"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, Ya.K., inzh.

Boring holes with flushing in upraise workings. Bezop. truda v prom. 7 no.4:29 Ap '63. (MIRA 16:4)

1. Shakhta No. 71 kombinata Kizelugol'.
(Boring)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, Ye., inzh.

Department of innovations in commercial aeronautics. Grazhd.av. 20 no.4:17 Ap '63. (MIRA 16:5)
(Aeronautics, Commercial--Technological innovations)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, K.L.; [illegible], S.G., otv. red.

[Radiogeodesy; course of lectures] Radiogeodezia; kurs lektsii. Novosibirsk, Novosibirskii in-t inzhenerov geodezii, aerofotos"emki i kartografii. Pt.3. 1962. 94 p. (MIRA 17:7)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, K.L.; ALEKSEYEV, V.I., otv. red.

[Radio geodesy; course of lectures for students of the Novosibirsk Institute of Engineers of Surveying, Aerial Photography, and Cartography] Radiogeodeziia; kurs lektsii dlia studentov Novosibirskogo instituta inzhenerov geodezii, aerofotos"emki i kartografii. Novosibirsk, Novosibirskii in-t inzhenerov geodezii, aerofotos"emki i kartografii. Pt.2. No.1. [Radar and geodimeter methods of distance measurement (characteristics and description of certain radar and geodimeter range-finders are given in the second number of Part 2)] Radio- i svetolokatsionnye metody izmereniia rasstoianii. 1963. 164 p.
(MIRA 17:9)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, K.L.

Thirtieth anniversary of the Novosibirsk Institute of Geodetic, Aerial Survey and Cartographic Engineers. Geod. i kart. no.3: 8-14 Mr '63. (MIRA 16:7)

(Novosibirsk--Geodesy)
(Novosibirsk--Cartography)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

S/006/63/000/003/001/001

AUTHOR: Provorov, K. L.

TITLE: The 30th Anniversary of the Novosibirsk Institute of Engineers of Geodesy, Aerial Photography and Cartography

PERIODICAL: Geodeziya i kartografiya, no. 3, 1963, 8-14

TEXT: Article presents a short history of the institute, cites numbers of students in three faculties and the graduate school, and the total number of graduates in engineering and astronomical geodesy, aerophotography-geodesy and cartography.

Accomplishments of selected graduates are given, and a breakdown of various institutes and governmental agencies employing graduates follows. A review of the courses of study and institute physical plant is given, as well as a critique of the shortcomings and problems of the school and faculty. Finally, the institute resolves to raise its level of instruction, to increase its coordination with other scientific institutions and industries, and to better carry out the Party's instructions in building the Communist society.

Organizations Mentioned: Novosibirskiy Institut Inzhenerov geodezii, aerofotosyomki u Kartografii (NIIGAIK) (Novosibirsk Institute of Engineers of Geodesy, Aerial

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The 30th Anniversary .....

Photography and Cartography); Kuznetskiy Metallurgicheskiy Kombinat (Kuznets Metallurgical Combine); Ministerstvo Geologii i Okhrany nedr (Ministry of Geology and Resource Conservation); Institut Geologii i Geofiziky Sibirskogo Otdeleniya AS USSR (Institute of Geology and Geophysics, Academy of Sciences, USSR); Moskovskiy Institut Inzhenerov Geodesii, Aerofotosyomky u Kargografii (Moscow Institute of Engineers of Geodesy, Aerial Photography and Cartography), GUGK (Glavnoye Upravleniye Geodesii i Kartografii) Main Administration of Geodesy and Cartography; ITR (Not further identified): Sibirskiy Astronomo-Geodezicheskiy Institut (Siberian Astronomo-Geodesic Institute, in 1932-33 name of NIIGAIK); Novosibirskiy Inshenerno-Stroitel'niy institut (Novosibirsk Engineering-Construction Institute, from 1933-39 name of NIIGAIK) Personalities mentioned: V. V. Polevtsev, D. F. Kiryan, O. A. Beloglazov, L. I. Markov, P. A. Bolotov, A. A. Taskayev, A. V. Byshuyev, G. Sheptunov, Engineer, A. Sheptunov, Engineers. I. A. Treskov, A. K. Gusarov, Yu. A. Bykov, Yu. Ye. Senatorov, I. T. Antipov. Proректor of Institute, S. I. Redionov, Dean of Cartographic Faculty, O. V. Sokolov, A. N. Gridchin, A. A. Vizgin, all holders of chairs, G. I. Karatayev, Senior Scientific Fellow of Institute of Geology and Geophysics of Siberian Section, AS, USSR, P. S. Zakatov, A. A. Isotov, A. I. Durnev, M. S. Solovyov, Mazmishvili, A. M. Virovets, V. V. Danilov, F. V. Drobyshev, I. D. Chulkov, Professors. P. A. Khodorovich, First Chair of Higher Geodesy; A. F. Lyuts, B. V. Vasilyevskiy, A. S.

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The 30th Anniversary S/006/63/000/003/001/001

Yurkevich, First Chairs of Engineering Geodesy; V. V. Popov, Member AS USSR; D. A. Kuleshov, Professor. A. F. Burtsev, N. G. Bazhanov, A. S. Nuvar'yev, P. A. Sokolov, all Lecturers. S. A. Luk'Yanov, Senior Instructor. S. Ya. Beliy, A. I. Argoskin, N. V. Shubin, I. I. Markson, A. V. Butkevich, G. I. Znamenshchikov, A. I. Piotrovskaya, A. M. Yurshanskiy, F. I. Ovsyaninkova, L. F. Tarnovskiy, V. Ya. Finkovskiy, O. V. Sokolov, A. N. Gridchin, Chairmen. N. I. Shat'ko, L. I. Borodin, N. N. Parkhomenko, V. I. Usol'tsev, Instructors. V. M. Miromanov, V. P. Napalkov, B. A. Glovatskiy, P. A. Karev, S. M. Gornykh, F. N. Noskov, O. A. Mayer, M. A. Fedorova, P. D. Guk, V. A. Rudakov, G. A. Znamenshchikov, G. A. Meshcheryakov, F. P. Noskov, I. M. Pavlov, E. I. Donskikh, V. Ya. Yashin, P. A. Karev, V. M. Goryacheva.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

S/035/62/000/008/072/090
A001/A101

AUTHOR: Provorov, K. L.

TITLE: The accuracy of determination of a point by linear intersection

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 8, 1962, 21, abstract 8G184 ("Tr. Novosib. in-ta inzh. geod., aerofotos"yemki i kartogr.", 1961, v. 14, 3 - 8)

TEXT: The rms error in measuring distances by modern radio- and optical range finders can be considered as the sum of two summands, one of which (m_s) is independent of the length of the line measured and the second (μ_s) is proportional to this length. In measuring distances up to 10 - 15 km, the first summand has a prevailing effect, owing to which the lines can be considered as measured with equal accuracy. On this basis (in so far as introduction of points by linear intersections must be used mainly in constructing networks of lower classes) the author solves error equations for the sides of intersection under condition [vv] = min and derives formulae for rms errors of adjusted quantities. It is seen from the formulae that the accuracy of point position, determined by

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linear intersection, does not depend on distances to initial points, and, consequently, on the shape of a triangle formed from these points. The diagram of point position errors determined by linear intersections from three points, shows that these errors slightly depend also on the location of the point itself relative to initial points: at considerable distances their magnitude can be considered as constant, equal to 1.2 m_s. In measuring distances over 20 km, the effect of the second summand of the error (μ_s) becomes more pronounced, and error equations for intersection sides (d) should be solved under condition $\left[\left(\frac{V}{d}\right)^2\right] = \min$. In this case formulae for rms errors of adjusted elements coincide with formulae derived by the author earlier (RZhAstr, 1957, no. 7, 6132) for direct angular intersections (if x and y are interchanged in them).

V. Pavlov

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, K.L., prof., doktor tekhn.nauk

Comparing the precision of triangulation, trilateration, and the combined triangulation-trilateration method. Izv.vys.ucheb.zav.; geod.i aerof. no.1:57-64 '60. (MIRA 13:6)

1. Novosibirskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii.
(Triangulation)

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SOV/35-59-11-9/[illegible]

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, Nr 11, pp 134 - 135 (USSR)

AUTHOR: Provorov, K.L.

TITLE: The Accuracy of the Network Elements of Linear Triangulation

PERIODICAL: Tr. Novosib. in-ta inzh. geod. aerofotos"yemki i kartogr., 1958, Nr 11, pp 3 - 21

ABSTRACT: Formulae are derived for the calculations of errors of adjusted elements of the detail triangulation network with measured sides. It is assumed that the network is composed of equilateral triangles, that the errors in the measurements of the sides are random, that there are two initial azimuths in the network arranged over N triangles. The conditions arising in connecting the network to triangulation points of the higher order, are not taken into consideration. The relation between the corrections of the sides of a triangle and the corrections of its angles, is found preliminarily. Following this, are compiled: a conditional equation of the horizon for linear triangulation, a conditional equation of azimuths for a network of N triangles (with N being even), in which

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The Accuracy of the Network Elements of Linear Triangulation SOV/35-59-11-9577

angle corrections are replaced by corrections of sides, and the expressions for the longitudinal (t_n) and the lateral (u_n) displacements of the network of n triangles (with n even). For the root-mean-square errors of adjusted elements of the network of linear triangulation, the following formulae are obtained:

$$m_{\alpha_n} = \frac{\rho\, m_a}{a} \sqrt{\frac{16n\,(N-n) + 8N + 3}{6\,(2N+1)}}, \qquad m_{t_n} = m_a \sqrt{\frac{n\,(2N-n+1)}{2\,(2N+1)}},$$

$$m_{u_n} = m_a \sqrt{\frac{n(4n^2 - 3n + 26)}{36} - \frac{(2n^2 - n - 4)^2}{24\,(2N+1)}},$$

where α_n is azimuth of the connecting side of the triangle with the number n, m_a - is the root-mean-square error of the measured side; a - is the length of the side of the triangle. For clarifying the nature of the errors in the detail network of linear triangulation, were calculated the inverse weights of adjusted azimuths of the connecting sides of several triangles, and the adjusted length of the side of the triangle situated in the middle of a series. The inverse weights were found from the adjustment of an ordinary network of 16 triangles with two initial azimuths and also of a triple, quintuple, septuple and a ninefold network. According to the results of the calculations the author makes the following conclusions: the accuracy of the azimuths in the detail network of

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The Accuracy of the Network Elements of Linear Triangulation SOV/35-59-11-9577

linear triangulation is practically the same for all the sides; the root-mean-square errors of the length of the sides in the detail network are decreased by 18% after the adjustment; the quintuple network of triangles can be considered as a network equivalent to the detail network of any size. All the subsequent conclusions are made for the quintuple network of triangles. From the examination of coefficients of the system of normal equations, formulae are derived for determination of the root-mean-square errors of the adjusted azimuth and the lengths of the side of the middle triangle between the initial sides;

$$m_\alpha = \frac{m_a}{a} \rho \sqrt{\frac{N + 90}{75}}, \qquad \frac{m_s}{s} = \frac{5\, m_a}{6\, a}.$$

For determination of the root-mean-square error of the adjusted angle the formula is suggested.

$$m_y = \frac{5\, m_a}{4\, a} \rho .$$

The longitudinal and lateral error in the mutual position of non-adjacent points between which are situated n triangles, are calculated according to the formulae.

$$m_{t_n} = m_a \sqrt{\frac{(N + 15)\,(n + 11)}{10\,(N + 25)}}$$

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The Accuracy of the Network Elements of Linear Triangulation COV/35-59[illegible]-9577

$$m_{\lambda_n} = m_a \sqrt{\frac{(N + 15)(pn^2 + 12n + 8)}{30(N + 25)}}$$

Quantities	Root-mean-square error	
	Linear Network	Angular Network
The measured angle in the angular network and the angle calculated from the measured sides in the linear network	± 1°,2	± [illegible]
The initial side in the angular network and the measured side in the linear network	1:250,000	1:240,000
The adjusted side of the triangle	1:300,000	1:250,000
The adjusted azimuth of the side of the triangle	± 1°,1	± [illegible],8
The errors in the mutual positions of the adjacent points: longitudinal	± 2,5 cm	± 3,[illegible] cm
lateral	± 4,7 cm	± 2,9 cm
total	± 5,3 cm	± [illegible],2 cm

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The Accuracy of the Network Elements of Linear Triangulation SOV/35-59-3-9377

In conclusion the calculation of the error values of elements of the linear triangulation network is performed by the derived formulae. It was assumed that $a = 7,5$ km, $\frac{m_a}{a} = 1:250,000$ the error of the initial azimuth $m_a = \pm 0$ [illegible] is not greater than 24. The results of the calculation are summarized in a table. For comparison, the pertaining values of the errors for the detail triangulation network with measured angles are cited, in which the bases and azimuths were measured over 2[illegible] triangles.

[illegible] Fatynskiy

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3(4) SOV/154-59-3-4/19

AUTHOR: Provorov, K. L., Professor, Doctor of Technical Sciences

TITLE: Accuracy of the Triangulation Chain With Measured Sides and Angles (Tochnost' tsepi triangulyatsii s izmerennymi storonami i uglami)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"-yemka, 1959, Nr 3, pp 33 - 50 (USSR)

ABSTRACT: Derivation and analysis of the formulas for the errors of the adjusted elements of a chain consisting of equilateral elements (Fig 1) are given here. The formulas obtained (27), (36), (44) and (50) permit the determination of the root mean square errors in the adjusted elements of the triangle chain, in dependence of the number of triangles in the chain and the root mean square errors of the measured angles and sidelengths. These formulas may be applied in the case of

$1 : 500000 < \frac{m_s}{m.s} < 1 : 100000$. m and m_s are the root mean square errors of the measured angles and sides, respectively. These are the simplest and most convenient formulas applicable

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in computations. Accurate formulas are derived without difficulties, but as they are very bulky their use is rather complicated. The formulas obtained make it possible to compare the accuracy of correspondent quantities of the adjusted chain from equilateral triangles with the various measured elements. Formulas (51), (52) and (53) were used herein. The root mean square errors of the measured quantities are easily determinable by the calculus of observations with formulas (58). It may be observed from these formulas that in order to evaluate the accuracy it is necessary to know the quantity q, formula (9). When not knowing q it is not possible to carry out the calculus of observations, q being the ratio of the weights of the quantities to be adjusted. It may be observed from (9) that the determination of q requires the knowledge of m and $\frac{m_s}{s}$ prior to the adjustment. If these errors are determined with sufficient reliability, q as well may be determined with sufficient accuracy. m is determinable to a satisfactory degree with the observation program or by formula (59).

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$\frac{m_s}{s}$, however, is not safely determinable with the measuring data. A simplified method is shown for the determination of $\frac{m_s}{s}$ and formula (63) is derived for this purpose. There are 6 tables and 2 Soviet references.

ASSOCIATION: Novosibirskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii (Novosibirsk Institute of Geodetical-, Aerial Surveying-, and Cartographical Engineers)

SUBMITTED: December 7, 1958

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

SOV/154-58-1-1/22

AUTHORS: Provorov, K. L., Professor, Vizgin, A. A. Docent

TITLE: Angular Measurements on Base Net Stations (Uglovyye izmereniya na punktakh bazisnykh setey)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka, 1958, Nr 1, pp 3-22 (USSR)

ABSTRACT: It is shown that observations in simple base nets according to the standard program and in compound nets under the condition of the most advantageous distribution of weights of angles (Ref 3, Sections 114, 115) do not offer essential advantages in comparison with observations according to the "method in all combinations" following the same program as in regular trigonometrical points of the correspondent class. Furthermore it is shown that in the investigation of base nets of a rhombic form the reciprocal weight of the logarithm of the input side can be computed with sufficient data according to the formula quoted here (38). There are 3 figures, 2 tables, and 10 references, 10 of which are Soviet.

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Angular Measurements on Base Net Stations SOV/154-58-1-1/22

ASSOCIATION: Novosibirskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii
(Novosibirsk Engineering Institute of Geodesy, Aerophotography and Cartography)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, K.L., prof.; VIZGIN, A.A., dotsent

Angular measurements on base net points. Izv. vys. ucheb. zav.; geod. i aerof. no.1:3-22 '58. (MIRA 11:7)

1. Novosibirskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii.

(Triangulation)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, Konstantin Leont'yevich.

Novosibirsk Inst of Engineers of Geodesy, Aerophotography, and Cartography. Academic degree of Doctor of Technical Sciences, based on his defense, 11 June 1954, in the Council of Moscow Inst of Engineers of Geodesy, Aerophotography, and Cartography, of his dissertation entitled: "The Structure of Continuous Triangulation Networks" presented in competing for the academic degree of candidate of sciences and for the academic title of professor of the chair "Engineering Geodesy."

Academic degree: Doctor of Sciences
Academic title: Professor

SO: Decisions of VAK, List no. 11, 14 May 55, Byulleten' MVO SSSR, No. 15, Aug 56, Moscow, pp. 5-24, Uncl. JPRS/NY-537

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PHASE I BOOK EXPLOITATION 414

Provorov, Konstantin Leont'yevich

O postroyenii sploshnykh setey triangulyatsii (The Construction of Continuous Grids in Triangulation) Moscow, Geodezizdat, 1957. 56 p. 3,500 copies printed.

Ed.: Zakatov, P.S.; Tech. Ed.: Romanova, V.V.; Ed. of Publishing House: Khromchenk, F.I.

PURPOSE: This booklet is intended for scientists and geodetic specialists.

COVERAGE: The author discusses the replacement of the continuous triangulations of 2nd and 3rd orders by a triangulation of a different kind. The precision of the new method together with the technical and economic advantages of the suggested approach is stressed and various methods of adjustment for this new triangulation are included. Modern continuous triangulation of the 2nd and 3rd order is of high precision, but the exactitude of the relative position of points for these two groups is not the same.

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If the adjacent points of the 2nd order survey are determined with a mean quadratic error of 1:275,000, the error of a point for the 3rd order triangulation is 1:150,000 or 1:200,000, and the error in relative position of two adjacent points of the same 3rd order triangulation will be 1:130,000. The new method will have, besides, a 20 percent economy for angular measurements, a mean quadratic error a ±1"0 and 1:240,000 for the mean quadratic error in length. With the introduction of single triangulation of enhanced precision the volume of error compensating adjustments will greatly increase but this can be taken care of by use of electronic calculating machines. In using the common mechanical or electromechanical computers, a great simplification of the procedure can be achieved by E. Regöczi's method. This consists in formation and adjustment of principal triangles which are precalculated from separate intervening triangulation systems. Accidental and systematic errors in angular measurements and the precision of compensated coordinates for any one class of triangulation must be taken into consideration.

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The Construction of Continuous Grids in Triangulation

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, Konstantin Leont'yevich (Novosibirsk); ZAKATOV, P.S., red.; KHROMCHENKO, F.I., red.izd-va; ROMANOVA, V.V., tekhn.red.

[The construction of continuous networks in triangulation] O postroenii sploshnykh setei trainguliatsii. Moskva, Izd-vo geodez.lit-ry, 1957. 56 p. (MIRA 11:2)
(Triangulation)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

AUTHORS: Kheraskova, Ye.P., Okhnapkina N.A., Provorov, V.N. 32-7-9/49

TITLE: Method for the Determination of the Unbound Content of Sulphur in Rubber Substances, Containing Sulphuric Catalyzers (Metod opredeleniya svobodnoy sery v rezinakh, v sostav kotorykh vkhodyat serosoderzhashchiye uskoriteli)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 7, pp. 798-800 (USSR)

ABSTRACT: Here the sulphite method is recommended where the rubber samples are heated with a sodium sulphite solution. The unbound sulphur enters a union with sulphite and becomes tiosulphate which can be determined by a iodometric titration. The surplus of sulphite remained unbound is bound with formalin. In the presence of sulphuric catalyzers this method cannot be used, as the results would be higher. As the other methods shown here - among them also an American method - proved as not very efficient, a new method was suggested. As adsorbents of the catalyzer and the waste products activated coal of the type (KAD), (OU) and (AP-3) was recommended. This should lead to the desired results in all cases dealt with here. There are 3 figures.

ASSOCIATION: Scientific Research Institute for Rubber Consumer Products (Nauchno-issledovatel'skiy institut rezinovykh izdeliy shirokogo potrebleniya)

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S/081/60/000/019/009/012
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 19, p. 546, # 79525

AUTHORS: Kheraskova, Ye. P., Okhapkina, N. A., Provorov, V. N.

TITLE: Determining Free Sulfur in Rubbers by Various Methods

PERIODICAL: V sb.: Metody analiza syr'ya i materialov, primenyayemykh v rezin. prom-sti Moscow, 1959, pp. 4-9

TEXT: Various methods of determining free S are compared including: the sulfite (Bolotnikov and Gurova), the Hartman (with a Cu-network), the American (improved sulfite method) and the NIIR method (sulfite method using activated carbon. The latter is the simplest and most accurate method. The following types of activated carbon are recommended: КАД (KAD) (ground); ОУ (OU) (acid); ОУ (OU) (alkaline); КАД (KAD) (iodine); БАУ (BAU); АР-3 (AR-3) (granulated).

O. Belyatskaya

Translator's note: This is the full translation of the original Russian abstract.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

S/138/63/000/001/007/008
A051/A126

AUTHORS: Provorov, V. N., Panasova, N. I.

TITLE: Polarographic study method of rubbers and latexes

PERIODICAL: Kauchuk i rezina, no. 1, 1963, 56 - 58

TEXT: Data are submitted from the polarographic determination of free fatty acids in СКС (SKS) and СКБ (SKB) rubbers; of emulsifiers in styrene latexes, and of free metacrylic acid in SKS-30-1 latex. a) The present chemical determination method of free fatty acid in synthetic rubbers is considered inconvenient since the extracts are usually colored from yellow-rose to brown. A polarographic method based on the linear relation of a diffusion current to the acid concentration within the concentration range of 0.0002 - 0.0007, has been developed; the M8-200 (M-8-200) polarograph (designed in the Institute of Chemistry of the Gor'kiy University) was used for the experiments on the SKS-30 (СКС-30 АРМ (SKS-30 ARM), and on stearic acid synthetic mixes, with an accuracy of ±8 relative %. b) Determination of emulsifiers (Nekal, leucanol and НФ (NF) dispersor) by the polarographic method is based on the use of their surface-active properties.

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Polarographic study method of rubbers and latexes

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A051/A126

Oxygen, on a 0.01 n KCl background, was used as the substance forming the polarographic maximum. In the presence of 2 or more emulsifiers in equal quantities, their actions are added together. Polarographic results, requiring 20 minutes, coincide with those of the colorimetric method, lasting 40 - 45 minutes. c) A 0.5 n tetraethylammonium iodide solution in water served as the background for studying the behaviour of metacrylic acid (MAA), without casing latex coagulation. There is a linear relation between wave height and concentration with a 0.001 - - 0.005 n concentration range. Free MAA can be determined in latex only if it has not been subjected to additional processing with acids or alkalis. The data obtained prove the polarographic determination method of free MAA in latexes to be satisfactory. There are 1 figure and two tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific Research Institute of Rubber and Latex Articles)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

[illegible]

Quantitative determination of accelerators, antiageing agents and some softeners in rubbers. Kauch. i rez. 24 no.6:54-59 [illegible] 1965. (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, V.N.; PANASOVA, N.I.

Polarographic method of rubber and latex analysis. Kauch.i rez. 22 no.1:56-58 Ja '63. (MIRA 16:6)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.

(Rubber--Analysis) (Polarography)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

DOBROVOL'SKAYA, N.N.; PROVOROV, V.N.; TARADAY, Ye.P.

Identification of acclerators and antiaging agents in rubbers. Trudy Kom.anal.khim. 13:191-195 '63. (MIRA 16:5)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.

(Rubber--Analysis)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

DOBROVOL'SKAYA, N.N.; PROVOROV, V.N.

Identification of the compounding ingredients of rubbers. Trudy Kom.anal.khim. 13:166-170 '63. (MIRA 16:5)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.

(Rubber--Analysis)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, V.N.; ZAYTSEVA, V.D.; GAL'BRAYKH, I.Ye.; UR'YAN, R.S.

Photometric method for evaluating textile materials of colored rubbers. Kauch.i rez. 21 no.9:57-58 S '62. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy i zavod "Krasnyy treugol'nik."
(Rubber--Testing)
(Photometry)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROV, V.N.

Second All-Union Conference of Chemist Analysts of the Rubber Industry. Kauch. i rez. 20 no.6:57-58 Je '61. (MIRA 14:6)
(Rubber industry--Congresses)
(Rubber--Analysis)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOROVA, Yu.G.

Is fall plowing needed on vegetable-growing collective farms? Zemledelie 4 no.11:106 N '56. (MLRA 10:2)

1. Agronom kolkhoza "Ogorodnik," Kostromskogo rayona, Kostromskoy oblasti.
(Plowing)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTORKHOV, V.S.

Laboratory work on heat engines in a pedagogical institute.
Politekh.obuch. no.10:66-69 O '59. (MIRA 13:2)

1. Chocheno-Ingushskiy pedagogicheskiy institut.
(Heat engines)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTOREKHOV, V. S.

Some methodological instruction for the conducting of practical work in tractors and motor vehicles in a teachers institute. Uch. zap. GGPI no.8:161-166 '58. (MIRA 13:8)
(Motor vehicles) (Tractors)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

L 27756-66 EWT(d)/EWT(m)/EWP(f)/T DJ

ACC NR: AP6009917 (A) SOURCE CODE: UR/0413/66/000/004/0115/0115

AUTHOR: Provotorkhov, V. S.

ORG: none

TITLE: Internal combustion rotary-piston engine. Class 46, No. 179118

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4, 1966, 115

TOPIC TAGS: internal combustion engine, internal combustion engine component, piston engine

ABSTRACT: An Author Certificate has been issued for an internal-combustion reciprocating engine containing a housing with a toothed piston rotating on a shaft cam; it also has synchronized internal gears mounted rigidly in the housing, which provide the planetary motion of the piston. To simplify the design and minimize the dimensions, the synchronized gears are made to serve as working parts for the oil pump; the end of the cam is designed with a crescent-like projection located between the gears, thus forming pressure chambers with both the latter and the side wall of the housing (See Fig. 1). Orig. art. has: 1 figure. [LD]

UDC: 621.437.2-72

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L 22756-66

ACC NR: AP6009917

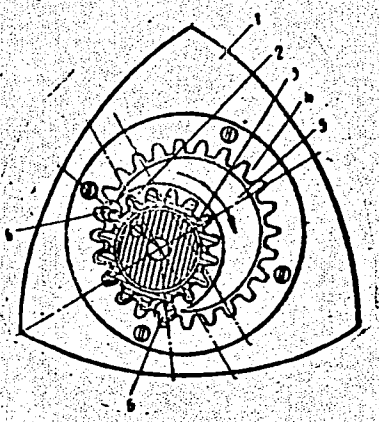

Fig. 1. Internal-combustion reciprocating engine. 1 - toothed piston; 2 - shaft cam; 3 - synchronized gear; 4 - piston gear; 5 - crescent-shape projection; 6 - borings

SUB CODE: 21 SUBM DATE: 10Oct64

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTOROV, A.P.

Introducing the method for multiple punching of holes. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no. 12:59-60 D '65 (MIRA 19:1)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

AUTHOR: Provotorov, B. N. SOV/2o-12o-4-41/67

TITLE: On the Chemical Reactions of Atoms With Energies Comparable With the Activation Energy (O khimicheskikh reaktsiyakh atomov s energiyey, sravnimoy s energiyey aktivatsii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 12o, Nr 4, pp. 838 - 84o (USSR)

ABSTRACT: If the energy of an atom is of the same order as the activation energy of the chemical reaction, the probability of the chemical reaction can be expressed by the specific velocity K(T) of the chemical reaction. K(T) can either be computed by the method of the activated complex or determined by experiment. First an expression for the quantity $K(T)n_A n_B$ of molecules forming per unit of time and per unit of volume (according to the scheme $A+B \longrightarrow C+D$) is given. n_A denotes the concentration of the atoms of the gas A, and n_B - the concentration of the molecules of the gas B. The atoms A are assumed to be in the ground state. The threshold energies of the reaction can, according to the above given expression, be different for every channel. In the case

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$\varepsilon_n \lesssim kT$ the threshold energy can be assumed to be equal for all channels. ε_n means the energy of the n-th quantum state of the molecule B. The magnitude of K(T) also depends on the cross section σ_n of the chemical reaction. The present paper shows the following: If the atom has a certain velocity $v_A \lesssim v_o$ the probability of the chemical reaction can be expressed as a function of the cross section $\sigma_n(v_o)$. $v_o = \sqrt{2E_o/\mu}$ denotes the threshold energy of the reaction. Terms are given for the distribution to the relative velocities and for the probability of the chemical reaction per unit time. The final expression for the mentioned probability $\alpha(v_o)$ is explicitly written down.

PRESENTED: January 24, 1958, by V.N.Kondrat'yev, Member, Academy of Sciences, USSR

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

On the Chemical Reactions of Atoms With Energies Comparable With the Activation Energy SOV/20-120-4-41/67

SUBMITTED: January 21, 1958

1. Atoms--Chemical reactions 2. Atoms--Energy 3. Chemical reactions--Energy 4. Chemical reactions--Velocity 5. Mathematical analysis

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTOROV, B.N.

Nuclear magnetic resonance in solids. Opt.i spektr. 11 no.1:123-125 Jl '61. (MIRA 14:10)

(Nuclear magnetic resonance and relaxation)

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S/056/61/041/005/024/038
B102/B138

24,7900 (1147,1163,1055)

AUTHOR: Provotorov, B. N.

TITLE: Magnetic resonance saturation in crystals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 5(11), 1961, 1582-1591

TEXT: From the fundamental Bloembergen-Purcell-Pound equation (Phys. Rev. 73, 679, 1948) in the theory of magnetic resonance in solids it follows that the absorption line should broaden with increasing h-f field strength (H_1) for any values of H_1 - a fact which is in contradiction with experimental observations (A. Redfield, Phys. Rev. 98, 1787, 1955). A kinetic equation for magnetic resonance in solids is deduced from the exact quantum equation for the density matrix

$$\frac{\partial \rho(t)}{\partial t} = -\frac{i}{\hbar}\left[-\hbar\omega_0 \hat{I}_z + \frac{\mu H_1}{2}\left(\hat{I}^1 e^{i\omega t} + \hat{I}^{-1} e^{-i\omega t}\right) + \hat{H}_{dip}, \rho(t)\right], \quad (3)$$

$$\hat{H}_{dip} = g^2\hbar^2 \sum_{i>k}\left(\frac{\hat{s}_i \hat{s}_k}{r_{ik}^3} - 3\frac{(\hat{s}_i r_{ik})(\hat{s}_k r_{ik})}{r_{ik}^5}\right).$$

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$\hat{I}_{x,y,z}$ denote the operators of the total-spin projections on to the coordinate axes, $I^{\pm 1} = \hat{I}_x \pm i\hat{I}_y$, $\hat{s}_i$ the spin operator for the i-th lattice site, r_{ik} - a vector leading from the i-th site to the k-th one. Of all the possible interactions only magnetic dipole-dipole interaction is taken into account. With $\varrho(t) = \exp(i\omega\hat{I}_z t)\varrho'(t)\exp(-i\omega\hat{I}_z t)$ the transition is made to a rotating coordinate system ($\varrho'(t)$ is the density matrix in the new system, ω is the frequency of the H_1-field, $\omega_0 = \mu H_0/\hbar$, H_0 the constant magnetic field $s\mu$ the magnetic moment of the particles). With the initial condition

$$\rho_0' = \frac{\exp\{(\hbar\omega_0\hat{I}_z - \hat{H}^0)/kT_0\}}{\mathrm{Sp}\exp\{(\hbar\omega_0\hat{I}_z - \hat{H}^0)/kT_0\}}. \quad (6)$$

and

$$\rho'(t) = e^{-i\hat{H}t/\hbar}\rho''(t)\,e^{i\hat{H}t/\hbar}, \quad (8)$$

$$\partial\rho''(t)/\partial t = -i\hbar^{-1}[V(t), \rho''(t)], \quad (9)$$

$$V''(t) = \tfrac{1}{2}\mu H_1 e^{i\hat{H}t/\hbar}(\hat{I}^{+1} + \hat{I}^{-1})e^{-i\hat{H}t/\hbar}. \quad (10)$$

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and $\varrho''(t) = \varrho_1(t) + \varrho_2(t) = \hat{P}\varrho''(t) + (1-\hat{P})\varrho''(t)$ the kinetic equation is derived using the method of R. Zwanzig (J. Chem. Phys. 33, 1338, 1960). The following relations are found:

$$\frac{d\rho_1(t)}{dt} = -\frac{\pi}{2}\left(\frac{\mu H_1}{\hbar}\right)^2 \hat{P}' \, [\hat{I}^1_{-\Delta} \, [\hat{I}^{-1}_{\Delta}, \rho_1(t)]]. \qquad (22)$$

for which the law of conservation $\frac{d}{dt}\mathrm{Sp}\{\varrho_1(t)\hat{H}\} = 0$ holds;

$$\frac{d}{dt}\mathrm{Sp}\,\{\rho_1(t)\,\hat{H}\} = -\frac{\pi}{2}\left(\frac{\mu H_1}{\hbar}\right)^2 \mathrm{Sp}\,\{\hat{P}'\,[\hat{H}, \hat{I}^1_{-\Delta}]\,[\hat{I}^{-1}_{\Delta}, \rho_1(t)]\}.$$

and, since $[\hat{H}, \hat{I}^1_{-\Delta}] = 0$, $[\hat{H}^0, \hat{I}^1_{-\Delta}] = -\hbar\Delta\hat{I}^1_{-\Delta}$, $[\hat{I}_z, I^1_{-\Delta}] = \hat{I}^1_{-\Delta}$ (24).

The steady-state solution reads as follows: $\varrho_{st} = \exp(-\hat{H}/kT^*)/\mathrm{Sp}\exp(-\hat{H}/kT^*)$ with

$$T^* = T_0 \frac{\Delta^2 + \mathrm{Sp}\,(\hat{H}^0)^2/\mathrm{Sp}\,\hat{I}_z^2}{\omega_0\Delta + \mathrm{Sp}\,(\hat{H}^0)^2/\mathrm{Sp}\,\hat{I}_z^2}. \qquad (26).$$

The most general form of the equilibrium distribution function

$$\rho_1(t) = \exp(\alpha(t)\,\hat{I}_z + \beta(t)\,\hat{H}^0)/\mathrm{Sp}\exp(\alpha(t)\,\hat{I}_z + \beta(t)\,\hat{H}^0). \qquad (28)$$

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contains in it the Bloembergen-Purcell-Pound solution as a particular case. For the mean values $I_z(t)$ and $H^0(t)$

$$I_z(t) = \alpha(t)(2s+1)^{-N}\mathrm{Sp}\,\hat{I}_z^2 = \frac{1}{3}\alpha(t)Ns(s+1), \qquad (34)$$
$$H_0(t) = \beta(t)(2s+1)^{-N}\mathrm{Sp}\,(\hat{H}^0)^2.$$

holds, or.

$$dI_z(t)/dt = -(\mu H_1/\hbar)^2\pi g(\Delta)(I_z(t) - y(t)), \qquad (35)$$
$$y(t) = \hbar\Delta\frac{H_0(t)}{\overline{H}_0^2}, \quad \overline{H}_0^2 = \frac{\mathrm{Sp}\,(\hat{H}^0)^2}{\mathrm{Sp}\,\hat{I}_z^2}, \quad g(\Delta) = \frac{\mathrm{Sp}\,(\hat{P}\hat{I}_{-\Delta}^2\hat{I}_{\Delta}^{-1})}{2Ns(s+1)(2s+1)^N/3}.$$

when spin-lattice relaxation is taken into account according to Bloembergen-Purcell-Pound

$$dI_z(t)/dt = -(\mu H_1/\hbar)^2\pi g(\Delta)(I_z(t) - y(t)) + (I_{0z} - I_z(t))/T_1, \qquad (36)$$
$$dy(t)/dt = (\hbar^2\Delta^2/\overline{H}_0^2)(\mu H_1/\hbar)^2\pi g(\Delta)(I_z(t) - y(t)) + (y_0 - y(t))/T_1'. \qquad (37)$$

is found; the zero subscripts indicate the initial values, T_1 and T_1' are the spin-lattice relaxation times of $I_z(t)$ and $H_0(t)$. The energy

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absorption per unit time under steady-state conditions, here $y_0 \ll I_{0z}$, is given by

$$P(\Delta, H_1) = \varepsilon(\Delta)\hbar\omega(I_{z\,ст} - y_{ст}) = \frac{\hbar\omega\varepsilon(\Delta) I_{0z}}{1 + \varepsilon(\Delta) T_1 (1 + \hbar^2\Delta^2 T_1'/\overline{H}_0^2 T_1)}. \quad (38).$$

For high saturation, when $\varepsilon(\Delta)T_1 \gg 1$, $(\Delta = \omega - \omega_0)$, the absorption line is fairly narrow and of Lorentzian shape

$$P(\Delta, H_1) = \frac{\hbar\omega}{T_1'} \frac{\overline{H}_0^2}{\hbar^2\Delta^2 + \overline{H}_0^2 T_1/T_1'}. \quad (39).$$

The results show that the absorption lines become narrower with increasing H_1. For the dispersion lines

$$I_{x,y}(t) = \frac{\mu H_1}{4\hbar} \int_{-\infty}^{+\infty} d\omega \, \mathrm{Sp}\,(\hat{P}' \hat{I}_{-\omega}^{1} [\hat{I}_{\omega}^{-1}, \rho_1(t)]) \times \quad (44)$$

$$\times e^{i\omega t \pm i\Delta t} \left\{ \left(\pi\delta(\omega - \Delta) + \mathrm{P}\frac{i}{\omega - \Delta} \right) \mp \left(\pi\delta(\omega - \Delta) - \mathrm{P}\frac{i}{\omega - \Delta} \right) \right\}.$$

$$I_x(t) = -(\mu H_1/\hbar) I_z(t) J_1(\Delta) + \left(\frac{\mu H_1 y(t)}{\hbar\Delta} \right) J_2(\Delta), \quad (45)$$

$$I_y(t) = (\mu H_1/\hbar) \pi g(\Delta) (I_z(t) - y(t));$$

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$$J_1(\Delta) = \mathrm{P}\int_{-\infty}^{+\infty} \frac{d\omega g(\omega)}{\omega - \Delta}, \qquad J_2(\Delta) = 1 + \Delta J_1(\Delta) \tag{46}$$

$$\chi'_{\text{cr}} = \frac{\mu I_{x\,\text{cr}}}{2H_1} = -\frac{\mu^2 I_{0z}}{2\hbar}\left\{\frac{(1+\varepsilon(\Delta)T_1'\hbar^2\Delta^2/\overline{H}_0^2)J_1(\Delta)}{1+\varepsilon(\Delta)T_1(1+\hbar^2\Delta^2T_1'/\overline{H}_0^2T_1)} - \frac{\varepsilon(\Delta)T_1'(\hbar^2\Delta/\overline{H}_0^2)J_2(\Delta)}{1+\varepsilon(\Delta)T_1(1+\hbar^2\Delta^2T_1'/\overline{H}_0^2T_1)}\right\}, \tag{47}$$

$$\chi''_{\text{cr}} = \frac{\mu I_{y\,\text{cr}}}{2H_1} = \frac{\mu^2 I_{0z}}{2\hbar}\,\frac{\pi g(\Delta)}{1+T_1\varepsilon(\Delta)(1+\hbar^2\Delta^2T_1'/\overline{H}_0^2T_1)}. \tag{48}$$

hold, from which it may be seen that the dispersion line width also decreases with increasing H_1 and that $\chi''(\omega, H_1)$ decreases at a higher rate than $\chi'(\omega, H_1)$ when H_1 increases. This agrees with the results from Ref. 2. The subscript CT indicates the steady-state quantities. The author thanks N. D. Sokolov for his interest and V. L. Ginzburg, S. V. Tyablikov and D. N. Zubarev for discussions. There are 9 references: 2 Soviet and 7 non-Soviet. The four most recent references to English-language publications reads as follows: Ref. 2:

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

26709
S/056/61/041/005/024/038
B102/B138

Magnetic resonance saturation in...

A. Redfield. Phys. Rev. 98, 1787, 1955; Ref. 4: F. Bloch. Phys. Rev. 105, 1206, 1957; Ref. 5: R. Zwanzig. J. Chem. Phys., 33, 1338, 1960; Ref. 7: I. Lowe, R. Noberg. Phys. Rev. 107, 47, 1957.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: May 28, 1961

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

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S/181/62/004/010/047/063
B102/B112

24.7100

AUTHOR: Provotorov, B. N.

TITLE: Double magnetic resonance in crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 10, 1962, 2940-2945

TEXT: The changes of dispersion and absorption signals that attend magnetic resonance saturation are studied. In the case of a weak alternating field ($H_1 \ll H_{loc}$, H_{loc} - absorption line width without saturation) the change of the spin-spin interaction energy has hitherto been disregarded. This is, however, not possible if the double magnetic resonance is investigated under conditions of saturation. The distribution function of the spin system is

$$\rho(t) = C \exp\left(\sum_{\alpha=1}^{R} n_\alpha(t) \hat{N}_\alpha + \beta(t) \hat{H}^1_{II}\right); \quad (1)$$

where the operator $\hat{H}^1_{II}$ represents the secular part of the spin-spin interaction and $\hat{N}_\alpha$ all possible additive integrals of motion. If

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S/056/61/041/005/024/038

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$H_1 \ll H_{loc}$ the secular part of the spin-spin interaction takes effect much more rapidly than the alternating field. The importance of the operator $\hat{N}_\alpha$ is discussed by reference to concrete cases. First, nuclear magnetic resonance is considered for $\hbar\omega/kT_0 \ll 1$, the spin part of the distribution function being $\varrho = C \exp(n(t)\hat{I}_z + \beta(t)\hat{H}^1_{II})$. Here $\hat{I}_z$ is the operator of the total spin projection onto the direction of the constant magnetic field. For this case the equations of magnetic resonance which the author has studied earlier (ZhETF, 41, 1583, 1961) using results obtained by Bloembergen et al. (Phys. Rev. 73, 679, 1948) are solved for the steady case. The solutions show that in the case of a high degree of saturation ($\gamma^2 H_1^2 T_1 T_2 \gg 1$) β changes strongly, which entails a strong change in the dispersion and absorption lines in the case of double magnetic resonance. The energy of the hf magnetic field absorbed per unit time by the spin system at the frequency ω_2 is

$$P = \hbar\omega_2 \gamma_2^2 H_2^2 \pi g_2(\Delta_2)(I_{s\,cr.} - \hbar\Delta_2 \beta_{cr.}). \quad (8)$$

* S/056/61/041/005/024/038

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from which the shape of the absorption line can be concluded. The shape of the dispersion signal is determined by

$$\chi_2'(t) = -\frac{\mu^2}{2I_2^2\hbar}\int_{-\infty}^{+\infty}\frac{d\omega g_2(\omega)}{\omega-\Delta_2}I_z(t) + \frac{\mu^2\beta(t)\hbar}{2I_2^2}\left(1+\Delta_2\int_{-\infty}^{+\infty}\frac{d\omega g_2(\omega)}{\omega-\Delta_2}\right). \quad (9)$$

$g(\Delta)$ is a function defined by Bloembergen et al., $\gamma = \mu/I\hbar$. The case of double magnetic resonance of ion crystals is studied on the basis of results from Phys. Rev. 114, 445, 1959, and ZhETF, 41, 1583, 1961. Here, the distribution function is

$$\varrho = C \exp \sum_{\alpha=1}^{R} n_\alpha(t)\hat{N}_\alpha + \beta(t)\hat{H}_{II}^1),$$ where $\hat{N}_\alpha$ is the operator of the number of magnetic particles in the state E_α. In this case too the stationary solutions are given and the line shape is studied.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, Moskva (Institute of Chemical Physics AS USSR, Moscow)

SUBMITTED: June 14, 1962

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S/056/61/041/005/024/038

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

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33579
S/056/62/042/003/039/049
B108/B102

24.4500
24.7900

AUTHOR: Provotorov, B. N.

TITLE: Quantum statistical theory of cross relaxation

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 3, 1962, 882-888

TEXT: A system of equations for the cross relaxation in spin systems containing two kinds of almost equal magnetic moments is derived from the general quantum mechanical equation for the density matrix. With the aid of the projection operator $\hat{P}$ which separates the diagonal part from the density matrix in a representation in which the pairwise commutating spin projection and dipole-dipole interaction operators, $\hat{I}_z$, $\hat{S}_z$, and $\hat{H}_{dip}$, respectively, are diagonal, the kinetic equation is obtained:

$$\frac{\partial \rho_1}{\partial t} = -\frac{\pi}{2}\left(\frac{\mu_1 H_1}{I\hbar}\right)^2 \hat{P}'[(\hat{I}^1)_{-\Delta_1}[(\hat{I}^{-1})_{\Delta_1}, \rho_1]] - \frac{2\pi}{\hbar^2}\hat{P}'[(\hat{H}^{0+}_{dip})_{-\Delta_{12}}[(\hat{H}^{0-}_{dip})_{\Delta_{12}}, \rho_1]] - \frac{2\pi}{\hbar^2}\sum_{\alpha=1}^{2}\hat{P}'[(\hat{H}^{1\alpha}_{dip})_{-\omega_{\alpha 0}}[(\hat{H}^{-1\alpha}_{dip})_{\omega_{\alpha 0}}, \rho_1]] - \quad (6),$$

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$$-\frac{2\pi}{\hbar^2}\sum_{\alpha=1}^{2}\int_{-\infty}^{+\infty} d\omega \hat{P}' \left[(\hat{F}^{1\alpha})_{-\omega}(\hat{R}^{1\alpha})_{-\omega_{20}+\omega}\left[(\hat{F}^{-1\alpha})_{\omega}(\hat{R}^{-1\alpha})_{\omega_{20}-\omega}, \rho_1\right]\right]$$

$$\omega_{10}=\frac{\mu_1 H_0}{I\hbar}, \quad \omega_{20}=\frac{\mu_2 H_0}{S\hbar}, \quad \Delta_{1,2}=\omega-\omega_{10,20}, \quad \Delta_{12}=\omega_{10}-\omega_{20}.$$

$$(\hat{A})_{\omega}=\frac{1}{2\pi}\int_{-\infty}^{+\infty} dt \exp\left(\frac{i(\bar{H}_{dip}+\hat{F})t}{\hbar}\right)\hat{A}\exp\left(-\frac{i(\bar{H}_{dip}+\hat{F})t}{\hbar}\right)e^{i\omega t}. \qquad (7)$$

$\varrho_1 = \hat{P}\varrho'$; $\varrho_2 = (1 - \hat{P})\varrho'$; $\hat{P}'\delta(0) = \hat{P}$. The terms on the right side of Eq. (6) describe the transitions between the levels of the spin system. The second term refers to cross relaxation. Owing to terms proportional to ϱ_2, Eq. (6) is inaccurate. However, this inaccuracy is only small if $\varrho_2 \ll \varrho_1$, which condition is fulfilled when simultaneously

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B108/B102

$$\frac{H_1}{H_{loc}} \ll 1, \quad \frac{\mu H_{loc}}{\hbar\Delta_{12}} \ll 1, \quad \frac{\mu H_{loc}}{\hbar\omega_{20}} \ll 1, \quad \frac{\hbar}{\mu H_{loc} T_1} \ll 1 \qquad (12).$$

Under these conditions a system of equations for cross relaxation is derived which differs from that obtained by N. Bloembergen et al. (Phys. Rev., 114, 445, 1959) is some additional terms. These describe the change in mean dipole-dipole interaction energy owing to saturation and cross relaxation. The results were obtained for a two-spin system only, but they can easily be generalized to systems with a greater number of different magnetic moments or to cases in which cross relaxation is related to transitions between the different hyperfine structure levels. There are 7 references: 2 Soviet and 5 non-Soviet. The four most recent references to English-language publications read as follows: P. Pershan. Phys. Rev., 117, 109, 1960; R. Roberts et al. Phys. Rev., 121, 997, 1961; S. Shapiro, N. Bloembergen. Phys. Rev., 116, 1453, 1959; R. Zwanzig. J. Chem. Phys., 33, 1338, 1960.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: October 21, 1961

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTOROV, B.N.

Theory of magnetic resonance saturation in ionic crystals. Fiz. tver. tela 5 no.2:564-570 F '63. (MIRA 16:5)

1. Institut khimicheskoy fiziki AN SSSR, Moskva.
(Paramagnetic resonance and relaxation) (Ionic crystals)
(Quantum theory)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

KOZHUSHNER, M.A.; PROVOTOROV, B.N.

Quantum statistical theory of the Overhauser effect in metals. Fiz. tver tela 5 no.9:2633-2640 S '63. (MIRA 16:10)

1. Institut khimicheskoy fiziki AN SSSR, Moskva.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

ACCESSION NR: AP4034932 S/0181/64/006/005/1472/1475

AUTHORS: Kozhushner, M. A.; Provotorov, B. N.

TITLE: The theory of dynamic polarization of nuclei in crystals

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1472-1475

TOPIC TAGS: dynamic polarization, crystal, induced polarization, spin

ABSTRACT: The authors sought a theoretical interpretation of the experimental results of A. Abraham and W. G. Proctor (C. R. 246, 2253, 1958), in which induced dynamic polarization was observed in nuclei of Li^6 in a crystal of LiF. Other authors have attempted to explain this by means of a two-particle model--two interacting spins of different kinds. The present authors use a strict equation for density matrix to examine the effect of induced dynamic polarization of nuclei in homogeneous expansion of the absorption line. They investigated the dependence of increase in polarization on concentration of spins of each kind, and they show that polarization decreases markedly when the frequencies of the variable field do not coincide with the resonance frequencies. In this circumstance the spin temperature changes appreciably. Any increase in polarization depends essentially on shift in field frequency relative to resonance frequency, and in this the shift in

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ACCESSION NR: AP4034932

polarization diminishes. Orig. art. has: 14 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, Moscow (Institute of Chemical Physics AN SSSR)

SUBMITTED: 06Dec63 DATE ACQ: 20May64 ENCL: 00

SUB CODE: SS, EM NO REF SOV: 004 OTHER: 004

Card 2/2

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

S/056/63/044/002/021/065
B102/B186

AUTHORS: Olkhov, O. A., Provotorov, B. N.

TITLE: Quantum-statistical theory of magnetic resonance in systems with strong exchange interaction

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 2, 1963, 514-521

TEXT: The authors show that the equations of magnetic resonance can be obtained from the exact equation for the density matrix

$$i\hbar\partial\rho(t)/\partial t = -i\,[-\hbar\omega_0\hat{S}_z + (\mu H_1/2s)\,(\hat{S}^{+}e^{i\omega t} + \hat{S}^{-}e^{-i\omega t}) + \hat{H}_{dip} + \hat{H}_{ex},\,\rho(t)], \qquad (1);$$

$$\hat{H}_{dip} = g^2\hbar^2 \sum_{i>k}{}' \left(\frac{\hat{s}_i\hat{s}_k}{r_{ik}^3} - 3\,\frac{(\hat{s}_i r_{ik})(\hat{s}_k r_{ik})}{r_{ik}^5}\right),$$

$$\hat{H}_{ex} = -\frac{1}{2}\sum_{i>k}{}' J_{ik}\hat{s}_i\hat{s}_k.$$

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

Quantum-statistical theory ...

$\hat{S}_{x,y,z}$ are the operators of the total-spin projections ($\hat{S}^{\pm 1} = \hat{S}_x \pm i\hat{S}_y$), s_i is the spin operator at the i-th lattice site, $\vec{r}_{ik}$ connects the i-th with the k-th site, J_{ik} is the exchange integral, ω and H_1 are frequency and amplitude of the alternating magnetic field, $\omega_0 = \mu H_0/\hbar s$. Under the assumption that $H_{ex} \gg H_{dip}$, $\hbar\omega_0 \gg S_z$, and by applying Bloch's method (Phys. Rev. 105, 1206, 1957) equations are derived which characterize the behavior of magnetization in a system with strong exchange interaction at $T \gg T_{Curie}$, which differ from that derived previously (e.g. Phys. Rev. 100, 1243, 1955) by taking into account the mean variation of the exchange interaction energy during saturation. A rotating coordinate system is introduced into

$$\rho(t) = \exp(i\omega\hat{S}_z t)\,\rho'(t)\exp(-i\omega\hat{S}_z t), \tag{2}$$

where $\rho'(t)$ is the new density matrix;

$$\rho'(t) = \exp(-i\hat{H}t/\hbar)\,\rho''(t)\exp(i\hat{H}t/\hbar), \quad \hat{H} = \hat{H}_{ex} + \mu\hat{\mathbf{S}}\mathbf{H}_{эфф}/s. \tag{4}$$

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$$\partial\rho''(t)/dt = -i\hbar^{-1}[\hat{V}'(t), \rho''(t)], \qquad (5).$$
$$\hat{V}'(t) = \exp(i\hat{H}t/\hbar)\,\hat{V}(t)\exp(-i\hat{H}t/\hbar).$$

The components $\varrho_1''(t)$, $\varrho_2''(t)$, where $\varrho'' = \varrho_1'' + \varrho_2''$, and ϱ_1'', $\varrho_2''(t)$ are derived as functions of the $\hat{S}$ components, H_{ex}, and $\hat{V}(t) = \sum_{m=-2}^{+2} \hat{H}^m e^{im\omega t}$. For the rotating coordinate system the equations

$$\begin{aligned}
\partial S_x/\partial t &= \gamma\,[SH_{эфф}]_x - S_x/T_2 - S_y/T_3,\\
\partial S_y/\partial t &= \gamma\,[SH_{эфф}]_y - S_y/T_2 + S_x/T_3,\\
\partial S_z/\partial t &= \gamma\,[SH_{эфф}]_z - (S_z + \mathcal{H})/T_1,\\
\partial \mathcal{H}/\partial t &= -\varkappa\,(S_z + \mathcal{H})/T_1.
\end{aligned} \qquad (15)$$

are finally obtained, where

$$\mathcal{H} = \hbar\omega\,\mathrm{Sp}\,\hat{S}_z^2\delta(t), \quad \gamma = \mu/\hbar, \quad \varkappa = \hbar^2\omega^2\,\mathrm{Sp}\,\hat{S}_z^2/\mathrm{Sp}\,\hat{H}_{ex}^2,$$
$$T_1^{-1} = 2\pi \sum_{m=1,2} m^2\,\mathrm{Sp}'\,\hat{H}_{m\omega}^m \hat{H}_{-m\omega}^{-m}/\hbar^2\,\mathrm{Sp}\,\hat{S}_z^2,$$

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$$T_2^{-1} = \pi \sum_{m=-2}^{m=+2} \mathrm{Sp}'\, \hat{S}^{-1} [\hat{H}^{m}_{m\omega} [\hat{H}^{-m}_{-m\omega}, \hat{S}^{+1}]]/\hbar^2 \mathrm{Sp}\, \hat{S}_z^2,$$

$$T_3^{-1} = \sum_{m=-2}^{+2} \mathrm{P} \int_{-\infty}^{+\infty} \frac{d\omega'}{m\omega - \omega'} \mathrm{Sp}'\, \hat{S}^{-1} [\hat{H}^{m}_{\omega'} [\hat{H}^{-m}_{-\omega'}, \hat{S}^{+1}]]/\hbar^2 \mathrm{Sp}\, \hat{S}_z^2.$$

In order to obtain the magnetic resonance equations, (15) is completed by adding spin-lattice interaction terms characterized by the relaxation times $\tau_{0,1,2}$, and assumes the form

$$\begin{aligned} \partial S_{x,y}/\partial t &= \gamma\, [\mathbf{S}\mathbf{H}'_{\text{эфф}}]_{x,y} - (T_2^{-1} + \tau_2^{-1})\, S_{x,y}, \\ \partial S_z/\partial t &= \gamma\, [\mathbf{S}\mathbf{H}'_{\text{эфф}}]_z - (S_z + \mathcal{H})/T_1 + (S_z^0 - S_z)/\tau_1, \\ \partial \mathcal{H}/\partial t &= -\varkappa\, (S_z + \mathcal{H})/T_1 + (\mathcal{H}^0 - \mathcal{H})/\tau_0. \end{aligned} \qquad (17).$$

With $\tau_{1,2} \gg T_{1,2}$ (17) can be simplified and its stationary solutions (subscript $c\tau$) are

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$$
\begin{aligned}
S_{x,\,\text{ст}} &= \gamma H_1 (\omega - \omega_{0,\,\text{эфф}})\, T_2^2 S_z^0/D, \\
S_{y,\,\text{ст}} &= -\gamma H_1 T_2 S_z^0/D, \\
S_{z,\,\text{ст}} &= [1 + (\omega - \omega_{0,\,\text{эфф}})^2 T_2^2]\, S_z^0/D, \\
\mathcal{H}_{\text{ст}} &= \mathcal{H}^0 [1 - \varkappa\gamma^2 H_1^2 \tau_0 T_2/D]; \\
D &= 1 + (\omega - \omega_{0,\,\text{эфф}})^2 T_2^2 + \gamma^2 H_1^2 T_1 T_2 (1 + \varkappa\tau_0/T_1).
\end{aligned}
\qquad (18).
$$

In the discussion the results are compared with experimental ones by Bloembergen and Wang (Phys. Rev. 93, 72, 1954). The Lorentz-type shape of the absorption line and its weak temperature dependence at saturation are in close agreement with the experiment. The theoretical results indicate a shift of the absorption peak and a change of the line width when the constant field H_0 is changed.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: June 8, 1962

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

OL'KHOV, O.A.; PROVOTOROV, B.N.

Quantum statistical theory of ferromagnetic resonance. Dokl. AN SSSR 152 no.3:591-594 S '63. (MIRA 16:12)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N.Kondrat'yevym.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

KOZHUSHNER, M.A.; PROVOTOROV, B.N.

Theory of the dynamic polarization of nuclei in crystals.
Fiz. tver. tela 6 no.5:1472-1475 My '64. (MIRA 17:9)

1. Institut khimicheskoy fiziki AN SSSR, Moskva.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

L 64490-65 EWT(1)/EPF(c) IJP(c) WW/GG

ACCESSION NR: AP5012634 UR/0051/65/018/005/0917/0920
539.143.43:535.33.001.1

44,55 28

AUTHORS: Zhidkov, O. P.; Provotorov, B. N. 44,55 B

TITLE: On the influence of modulation on the shape of magnetic resonance signals observed in liquids

SOURCE: Optika i spektroskopiya, v. 18, no. 5, 1965, 917-920

TOPIC TAGS: magnetic resonance, Fourier integral, Bessel function, magnetization NMR signal, liquid property, resonance line

ABSTRACT: The authors present a method for the summation of the infinite series involved in the Bloch equations which are used to calculate the magnetic resonance signals in liquids. The simplification is based on expanding the line shape in a Fourier integral and using certain known theorems concerning the addition of Bessel functions. A solution of the Bloch equations is obtained for small amplitudes

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L 64490-65

ACCESSION NR: AP5012634

of the radio-frequency field applied by assuming that the longitudinal magnetization is equal to its equilibrium value and neglecting the change of magnetization caused by modulation of the constant magnetic field. On the basis of the proposed summation method it is then easy to show that unsaturated magnetic-resonance signals can be obtained in an increasing field by increasing the amplitude of the modulation signal. Orig. art. has: 10 formulas

ASSOCIATION: None

SUBMITTED: 29Jun64 ENCL: 00 SUB CODE: OP, EM

NR REF SOV: 003 OTHER: 006

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

ZHIDKOV, C.P.; PROVOTOROV, B.N.

Effect of modulation on the shape of magnetic resonance signals observed in a liquid. Opt. i spektr. 18 no.5:917-920 My '65. (MIRA 18:10)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

L 58537-65 EWT(1) IJP(c)

ACCESSION NR: AP5012531 UR/0181/65/007/005/1289/1293

AUTHOR: Provotorov, B. N.; Samokhin, A. A.

TITLE: Spin absorption in weak magnetic fields

SOURCE: Fizika tverdogo tela, v. 7, no. 5, 1965, 1289-1293

TOPIC TAGS: spin absorption, density matrix, spin lattice relaxation, spin spin relaxation

ABSTRACT: The purpose of the investigation was to derive expressions for spin absorption from a rigorous equation for the density matrix of a spin system. This is done by analyzing the behavior of the spin system with the aid of the equation for the density matrix, in a weak constant magnetic field (of the order of the local field), parallel to which an alternating field is applied. The expressions derived in this manner for the dispersion and for the absorption are valid for alternating-field frequencies which do not exceed the reciprocal of the spin-spin relaxation time. These expressions contain the dependence on the amplitude of the alternating field at high frequencies. The results show that spin absorption can

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ACCESSION NR: AP5012531

be noticeably decreased at certain frequencies by saturation, as was observed, for example, in the case of $CuSO_4 \cdot 5H_2O$ at 78 Mcs (C.J. Gorter, Paramagnetic Relaxation, Elsevier, N.Y., 1947). The results are applicable also in the presence of electric splitting of the levels of the spin system. Orig. art. has: 26 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, Moscow (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 02Jul64 ENCL: 00 SUB CODE: SS, NP

NR REF SOV: 003 OTHER: 005

Card 2/2

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

[illegible]

[illegible] in weak magnetic fields. [illegible] tver. tela [illegible] no.5: [illegible] (MIRA 18:5)

[illegible] Khimicheskoy fiziki AN SSSR, Moskva.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

[illegible], L.M., inzh.

Advantages of the GVP-U1 single-channel gas burner. TSement 30 no.5: 17-18 S-O '64. (MIRA 17:12)

1. Rizhskoye otdeleniye Vsesoyuznogo gosudarstvennogo spetsial'nogo byuro po provedeniyu pusko-naladochnykh i proyektno-konstruktorskikh rabot v tsementnoy promyshlennosti Gosstroya SSSR.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

SAVCHERON, M.A.

Pneumatic control of assembly units of drilling rigs manufactured by the "Barrikady" Plant. Mash. i neft. obor. no.8:30-32 '65. (MIRA 18:9)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTOROV, V.A.

Strength of outlet channels for small bridges. Transp.stroi.6 no.6:28 Je '56. (MIRA 9:9)

1.Glavnyy inzhener proyekta Lengiprotransa.
(Bridges--Tables, calculations, etc.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTOROV, V.F., elektromekhanik

Automatic switch for checking the time lag of discriminator relays. Avtom., telem. i sviaz' 6 no.10:29-30 O '62. (MIRA 16:5)

1. Kontrol'no-ispytatel'naya stantsiya avtostopov Ptishchevskoy distantsii signalizatsii i svyazi Privolzhskoy dorogi.
(Railroads--Electric equipment) (Electric relays--Testing)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

TROFIMOV, M.G.; Prinimali uchastiye: TELIS, M.Ya., inzh.; ZHARKIKH, A.A.; KHEYFIN, V.Z.; PROVOTOROVA, G.V.

Lining of vacuum and open induction smelting furnaces. Lit. proizv. no.8:14-16 Ag '62. (MIRA 15:11)
(Electric furnaces) (Refractory materials)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTOROV A. L. M. Cand Pharm Sci -- (diss) "Chromatographic method of investigation in the solution of certain problems of forensic chemistry." Mos, 1957. 15 pp 21 cm. (Min of Health RSFSR. Mos Pharm Inst. Chair of Forensic Chem),100 copies (KL, 7-57, 110)

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USSR/Pharmacology. Toxicology. Toxicology. V

Abs Jour : Ref Zhur-Biol., No 8, 1958, 37734

Author : Provotorova L. M.
Inst : Not given
Title : The Application of the Chromatographic Method in a Forensic, Chemical Analysis of Biological Data on the Presence of Nickel Compound (Primeneniye Khromatogrfichskovo metoda v sudevno khimicheskom analize biologocheskovo materiala na prisudstviye soyedineniy nikoya).

Orig Pub : Aptechn. delo, 1957, 6, No 3, 28-32

Abstract : No abstract

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PROVOTOROVA, P.P.

Comparative action of corchoroside and convallatoxin in acute coronary insufficiency. Farmakol. toksik. 26 no.3:284-288 My-Je'63 (MIRA 17:2)

1. Kafedra farmakologii (zav. - prof. V.I. Zavrazhnov) Voronezhskogo meditsinskogo instituta.

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PROVOTOROVA, P.P.

Effect of corchoroside on the course and outcome of experimental myocardial infarct. Farm. i toks. 27 no.4:444-446 Jl-Ag '64. (MIRA 17:11)

1. Kafedra farmakologii (zav. - prof. V.I. Zavrazhnov) Voronezhskogo meditsinskogo instituta.

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PROVOTOROVA, V.H. (SSSR, Lipetska oblast)

Ways of increasing the effectiveness of a lesson. Mat i fiz Bulg 5 no.4:16-23 Jl-Ag '62.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

SMYSHLYAYEVA, T.N.; ZAKHAROVA, Z.L.; PROVOVEROV, K.N.

Drying plaster on the walls of buildings with gas infrared radiant heaters. Sbor. nauch. rab. AKKH no.9:94-105 '61. (MIRA 16:1)

(Infrared rays—Industrial applications)
(Plaster—Drying)

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MALAKHOV, G.M., doktor tekhn.nauk; LAVRINENKO, V.F., kand.tekhn.nauk; DYADECHKIN, N.I., inzh.; PROYANENKO, A.I., inzh.; IVANOV, Yu.A., inzh.

Results of using new methods of short delay blasting in underground mining operations. Met. i gornorud. prom. no.4:45-51 Jl-Ag '62. (MIRA 15:7)
(Iron mines and mining)
(Blasting)

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PROYAVKIN, E.T.

ANDROS, I.P., inzh.; ASSONOV, V.A., kand. tekhn. nauk.; BERNSHTEYN, S.A., inzh.; BOKIY, B.V., prof.; BROVMAN, Ya.V., inzh. BONDARENKO, A.P., inzh.; BUCHNEV, V.K., kand. tekhn. nauk; VERESKUNOV, G.P., kand. tekhn. nauk; VOLKOV, A.F., inzh.; GELESKUL, M.N., kand. tekhn. nauk; GORODNICHEV, V.M., inzh.; DEMENT'YEV, A.Ya., inzh.; DOKUCHAYEV, M.M., inzh.; DUBNOV, L.V., kand. tekhn. nauk; YEPIFANTSEV, Yu.K., kand. tekhn. nauk.; YERASHKO, I.S., inzh.; ZHEDANOV, S.A., kand. tekhn. nauk; ZIL'BERBROD, A.F., inzh.; ZINCHENKO, E.M., inzh.; ZORI, A.S., inzh.; KAPLAN, L.B., inzh.; KATSAUROV, I.N., dots.; KITAYSKIY, E.V., inzh.; KRAVTSOV, Ye.P., inzh.; KRIVOROG, S.A., inzh.; KRINITSKIY, L.M., kand. tekhn. nayk; LITVIN, A.Z., inzh.; MALEVICH, N.A., kand. tekhn. nauk; MAN'KOVSKIY, G.I., doktor tekhn. nauk; MATKOVSKIY, A.L., inzh.; MINDELI, E.O., kand. tekhn. nauk; NAZAROV, P.P., kand. tekhn. nauk; NASONOV, I.D., kand. tekhn. nauk; NEYYENBURG, V.Ye., kand. tekhn. nauk; POKROVSKIY, G.I., prof., doktor tekhn. nauk; PROYAVKIN, E.T., kand. tekhn. nauk; ROZENBAUM, inzh.; ROSSI, B.D., kand. tekhn. nauk; SEMEVSKIY, V.N., doktor tekhn. nauk; SKIRGELLO, O.B., inzh.; SUKEUT, A.A., inzh.; SUKHANOV, A.F., prof., doktor tekhn. nauk; TARANOV, P.Ya., kand. tekhn. nauk; TOKAROVSKIY, D.I., inzh.; TRUPAK, N.G., prof., doktor tekhn. nauk; FEDOROV, S.A., prof., doktor tekhn. nauk; FEDYUKIN, V.A., inzh.; KHOKHLOVKIN, D.M., inzh.; KHRABROV, N.I., kand. tekhn. nauk; CHEKAREV, V.A., inzh.; CHERNAVKIN, N.N., inzh.; SHREYBER, B.P., kand. tekhn. nauk; EPOV, B.A., kand. tekhn. nauk; YAKUSHIN, N.P., kand. tekhn. nauk; YANCHUR, A.M., inzh.; YAKHONTOV, A.D., inzh.; POKROVSKIY, N.M., otvetstvennyy red.; KAPLUN, Ya.G. [deceased], red.; MONIN, G.I., red.; SAVITSKIY, V.T.,

(Continued on next card)

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ANDROS, I.P.----(continued) Card 2.
red.; SANOVICH, P.O., red.; VOLOVICH, M.Z., inzh., red.; GORITSKIY, A.V., inzh., red.; POLUYANOV, V.A., inzh., red.; FADEYEV, E.I., inzh., red.; CHECHKOV, L.V., red. izd-va; PROZOROVSKAYA, V.L., tekhn. red.; NADEINSKAYA, A.A., tekhn. red.

[Mining; an encyclopaedic handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav. red. A.M. Terpigorev. Moskva, Gos. nauchno-tekhnicheskoe izd-vo lit-ry po ugol'noi promysh. Vol.5 [Mining and timbering] Provedenie i kreplenie gornykh vyrabotok. Red-kollegiia tom: N.M.Pokrovskii... 1958. 464 p. (MIRA 11:7)

(Mine timbering) (Mining engineering)

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PROYAYEV, G.K.; VALEYEV, I.M.

System of air starting for the V2-300 motor. Energ.biul.no.9:30-31 S '57. (MIRA 10:10)

(Diesel engines)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROZHIGA, V.I., kandidat med. nauk

Reflex disorders of the cardiovascular system in pericardial surgery; experimental data. Vest.khir.75 no.6:71-78 Jl '55. (MLRA 8:10)

1. Iz kafedry operativnoy khirurgii i topograficheskoy anatomii (Nach.--prof. A.N. Maksimenkov) Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova, Leningrad, ul. Kuyboysheva, d.21, kv.45-a.

(PERICARDIUM, surg.
exper.eff. on causing reflex disorders of cardiovasc. system)
(CARDIOVASCULAR DISEASES, exper.
reflex disord.,caused by pericardial surg. in dogs)

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PROZIN, N.N.

Carbonation of water/ammonia suspensions containing a mixture of sodium chloride and sodium sulphate. N. N. Prozin, E. T. Gromova, and E. S. Nenn. (*J. appl. chem.*, [redacted] 237—247).—Laboratory carbonation of aq. NH_3 solutions containing NaCl and Na_2SO_4 is studied at 35° in order to determine the suitability of liquors containing mixed NaCl and Na_2SO_4 for industrial $NaHCO_3$ production. Two types of system are investigated; those "poor" in Na which form a clear solution before pptn. of $NaHCO_3$, and those "rich" in Na in which the concn. of NaCl and Na_2SO_4 is such that part of them is still undissolved when the pptn. of $NaHCO_3$ begins. Better utilisation of Na (78—68%) and NH_3 (75—66%) is attained when suspensions "rich" in Na are used in laboratory carbonation experiments lasting 3—4 hr. The carbonation of systems containing a mixture of NaCl and Na_2SO_4 is governed by the rules of additivity and all the characteristic properties of these systems can be calculated from the properties of aq. NH_3 solutions containing only one salt. S. K. Lachowicz.

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PROZOROV, A.

Reorganized management of grain procurement stations. Muk.-elev. prom. 25 no.4:8-9 Ap '59. (MIRA 13:1)

1.Direktor Ipatovskogo khlebopriyemnogo punkta Stavropol'skogo upravleniya khleboproduktov.
(Grain elevators)

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PROZOROV, A.A.

Effect of egg lysozyme on the permeability of cells of Bacillus subtilis to transforming DNA. Dokl. AN SSSR 160 no.2:472-474 Ja '65. (MIRA 18:2)

1. Submitted May 15, 1964.

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PROZOROV, A.P.; NUSINOV, Ya.Ye.; SHMELEV, I.K.

"Antegmit" ATM-1 as a lead substitute. Khim.prom. no.2:103-108 Mr '55. (MIRA 8:8)
(Refrigeration and refrigeration machinery)
(Corrosion and anticorrosives)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROZOROV, A.Ye.

Roentgenologic signs in rigid cavern. Probl. tuberk., Moskva no.4:39-45 July-Aug 1953. (CIMA 25:4)

1. Professor, Corresponding Member AMS USSR, deceased. 2. Of the Institute of Tuberculosis of the Academy of Medical Sciences USSR (Director -- Z. A. Lebedeva).

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PROZOROV, L.V., kandidat tekhnicheskikh nauk; BEREZHKOVSKIY, D.I., inzhener; TIKHOMIROV, N.V., kandidat tekhnicheskikh nauk.

Engineering characteristics of austenite steel forgings. [Trudy] TSNIITMASH 62:164-196 '54. (MLRA 7:9)
(Steel forgings) (Austenite)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343410006-9

PROVOTORKHOV, Viktor Semenovich; STEBLEV, N.M., red.; KREYS, I.G., tekhn.red.

[Practical study of automobiles in secondary schools] Prakticheskie raboty po avtomobiliu v srednei shkole. Moskva, Gos. uchebno-pedagog.izd-vo M-va prosv.RSFSR, 1960. 143 p.
(Juvenile drivers) (MIRA 13:7)

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