it possible to find the functions completely determining the arbitrary process at the output of the relay. The mathematical expectation value and the correlation function of the output voltage is computed. Finally the case of an effect of steady interference on the relay is given as an example. There are 5 references, 5 of which are Slavic

SUBMITTED: August 15, 1956 (initially) and November 13, 1957 (after revision)

AVAILABLE: Library of Congress

Card 2/2
1. Pulse transmission lines-Detectors 2. Mathematical analysis

6.9000

~~6 (4), 9 (2, 3, 9)~~

66310

SOV/162-59-1-3/27

AUTHOR: Vasil'yev, A.M.

TITLE: The Application of the Theory of Brownian Motion for Investigating the Noiseproofness of Tracking Devices in Pulse Radio Engineering, I

PERIODICAL: Nauchnyye doklady vysshey shkoly, Radiotekhnika i elektronika, 1959, Nr 1, pp 16-25

ABSTRACT: The mathematical equations describing the motion of a Brownian particle located in an external power field are used for analyzing the noiseproofness of tracking devices, using the automatic range finder of a radar station as an example. The premises of the Brownian motion theory are outlined, ie. brief explanations of the Langevin and the Einstein-Fokker equations are given under consideration of boundary problems. The analysis of tracking devices leads in many cases to non-linear differential equations with random disturbances which are completely analogous to the equations found in statistical physics for describing the moti-

Card 1/3

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66310

SOV/162-59-1-3/27

The Application of The Theory of Brownian Motion for Investigating
the Noiseproofness of Tracking Devices in Pulse Radio Engineering,
I

on of Brownian particle located in an external power field. This analogy permits an entire series of results and approaches to be used for studying the noiseproofness of tracking devices. Equations of radio engineering problems are often of an order higher than the second, or additional conditions are not met. It is possible to find for these equations corresponding Einstein-Fokker equations, although great difficulties are encountered in solving the latter. The practical application is discussed by an example, in which the problem is reduced to a solution of an Einstein-Fokker equation, ie. there is a Langevin equation, but the conditions for using the Einstein-Fokker equation are not met. The functioning of an automatic range finder is described briefly and the equation of the range finder is derived, which may be converted to a form analogous to the Langevin equation. Finally, the steady

Card 2/3

4

66310

SOV/162-59-1-3/27

The Application of the Theory of Brownian Motion for Investigating the Noiseproofness of Tracking Devices in Pulse Radio Engineering, I

state distribution is discussed under the assumption that the object to be tracked moves very little during a time interval. There are 1 block diagram, 2 graphs and 8 references, 2 of which are American and 6 Russian.

ASSOCIATION: Kafedra fiziki Moskovskogo energeticheskogo instituta (Chair of Physics of the Moscow Power Engineering Institute) 4

SUBMITTED: May 24, 1958

Card 3/3

06387
SOV/170-59-2-5/23

6(4)

AUTHOR: Vasil'yev, A.M.

TITLE: Analysis of One Method of Reducing Interferences in Impulse Communication Lines

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Nr 2, pp 32-43 (USSR)

ABSTRACT: In this paper the operation of a device is theoretically analyzed, which switches off a receiver for time intervals between incoming signal pulses and switches on again at the instant of their arrival. This method makes it possible to reduce the effect of interferences in communication lines. The author analyzes the application of this device in the case of stationary interferences of low intensity at the presence of regular signals following each other after an interval of time denoted by T. As a result of his analysis he comes to the conclusion that the application of the above mentioned device is expedient in cases when the following condition is fulfilled:

$$2qT(1 - Q)^2 \ll 1$$

where q is the intensity of interference, or the average number of interference pulses with an amplitude exceeding U_0 ; $Q(n)$ is the probability of output voltage exceeding U_0 at an instant when the n-th pulse arrives at

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06387:

SOV/170-59-2-5/23

Analysis of One Method of Reducing Interferences in Impulse Communication Lines

the receiver. The author illustrates the application of his theoretical formulae by a particular example for which the values of several characteristic factors in dependence on q , interference intensity, are presented in graphical form in Figure 1.

There are: 1 graph and 5 Soviet references.

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SOV/170-59-4-5/20

9(2)

AUTHOR: Vasil'yev, A.M.

TITLE: The Transformation of a Stochastic Succession of Impulses by Means of Inertia Relay With Two Steady States (Preobrazovaniye sluchaynoy posledovatel'nosti impul'sov pri pomoshchi inertsiionnogo rele s dvumya ustoychivymi sostoyaniyami)

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Nr 4, pp 28-37 (USSR)

ABSTRACT: The author considers the problem of determining statistical characteristics of the output voltage of an inertia relay subjected to the action of a stochastic succession of impulses. This problem presents considerable difficulties for an arbitrary voltage. Therefore the author restricts himself to considering the case under the following assumptions as to relay functioning and the properties of stochastic voltages: the voltage at the output can assume two values: 0 (relay in state 1) and "a" (state 2); the transition from one state into another occurs instantaneously as soon as the voltage at the second input exceeds the value of prescribed functioning E. The inertia property of the relay manifests itself in that the inverse transition from the second state into the first is possible only after a certain

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SOV/170-59-4-5/20

The Transformation of a Stochastic Succession if Impulses by Means of Inertia Relay With Two Steady States

time interval elapsed since the transition from the first into the second state. As to stochastic voltages it is assumed that they may be considered as equivalent to stochastic successions of short impulses exceeding the value of functioning E. The solutions of the problem is obtained for two particular cases: the effect of stationary interference, and the effect of a regular periodic impulse signal superimposed on stationary interference.

There are: 1 graph and 4 Soviet references.

Card 2/2

AUTHOR: Vasil'yev, A.M.

SOV/109-4-6-5/27

TITLE: Synchronisation of a Relaxation Oscillator by a Random Voltage (Sinkhronizatsiya relaksatsionnogo generatora sluchaynym napryazheniyem)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 6, pp 942 - 950 (USSR)

ABSTRACT: The problem is formulated as follows. A relaxation oscillator, e.g. a multi-vibrator, has two inputs. If no voltages are applied to the inputs, the oscillator generates a periodic voltage at its output. The resulting waveform contains a sequence of positive and negative rectangular pulses whose durations are T_1 and T_2 : respectively. If signals are applied to the inputs of the oscillator, the system can be synchronised. These signals are assumed to be in the form of non-stationary random sequences of short pulses. The probability that during an interval from t to $t + dt$ the voltage applied to the first input has a value such that the oscillator changes its state, is denoted by $\pi_1(t)dt$. The analogous

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SOV/109-4-6-5/27

Synchronisation of a Relaxation Oscillator by a Random Voltage

probability for the second input is denoted by $\pi_2(t)dt$.

Thus if, for example, a train of periodic synchronising pulses and stationary noise is applied to the first input, the probability is given by:

$$\pi_1(t) = \pi_1 + \sum_n q\delta(t - n\theta)$$

where $\delta(t)$ is the delta function and θ is the repetition period of the pulses; q is the probability that during the appearance of a synchronising pulse, the total voltage of the pulse and the noise is sufficient to switch over the oscillator. Two further probability functions are of interest. The quantity $p_1(t)dt$ is the probability that during the interval from t to $t + dt$, the oscillator changes over from its first state into the second; the quantity $p_2(t)dt$ gives the probability of the oscillator changing over from the second state into the first state during the interval from t to

Card2/4

SOV/109-4-6-5/27

Synchronisation of a Relaxation Oscillator by a Random Voltage

$t + dt$. It is now necessary to derive equations relating the functions p_1 , p_2 with the given functions π_1 and π_2 . The required relationships are represented by Eqs (3). The system represented by Eqs (3) can be reduced to a system of differential equations with a delayed argument; the theory of these is known and is given, for example, in Ref 5. Eqs (3) are employed to investigate three special cases. If a relaxation oscillator is subject to the interaction of a stationary noise alone, Eqs (3) can be written as Eqs (9), where t_0 is the instant of the inception of the oscillator operation. Eqs (9) can be solved by using the integral Laplace transformation. The solutions are represented by Eqs (10). If the input voltage of the oscillator is a slightly non-stationary function, such that the probabilities π_1 and π_2 are given by Eqs (14) and the functions p_1 and p_2 are represented by Eqs (15), their solution is in the form of Eqs (16). When $T_1 = T_2 = T$ and $\pi_1 = \pi_2 = \pi$ and if

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Synchronisation of a Relaxation Oscillator by a Random Voltage ^{SOV/109-4-6-5/27}

γ is a periodic function having a period T , Eqs (3) can be represented by Eq (17). The solution of this is given by Eq (19). There are 5 Soviet references.

SUBMITTED: May 3, 1957

Card 4/4

VASIL'YEV, A.M. (Moskva)

Invariant affine connectivities in a space containing linear elements.

Mat. sbor. 60 no.4:411-424 Ap '62.

(MR6:4)

(Groups, Theory of)

L 10394-66 EWT(1) IJP(c) AT

ACC NR: AP5026903

SOURCE CODE: UR/0109/65/010/010/1839/1844

AUTHOR: Vasil'yev, A. M.

19
B

ORG: none

TITLE: Transient processes in lateral-photoeffect cells

SOURCE: Radiotekhnika i elektronika, v. 10, no. 10, 1965, 1839-1844

TOPIC TAGS: photocell, photocell transient

31
41
55
ABSTRACT: Based on G. Lukovsky's equation for the inertia of a lateral-photoeffect cell (J. Appl. Phys., 1960, 31, 6, 1088) and on a simple equivalent circuit (emf generator, internal resistance, and capacitance — all in parallel), a further theory of the photocell behavior under dynamic conditions is developed. An integral formula for the photovoltage is derived on the assumption that the photocell inertia is largely determined by the capacitance of its p-n junction and

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UDC: 621.383.5
2

L 10394-66

ACC NR: AP5026903

base layer; a certain law of the point-spot movement over the photocell $x_0(t)$ is assumed. Too cumbersome for practical purposes, this integral formula can be considerably simplified when $x_0(t)$ is specified as a periodic function with a known period. The photovoltage in this case consists of a number of harmonics with phase shifts among them. Orig. art. has: 3 figures and 30 formulas.

SUB CODE: 09 / SUBM DATE: 13Jul64 / ORIG REF: 003 / OTH REF: 004

^{jw}
Card 2/2

AUTHOR: PIZAROV, I. B. et al. A. Ya. Landsman, A. P.

TITLE: Photocells with longitudinal photoelectric effect

SOURCE: Radiotekhnika i elektronika, v. 10, no. 1, 1965, 138-146

TOPIC TAGS: photocell, photoelectric effect

ABSTRACT: The equation for potential difference across an infinite p-n junction set up by G. Lucovsky (J. Appl. Phys., 1960, 31, 6, 1088) is adapted, in the present article, to the case of a finite-size photocell. Boundary conditions for solving the problem are formulated with an allowance for that part of the p-n junction which is located under the surface of the very high light intensity. The solution is presented as a series of Legendre polynomials. As variance with Lucovsky's assumption that the light intensity is a constant, the potential difference

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L 31041-65

ACCESSION NR: AP5002909

compared with $AkT/q = 30-50$ mv, where A is the parameter of the current-voltage p-n-junction characteristic, k is the Boltzmann constant, T is temperature, and q is the electron charge. An equivalent circuit of the photocell is suggested, and conditions of independence between photo-*emf*'s of both pairs of contacts are formulated. Experimental results are reported which were obtained with phosphorus-doped high-resistivity p-5 x n-mm and 10 x 12-mm cells illuminated by a 0.4-mm light spot. The measured longitudinal sensitivity is 60-80 mv/mm-mw, reverse-saturated current is 10^{-6} a/m². The effect of the light spot position on the longitudinal photo-*emf* and photo-current is presented in 6 curves. Orig. art. has: 5 figures and 3 formulas.

ASSOC. DATA: none

SUBMITTED: 27Sep63

ENCL: 0

SUB CODE: 57

NO REF SOV: 002

OTHER: 004

Card 2/2

L 49802-65

ACCESSION NR: AP5010106

boundary conditions are supplied which permit determining the consecutive terms of this series. Using a simplest photocell as an example, it is shown that, in the first approximation, the M. B. Prince equivalent circuit (J. Appl. Phys., 1955, 26, 5, 534) is valid. Formulas are also derived for a contact arranged along the perimeter of the doped layer, along the 1st, 2 sides, grill-shaped and grid-shaped contacts. A 3x15 rectangular photocell illuminated by a ZS-3 lamp having a luminous flux of 80 w/m² serves for measuring the load current-voltage curve. A theoretical curve plotted in the same figure shows good agreement. Orig. art. has 7 figures and 10 formulas.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut istochnikov toka (All-Union Scientific Research Power Source Institute)

SUBMITTED: 07Dec63

ENCL: 00

SUB CODE: EC

NO REF SOV: 001

OTHER: 003

Card 2/2

BRYUKHOVETS, Dmitriy Fedotovich; VASIL'YEV, A.M., kand. tekhn.
nauk, retsenzent; MASLOV, D.P., nauchn. red.;
SMIRNITSKAYA, O.M., red.

[Assembling and testing motor vehicles, tractors and
motorcycles] Sborka i ispytaniia avtomobiloi, traktorov
i mototsiklov. Moskva, Vysshaya partiinaya shkola, 1965.
361 p. (MIRA 18:9)

L 05629-67 EWT(1)/T LJP(2) AT

ACC NR: AP6024501

SOURCE CODE: UR/0181/66/008/007/2248/2250

AUTHOR: Bordina, N. M.; Vasil'yev, A. M.; Popov, D. A.

ORG: none

TITLE: Influence of internal field on diffusion in semiconductors

SOURCE: Fizika tverdogo tela, v. 8, no. 7, 1966, 2248-2250

TOPIC TAGS: physical diffusion, semiconductor impurity, impurity level, semiconductor carrier, carrier density

ABSTRACT: It is shown that certain observed peculiarities accompanying diffusion in semiconductors can be attributed to the influence of electric fields. It is proposed that the field can be assumed homogeneous, and a rule is given for the determination of this field. Actually, however, the field is inhomogeneous and it is more correct to use a different approximation. For concreteness, diffusion of donors in an intrinsic semiconductor is considered. The differential equation of donor diffusion is obtained for a field determined by the Poisson equation, under the assumption that the electrons and holes are in equilibrium during diffusion. The expression for the diffusion is obtained in terms of a fictitious surface density and is found to agree well with experimental data. When the surface density of the diffusing impurity is smaller than the density of the intrinsic carriers, the diffusion has in first approximation the usual character. When the surface density exceeds the intrinsic value, there exists a gently sloping region which corresponds to diffusion with a dual diffusion co-

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L 05629-67

ACC NR: AF6024501

efficient. Where the two densities are commensurate, a transition to the second distribution takes place. Orig. art. has: 7 formulas. 0

SUB CODE: 20/ SUBM DATE: 16Aug65/ ORIG REF: 004/ OTH REF: 005

Card

2/2 *egh*

L 04622-67 EWT(1)/EWT(m)/EWT(t)/ATI IJF(c) JD/AT

ACC NR: AP6033258

SOURCE CODE: UR/ 109/66/011/010/1846/1855

AUTHOR: Vasil'yev, A. M.; Lisin, A. S.

ORG: none

TITLE: Dynamic characteristics of lateral-photoeffect silicon photocells ²⁷ ₂₅

SOURCE: Radiotekhnika i elektronika, v. 11, no. 10, 1966, 1846-1855

TOPIC TAGS: photocell, silicon photocell, ~~silicon~~ photoeffect, PHOTOELECTRIC CELL, SILICON

ABSTRACT: A theoretical and experimental investigation of the dynamic characteristics of lateral-photoeffect cells is described. A periodic law of light-spot motion is selected; the cases of step, linear, and sinusoidal motions are considered, and formulas describing the output voltages necessary for realizing these motions are derived. In the experimental part of the investigation, the vibrator and the optics of an electromagnetic oscillograph were used to produce sinusoidal movement of the light spot, at a frequency under 5 kc, over a silicon photocell. The effects of frequency and load on the output-signal phase were determined. It was found that the silicon cell can be regarded, in the first approximation, as a linear circuit with distributed parameters $R_e/2d$ and $c2b$, when $i_0 \gg I_s$ and $i_0 \gg I_{ph}$; here R_e is the lateral-layer resistance, $2d$, the cell length, $2b$, the cell width, i_0 , a conditional parameter, I_s , the saturation current, I_{ph} , the integral photocurrent. To obtain

Card 1/2

L 04622-57

ACC NR: AP6033258

quick response in a silicon cell, the time constant of cell unit area should be reduced, the load resistance should be kept low, and the photodiode-type operation should be used. Orig. art. has: 8 figures and 37 formulas.

SUB CODE: 09 / SUBM DATE: 08May65 / ORIG REF: 005 / OTH REF: 006 / ATD PRESS: 5100

Card 2/2 ZC

ACC NR: AP6023874

SOURCE CODE: UR/0109/66/011/007/1285/1294

AUTHOR: Averbukh, T. G.; Buzanova, L. K.; Vasil'yev, A. M.; Gliberman, A. Ya.

ORG: none

TITLE: Electric modulation of lateral photoemf

29
B

SOURCE: Radiotekhnika i elektronika, v. 11, no. 7, 1966, 1285-1294

TOPIC TAGS: photo emf, photoelectric effect, lateral photoelectric effect, *photoeffect cell*

ABSTRACT: So far the lateral-photoeffect cells have been investigated under the conditions of a constant signal; G. Wallmark (Proc. IRE, 1957, 45, 4, 474) mentioned a possibility of obtaining an alternating lateral photovoltage. The present article describes a theoretical and experimental investigation of a lateral-photoeffect cell modulated electrically by superposing an external alternating voltage on the p-n-junction voltage; weak illumination is assumed ($kT/q = 30-50$ mv). It is found that: (1) The experiments have shown that the parameter $\lambda = I_M(\rho/W) / (AkT/q)$ should not exceed 2.5-3 (for the photocells having $R = 20$ kohms and $A = 1.7$) in order to warrant the validity of the reported formulas; (2) The plot of light-spot coordinate vs. lateral modulated emf is linear, within 6%, when the spot moves away from the photocell center by a distance under 0.5 d; at 0.8 d, the nonlinearity is 12%; (3) The photocell sensitivity is proportional to the square of the photocell-

Card 1/2

UDC: 621.383.44:546.28

L 38996-66

ACC NR: AP6023874

layer resistance; a formula for the sensitivity in terms of no-load voltage is suggested. Orig. art. has: 5 figures and 53 formulas.

[03]

SUB CODE: 20, 09 / SUBM DATE: 06Feb65 / ORIG REF: 003 / OTH REF: 003/ ATD PRESS:

5050

Card 2/2 *KS*

15

VASIL'YEV, A.M.
CA

PROCESSES AND PROPERTIES INDEX

Pseudosandy soils and the methods for their determination. A. M. Vasil'ev. *Soviet Geol.* 1940, Nos. 5, 6, 137-44.--Data on the phys. properties, especially as regards particle size, swelling with H₂O and capillary activity, of various clays are given. P. H. Rathmann

ASB.SLA METALLURGICAL LITERATURE CLASSIFICATION

GROUP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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VASIL'YEN, A. M.

Science

Study of the physical properties of the soil, Kishinev, Godelizdat Moliavii, 1952.

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

VASIL'YEV, A.M., kandidat geologo-mineralogicheskikh nauk.

[Fundamentals of contemporary methods and technique for laboratory determination of physical properties of soils] Osnovy sovremennoi metodiki i tekhniki laboratornykh opredelenii fizicheskikh svoistv gruntov. Izd.2., ispr.i dop. Moskva, Gos.izd-vo lit-ry po stroitel'stvu i arkhitekture, 1953. 215 p.
(MLRA 6:8)
(Soil physics)

VASIL'YEV, A. M.

15-57-4-5388D

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 4,
p 184 (USSR)

AUTHOR: Vasil'yev, A. M.

TITLE: Classifications of Bearing Soils and Foundations for
the Industrial, Civil, and Hydrotechnical Structures
(Klassifikatsiya gruntov-osnovaniy promyshlennykh,
grazhdanskikh i gidrotekhnicheskikh sooruzheniy)

ABSTRACT: Bibliographic entry on the author's dissertation for
the degree of Doctor of Technical Sciences, presented to
the Vses. n.-i. in-t, osnovaniy i fundamentov (All-Union
Scientific Institute of Foundations and Substructures),
Moscow, 1956.

ASSOCIATION: Vses. n.-i. in-t, osnovaniy i fundamentov (All-Union
Scientific Institute of Foundations and Substructures)

Card 1/1

VASIL'YEV, A.M., kandidat geologo-mineralogicheskikh nauk.

Brief review of Russian and foreign classifications of soils for
building foundations. Trudy NII osn.i fund. no.29:4-55 '56.
(MLRA 10:5)

(Soil mechanics)
(Soils--Classification)

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 130 (USSR) SOV/124-57-4-4784

AUTHOR: Vasil'yev, A. M.

TITLE: A Penetration-cone Method for the Determination of the Strength of Plastic Clay Soils in a Natural and a Disturbed Formation (Konusnyy metod opredeleniya prochnosti plastichnykh glinistykh gruntov v yestestvennom i narushennom slozhenii)

PERIODICAL: Tr. N.-i. in-ta osnovaniy i fundamentov, 1956, Nr 29, pp 56-68

ABSTRACT: Bibliographic entry

Card 1/1

14(6)

SOV/112-59-5-8752

Translation from: Referativnyy zhurnal. Elektrotehnika, 1959, Nr 5, p 47 (USSR)

AUTHOR: Vasil'yev, A. M.

TITLE: Construction Classification of Foundation Soils

PERIODICAL: Sb. N.-i. in-t osnovaniy i podzemn. sooruzh. Akad. str-va i arkhitekt. SSSR, 1958, Nr 33, pp 5-27

ABSTRACT: Bibliographic entry.

Card 1/1

VASIL'YEV, A. M.

28-4-5/35

AUTHORS: Vasil'yev, A.M., Candidate of Technical Sciences, and Kali-
shevskiy, V.L., Engineer

TITLE: Revision Principles for Standards of Piston Steam Pumps
(Printsipy peresmotra standartov na parovyie porshnevyye nasosy)

PERIODICAL: Standartizatsiya, 1957, # 4, pp 21-25 (USSR)

ABSTRACT: The old standards, GOCT 579-41, 580-41, 582-41, 2834-45, 3619-47, covering 100 models of steam pumps and about 30 of motor-driven pumps are under revision. The author cites a few examples of inadequacies in the old.

The new GOCT 8336-57 "Pumps, Piston, Steam, Horizontal Type, Basic Parameters and Dimensions" will be put into effect on 1 January 1958, replacing the GOCT 579-41, 580-41 and 2834-45. This is for water pumps, dark petroleum products of up to 110° BY viscosity and 100°C, and other like fluids, with steam work pressure of 16 kg/cm². The pumps are direct action, two-cylinder, 4 stage. The number of models is reduced from 100 to 30. The accepted pressure gradations and feed limits are given in a chart (table 1). The series is built on feed stages

Card 1/2

Revision Principles for Standards of Piston Steam Pumps

28-4-5/35

in geometric progression with a denominator of 1.778 (based on the 40th series of GOCT 8032-56). It is stated that the weight of pumps, as they are given by the new GOCT, does not exceed the weight of similar foreign pumps. Of all the pumps being produced at this time, only 9 fully conform to the new GOCT, 12 require modernization, and 5 have to be completely worked over.

Modernization is needed mainly to decrease weight. As the production of steam pumps is scattered through 14 plants, the modernization should be done by one head organization. Production should be concentrated at one or two plants, to make possible the unification of the existing pump nomenclature.

There are 2 tables and 1 graph.

AVAILABLE: Library of Congress

Card 2/2

VASIL'YEV, A.M., kand.tekhn.nauk

Suction capacity of screw pumps. Trudy VIGM no.22:138-152 ' 58.
(MIRA 11:11)

(Pumping machinery)

VASIL'YEV, A.M., kand. tekhn. nauk

Calculating the efficiency of oil screw pump with cycloidal
gear system. trudy VIGM no.24:125-135 '59. (MIRA 12:8)
(Pumping machinery)

ACCESSION NR: AP4013530

S/0181/64/006/002/0619/0624

AUTHOR: Vasil'yev, A. M.

TITLE: Spin lattice relaxation of F centers in alkali halide crystals

SOURCE: Fizika tverdogo tela, v. 6, no. 2, 1964, 619-624

TOPIC TAGS: spin lattice relaxation, F center, alkali halide, contact interaction, relaxation time

ABSTRACT: The effects of spin saturation and relaxation of F-center electrons during relaxation at contact interaction of the electron with the surrounding vacancy of the F-center nucleus, were examined. From a consideration of these phenomena at levels such that the contact interaction is much greater than purely nuclear or purely spin relaxation time, it is concluded that change in paramagnetic relaxation time is practically determined by the contact interaction. For saturation of paramagnetic resonance, when the time expended for saturation is large, the level sufficient for saturation is determined by other than contact mechanism. When steady concentration density has been established during saturation, subsequent relaxation time is also determined by some mechanism different from contact

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ACCESSION NO: AP4013530

interaction. When the saturation state was not maintained sufficiently long (less than contact relaxation time), the following relaxation time is determined by contact interaction. The author concludes that horizontal processes cannot be the leading factors in the relaxation of F centers. Vertical processes may be more effective than contact interactions. One possibility is relaxation by paramagnetic impurities. Orig. art. has: 1 figure and 2 formulas.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut istochnikov toka, Moscow (All-Union Scientific Research Institute of Current Sources)

SUBMITTED: 20May63

DATE ACQ: 03Mar64

ENCL: 00

SUB CODE: SS

NO REF SOV: 003

OTHER: 004

Card 2/2

ACCESSION NR: AP4034574

S/0076/64/038/004/0845/0849

AUTHOR: Vasil'yev, A. M. (Moscow)

TITLE: The width of EPR lines of the Mn (II) ion in aqueous solution as a function of concentration

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 4, 1964, 845-849

TOPIC TAGS: EPR line, spin lattice interaction, manganous sulfate, electron paramagnetic resonance, spin spin interaction

ABSTRACT: In this study measurements were made of the width of the EPR line at 10^{10} cps frequency in solutions of $MnSO_4$ when the concentration of the latter was varied from 2 to 0.001 moles/l. The obtained experimental data are compared with the theoretical calculations. Spin-lattice interactions result from the interaction of Mn (II) ion with the electric fields of the surrounding H_2O molecules, thus they are independent of concentration. Spin-spin interactions, on the other hand, lead to line broadening which is directly proportional to the concentration of Mn (II). Consequently, the line width in dilute solutions is equal to 24 gauss and it characterizes spin-lattice interactions. Subtracting this value from the

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ACCESSION NR: AP4034574

remaining part of the line width should characterize the spin-spin interaction and it must be proportional to the concentration. The deviation from direct proportionality in an EPR spectrum of Mn (II) as a function of concentration indicates some other mechanism of relaxation, completely explainable on the purely geometric basis of the interposition of several Lorenz lines on one another. It has been shown that taking into account the mutual repulsion of Mn (II) ions the agreement between the theoretical and experimental data has been considerably improved. Orig. art. has: 4 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut istochnikov toka
(Scientific Research Institute of Current Sources)

SUBMITTED: 30Jan63

DATE ACQ: 20May64

ENCL: 00

SUB CODE: NP

NR REF SOV: 006

OTHER: 003

Card 2/2

Card

L 41594-66 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) AT/JD

ACC NR: AP6018546

SOURCE CODE: UR/0181/66/008/006/1823/1833

AUTHOR: Vasil'yev, A. M.; Truscov, L. I.ORG: All-Union Scientific-Research Institute of Current Sources, Moscow (Vsesoyuznyy nauchno-issledovatel'skiy institut istochnikov toka)TITLE: Contribution to umklapp processes in intervalley transitions and absorption by free electrons in n-Si₁ ✓

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1823-1833

TOPIC TAGS: silicon semiconductor, semiconductor band structure, carrier scattering, semiconductor carrier, electron interaction, phonon interaction group theory

ABSTRACT: To check on a hypothesis first advanced by W. Harrison (Phys. Rev. v. 104, 1281, 1956) that the mobility and scattering of the electrons in silicon are governed primarily by the umklapp processes and by intervalley scattering, the authors evaluate the contribution of the umklapp processes by determining the matrix elements for electron-phonon interaction that leads to the umklapp processes and to the intervalley transitions. The valleys from which transitions are possible by means of a selected reciprocal-lattice are determined, and the matrix elements for the transition from the given initial state to the given final state, in terms of different reciprocal-lattice vectors, are written out. The possible corresponding transitions are tabulated, and group theory is used to separate the nonvanishing matrix elements and to ascertain the oscillations that cause the scattering leading to intervalley transi-

Card 1/2

L 41594-66

ACC NR: AP6018546

tions and to umklapp processes. The calculations show that the umklapp contribution is commensurate with the contribution from the intervalley electron-phonon scattering. Orig. art. has: 2 figures, 32 formulas, and 4 tables.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 002/ OTH REF: 005

Card 2/2

VASIL'YEV, A.M., inzh.; GANSBURG, B.M., inzh.; BONDAR', Ye.P., inzh.

Using assembly-line methods in assembling construction elements of
a 2800/1700 sheet rolling mill. Mont.i spets.rab.v stroi. 22
no.4:10-14 Ap '60. (MIRA 13:8)

1. Trest Stal'montazh-5 i Proyechnyy institut Promstal'konstruktsiya.
(Assembly-line methods)
(Rolling mills)

VASIL'YEV, A.M.

Application of the theory of Brownian movement in the investigation of interference rejection of radio pulse servo systems. Nauch. dokl. vys. shkoly; radiotekh. i elektron. no.2:3-13 '59. (MIRA 14:5)

1. Kafedra fiziki Moskovskogo energeticheskogo instituta.
(Pulse techniques (Electronics)) (Brownian movements)
(Servomechanisms)

S/181/60/002/009/030/036
B004/B056

AUTHOR: Vasil'yev, A. M.

TITLE: The Fine Structure of the Paramagnetic Resonance Spectrum
of the Chromium Ion in Chrome Alum in Consideration of the
Higher Terms

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2252-2263

TEXT: The author discusses the effect of an electrostatic field upon the 4F state of the chromium ion. The crystal field has an intensive cubic-symmetric component with the potential $\phi_1 = k(x^4 + y^4 + z^4)$ (2) and a weaker trigonally symmetric component with the potential $\phi_2 = m(xy + xz + zy)$ (3). The cubic component splits the sevenfold degenerate level into three: the lower level is singly, the two higher levels are triply degenerate. The trigonal component splits up each of the triply degenerate levels into two: a singly and a doubly degenerate one, so that, in the end, two singly and two doubly degenerate levels exist above the singly

Card 1/3

The Fine Structure of the Paramagnetic
Resonance Spectrum of the Chromium Ion in Chrome
Alum in Consideration of the Higher Terms

S/181/60/002/009/030/036
B004/B056

degenerate ground level. It was the aim of the author to explain the part played by the higher terms in the fine structure of the paramagnetic resonance spectrum of Cr^{3+} in chrome alum. The possible states of free Cr^{3+} are discussed, and for the d^3 configuration the terms $4F^4P$; $2H^2G^2F^2D^2P$, for the d^2s configuration the terms $4F^4P'$; $2H^2G^2F^2D^2P'$ are written down. The ds^2 configuration and the configurations with 4p electrons are so high as regards energy that they, as also the doublet terms, may be neglected. For the fine structure, only the states $4F$, $4p$, $4F'$ and $4p'$ need therefore be taken into account. The wave functions of these states are written down, using the calculations given in Ref. 10, and the influence exerted by the cubic and the trigonal fields as well as the spin-orbit interaction are investigated. The result is that the ground level is split into two doubly degenerate levels, the initial splitting Δ being expressed by $\Delta = E_1 - E_2 = 8\lambda^2 \delta \left[\frac{1}{(\epsilon_2 - \epsilon_1)^2} - \frac{1}{\epsilon_2^2 - \epsilon_1^2} \right]$ (14). Of the numerous higher terms of Cr^{3+} , only the

Card 2/3

The Fine Structure of the Paramagnetic
Resonance Spectrum of the Chromium Ion in Chrome
Alum in Consideration of the Higher Terms

S/181/60/002/009/030/036
B004/B056

$4F'$ term of the d^2 configuration acts upon the initial splitting of the ground level. This action, however, manifests itself only in the form of a purely quantitative correction (reduction of initial splitting by the second term of the expression in brackets (14)). The small influence exerted by the $4F'$ term is due to the fact that in the cubical field, the levels of the $4F'$ term are higher than those of the $4F$ term. If the term of equation (14) corresponding to the $4F'$ term is assumed to be greater than that corresponding to the $4F$ term, the experimentally observed value of the initial splitting may be explained. Here, $\Delta < 0$, whereas, according to Ref. 9, $\Delta > 0$. There are 11 references: 3 Soviet, 7 US, and 1 Dutch.

SUBMITTED: February 3, 1960

Card 3/3

VARENTOV, Vladimir Semenovich, dots.; LAZAREV, Aleksandr Vasil'yevich, dots.; BRAGIN, N.A., inzh., retsenzent; AKSENOV, Ye.A., dots., retsenzent; VASIL'YEV, A.M., dots., retsenzent; NIKIFOROV, V.A., dots., retsenzent; PIMENOV, M.P., dots., retsenzent; SHADURSKIY, P.A., dots., retsenzent; SEMENSKIY, Ye.P., dots., retsenzent; FRIDKIN, L.M., tekhn. red.

[Technology of the production of milled peat] Tekhnologiya proizvodstva frezernogo torfa. Moskva, Gosenergoizdat, 1962. 335 p.
(MIRA 15:12)

1. Kalininskiy torfyanoy institut (for Varentsov, Lazarev). 2. Belorusskiy politekhnicheskii institut (for Aksenov, Vasil'yev, Nikiforov, Pimenov, Shadurskiy).

(Peat)

VASIL'YEV, A.M.

Standards for and methods of industrial water supply and drying of lowland peat bogs treated by the excavator method. Sbor. nauch.trud.Bel.politekh.inst. no.65:69-82 '59.

(Peat industry)

(MIRA 13:5)

VASILYEV, A.M.
P.Z.

PHASE I BOOK EXPLOITATION SOV/3727

Rasshireniye vozmozhnostey primeneniya plastmass v konstruktsiyakh mashin (Widening the Possibilities for Using Plastics in Machinery Components) Moscow, Mashgiz, 1959. 183 p. 8,000 copies printed.

Reviewers: N.V. Popov, Engineer, and P.Z. Petukhov, Doctor of Technical Sciences; Ed.: N.I. Suslov, Engineer; Tech. Eds.: N.A. Duginina and A.F. Uvarova; Exec. Ed. (Ural-Siberian Division, Mashgiz): T.M. Somova, Engineer.

PURPOSE: The book is intended for engineers and scientists engaged in the study and manufacture of plastics and plastic machine parts.

COVERAGE: The chapters of this book were written by different authors indicated in parentheses after each chapter in the table of contents. The chapter on the use of plastics in non-Soviet countries includes data on the Skoda Works in Czechoslovakia. A number of Soviet manufacturing establishments are mentioned. Equipment using plastic parts is described and evaluated. Considerable attention is paid to nonferrous and chemical enterprises, as well as to the problem of substituting plastics for critical materials in types of equip-

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SOV/3727

Widening the Possibilities (Cont.)

ment subjected to wear or to corrosive, abrasive and chemical influences. Brand designations, properties and uses of a number of Soviet-made plastic materials are given. It is thus a survey of modern Soviet plastic materials grouped according to their specific application in industry. The authors rely heavily upon the experience of Ural plants, especially those specializing in electrical apparatus, automotive equipment, and measuring instruments. No personalities are mentioned. There are 37 references: 31 Soviet, and 5 German.

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Widening the Possibilities (Cont.)

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Widening the Possibilities (Cont.)

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Widening the Possibilities (Cont.)

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AVAILABLE: Library of Congress

AC/rem/jb

Card 6/6

7-12-60

VASIL'YEV, A.M., kand.tekhn.nauk; PLEYKIN, A.V. inzh.

More attention to the development of equipent and means of
automation for the chemical industry. Mekh. i avtom. proizv. 15
no.3:1-3 Mr '61. (MIRA 14:3)
(Automation) (Chemical industries—Technological innovations)

DOCUMENT ID: AP4005602

S/0286/63/000/022/0054/0055

AUTHOR: GANbershteyn, P. G.; Alferov, V. V.; Vasil'yev, A. M.; Posternak, M. I.; Levin, L. B.; Umnov, V. F.; Koloskov, I. A.

TITLE: Method for computing arrival time and phase of seismic waves for asynchronous digital computer processing. Class 42, no. 158732

CLASS: Byul. izobret. i tovarn. znakov, no. 22, 1963, 54-55

KEY TAGS: seismology, seismic wave, automatic data processing, data processing, seismic data, computer analysis, magnetic recording, electronic computation seismic wave, linear interpolation, arrival time, phase

ABSTRACT: A method is described for computing arrival time and phase of seismic waves for processing time into a digital computer from multichannel correlated seismograms obtained by the oscillographic method or by an inked graph. Variable tape transport mechanism speeds are minimized as a readout accuracy factor by employing magnetic material to make the strokes marking both time and the arrival times and phases. These strokes are read out by magnetic heads, the number of pulses corresponding to the strokes for the time marks is summed, and with the

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ACCESSION NR: AP4005602

entrance of a pulse for the arrival or phase of a wave a linear interpolation is made in each of the channels of the distance between the two closest time mark pulses.

SUBMITTED: 11Sep62

DATE ACQ: 03Jan64

ENCL: 00

SUB CODE: AS

NO REF SOV: .000

OTHER: 000

Card 2/2

ACCESSION NR: AP4009460

S/0051/63/015/006/0772/0780

AUTHOR: Vasil'yev, A.M.; Ye'vdokimov, V.M.

TITLE: Influence of an electric field on NMR in gases and liquids

SOURCE: Optika i spektroskopiya, v.15, no.6, 1963, 772-780

TOPIC TAGS: NMR, NMR splitting, chemical shift, nonspherical nucleus, quadrupole moment, quadrupole coupling constant, symmetrical top molecule, linear molecule

ABSTRACT: The influence of an external electric field on the splitting of the nuclear magnetic resonance spectrum of nuclei with a quadrupole moment has been considered by one of the authors in an earlier paper (A.M.Vasil'yev, ZhETF,43,1526,1962). In the present paper, the problem is treated quantum-mechanically taking into account the orientation of the molecules in the applied electric field. It is assumed that the nuclei have a non-zero quadrupole moment and are bound in a molecule with an electric dipole moment. The initial equation is the quadrupole interaction Hamiltonian of Landau and Lifshits (Kvantovaya mekhanika [Quantum mechanics],M.-L. 1948). The wave functions are derived for an axially symmetric top molecule. In addition, the case of a linear molecule is considered. The final equations charac-

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ACC.NR: AP4009460

terize the spectrum of resonance frequencies that should appear in lieu of the single NMR line. The possibility of measuring the splitting experimentally for the purpose of evaluating the quadrupole coupling constant is discussed. It is concluded that measurement of the line broadening should be feasible under the appropriate experimental conditions. Orig.art.has: 65 formulas.

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NR REV SOV: 004

OTHER: 004

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B104/3186

AUTHOR: Vasil'yev, A. M.

TITLE: The effect of the orientation of liquid molecules in an electric field on nuclear magnetic resonance

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 4(10), 1962, 1526-1528

TEXT: Molecules of liquids possessing an electric dipole moment orient themselves partly in an external electric field. A quadrupole splitting of the nuclear magnetic resonance lines is likely to be observed when these molecules contain atoms whose nuclei possess quadrupole moments. The extent of this splitting is here evaluated. The quadrupole interaction is determined with the aid of the Hamiltonian

$$\mathcal{H}_Q = \frac{1}{6} \sum_{m=-2}^2 Q^m (\nabla E)_m. \quad (1)$$

(L. D. Landau, Ye. M. Lifshits, Kvantovaya mekhanika (Quantum Mechanics) Gostekhizdat, 1948). The components of the tensors Q^m and $(\nabla E)_m$ are:

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$$\begin{aligned}
 Q^0 &= \frac{2 \cdot 3eQ}{2I(2I-1)} \{3\hat{I}_z^2 - I(I+1)\}, \\
 Q^{\pm 1} &= \frac{3eQ}{2I(2I-1)} (\hat{I}_z \hat{I}_{\pm} + \hat{I}_{\pm} \hat{I}_z), \quad Q^{\pm 2} = \frac{3eQ}{2I(2I-1)} \hat{I}_{\pm}^2, \\
 (\nabla E)_0 &= \frac{1}{2} \partial^2 \varphi / \partial z^2, \quad (\nabla E)_{\pm 1} = \partial^2 \varphi / \partial x \partial z \mp i \partial^2 \varphi / \partial y \partial z, \\
 (\nabla E)_{\pm 2} &= \frac{1}{2} (\partial^2 \varphi / \partial x^2 - \partial^2 \varphi / \partial y^2 \mp 2i \partial^2 \varphi / \partial x \partial y),
 \end{aligned} \tag{2}$$

where x, y, z are the coordinates in the laboratory system. For a rotating molecule of this type the probability that the dipole moment lies within the solid angles $\theta - \theta + d\theta$ and $\psi - \psi + d\psi$ and that the angle of rotation lies within $\varphi - \varphi + d\varphi$ becomes equal to

$$\begin{aligned}
 dW &\approx C \exp\left[-\frac{\rho E \cos \theta}{kT}\right] \frac{\sin \theta}{2} d\theta \frac{d\psi}{2\pi} \frac{d\varphi}{2\pi} \approx \\
 &\approx \left[1 - \frac{\rho E \cos \theta}{kT} + \frac{1}{2} \left(\frac{\rho E}{kT}\right)^2 \left(\cos^2 \theta - \frac{1}{3}\right)\right] \frac{\sin \theta}{2} d\theta \frac{d\psi}{2\pi} \frac{d\varphi}{2\pi}.
 \end{aligned} \tag{4}$$

The products $a_{ik} a_{jm}$ of the direction cosines of the system are averaged by

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using (4) and the field so averaged is found to be axisymmetric with its axis of symmetry directed along the electric field. The matrix elements of \mathcal{H}_Q read:

$$(m | \mathcal{H}_Q | m') = \frac{3eQ}{2I(2I-1)} \frac{a}{6} [3m^2 - I(I+1)] \delta_{mm'}$$

Several resonance frequencies occur instead of one γH if the electric field is parallel to the magnetic field:

$$\omega_m = \gamma H + \frac{3eQ}{2I(2I-1)} \frac{a}{2\hbar} [2m+1], \quad m < J.$$

The frequency splitting $\delta\omega = \omega_{m+1} - \omega_m$ is then given by

$$\delta\omega = \frac{3eQ}{2I(2I-1)} \frac{a}{\hbar} = \frac{e^2 q Q}{2\hbar} \left(\frac{pE}{kT} \right)^2 \frac{1}{2I(2I-1)}$$

According to data obtained by Ch. Tauns and A. Shavlov (Radiospektroskopiya, IIL, 1959), the value of $e^2 q Q$ varies from 10^3 to 1 mc/sec

($p = 10^{-18}$ CGSE units). For $p = 6 \cdot 10^{-18}$, one obtains $e^2 q Q = 40$ mc/sec
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and $I = 3/2$. Conclusions: At $T = 300^\circ\text{K}$ and $E = 100 \text{ kv/cm}$, one obtains $\delta\omega = 3 \text{ kc/sec}$. In the case of quadrupole relaxation, the line width can be estimated from $\Delta\omega = \frac{4}{5} \pi^2 (e^2 qQ/\hbar)^2 \tau_c$, where τ_c is the correlation time ($\sim 10^{-11} \text{ sec}$). $\Delta\omega = 12 \text{ kc/sec}$ is obtained. Hence, a splitting or at least a broadening of the lines of nuclear magnetic resonance can be observed in strong electric fields. ✓

SUBMITTED: May 18, 1962

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L 13027-63 EPF(c)/EWT(1)/BDS AFFTC/ASD/ESD-3 Pr-4/Pi-4 IJP(C)/GG
ACCESSION NR: AP3000627 S/0181/63/005/005/1430/1443

AUTHOR: Vasil'yev, A. M.

TITLE: The effect of an applied electrical field on nuclear resonance 64

SOURCE: Fizika tverdogo tela, v. 5, no. 5, 1963, 1430-1443 21

TOPIC TAGS: nuclear resonance, electron shell, quadrupole moment, sodium chlorate, sodium borate

ABSTRACT: The author has used the positive ion of sodium as an example in examining one method by which an applied electrical field may affect the frequency of nuclear resonance. He employs a number of mathematical approximations and concludes that the applied field polarizes the electron shell of ions in the crystal. In the second approximation, involving the theory of excitation, the value of the quadrupole bond changes, and this leads to a change of frequency. For a field of 10 kv/cm, the frequency at $\cos \Theta = 1$ is 140 cps. A shift in frequency of this magnitude is apparently not difficult to detect experimentally, especially if a variable electrical field is used, leading to frequency modulation of the quadrupole-resonance signal. NaClO₃ and NaBrO₃ might be suitable crystals for observation. Orig. art. has: 29 formulas, 2 tables, and 1 figure.

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