3(0), 9(5)

SOV/2o-122-6-14/49

AUTHOR: Khalfin, L. A.

TITLE: The Information Theory of the Interpretation of Geophyiscal Investigations (Informatsionnaya teoriya interpretatsii geofizicheskikh issledovaniy)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 6, pp 1oo7-1o1o (USSR)

ABSTRACT: The theory investigated by the present paper differs from the usual interpretation theory by the fact that it describes the geophysical investigation methods as systems of "information observation". Besides the information theory, also the classical theory of statistical estimation may serve as a basis for investigations of the problems discussed. The problem of interpreting the data of the geophysical method is known to consist in determining the sources Q (information) of a geophysical field $\varphi_Q(\vec{r})$ (signal) from this geophysical field. For this purpose the following is obviously necessary: For a given geophysical field $\varphi_Q(\vec{r})$ only such a characteristic of

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the sources of this field can be described as information Q as is biuniquely (uniqueness theorem) connected with the geophysical field (signal $\varphi_Q(\vec{r})$: $\varphi_Q(\vec{r}) \rightleftarrows Q$. In this case division of the problems into direct and inverse problems is natural. Interpretation may be either paletot-like (paletochnyy) or analytic. In the case of neither of these two interpretation methods is there a so-called geophysical interpretation, although it is used in practice. This contradiction is due to the fact that, if the usual method of the interpretation theory is employed, the existence of obstacles (pomekha) is neglected in the widest sense of the word. From the very outset, the author assumes that in the measured field (signal) $\psi(\vec{r})$ there exist a field (signal with a utilizable (poleznyy) Q-information and homogeneous obstacles $n(\vec{r})$ with a disturbing information: $\psi(\vec{r}) = \varphi_Q(\vec{r}) + n(\vec{r})$. The term "obstacles" is then discussed in detail. Unfortunately, only some of the characteristics of obstacle distribution are known. For a special case such a distribution p(n) is determined which warrants a maximum quantity of n-information. By solving the corresponding variation problem an expression is obtained for p(n). Furthermore, an expression for the maximum quantity of informa-

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tion in $\psi(r)$ is derived. Several principal variants are then investigated: 1) That only normalization is known. 2) That also the average number of obstacles is assumed to be known. 3) That also the dispersion with respect to the obstacles is known. Also the complication of geophysical methods is included in the investigation of the information theory; next, the interpretation of the physical properties of geological objects is discussed. By means of the information theory discussed in the present paper it is possible to compare also various interpretation methods hitherto employed with one another. The principal result obtained by this paper is the determination of an algorithm of the information theory of interpretation, which can be realized by means of a computer equipped with a memory. The results actually obtained are results of the general information theory of observation. The author thanks Professor Yu. V. Linnik and Professor A. S. Semenov for their discussions as well as for their useful advice. There are 7 references, 4 of which are Soviet.

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A-11 Sci Res Inst for Prospecting Geophysics

SOV/49-59-4-1/20

AUTHORS: Khaykovich, I. M., Khalfin, L. A.

TITLE: On the Effective Dynamic Parameters of Heterogeneous Elastic Media in which Plane, Longitudinal Waves Propagate (Ob effektivnykh dinamicheskikh parametrakh neodnorodnykh uprugikh sred pri rasprostranenii ploskoy prodol'noy volny)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 4, pp 505-515 (USSR)

ABSTRACT: The effective parameters discussed by the authors are illustrated in Fig 1, where two components of the homogeneous medium are denoted by 1 and 2 , and s - period of the distribution of the uniform spherical particles which are subjected, to the plane, monochromatic, longitudinal wave φ , propagated from the left-hand side. In these circumstances the wave becomes diffused, the rate of which depends on the coordinate z_o . It is assumed that the wavelength is greater than the dimension of the spherical particles and that every particle is in the state of a seismic di-polar vibration in the direction of the axis z . Then the wave can be described by the expression (1.1), where (ρ, Ω, z) - polar coordinates, $(r, \vartheta, \text{ and } \Omega)$ - spherical coordinates, b_1 - velocity of transverse waves, a_1 - velocity of the

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On the Effective Dynamic Parameters of Heterogeneous Elastic Media in which Plane, Longitudinal Waves Propagate

longitudinal waves, u - dislocation field expressed as Eq (1.2). The longitudinal and transverse potentials φ and ψ inside the sphere can be expressed as Eqs (1.3) and (1.4), respectively. Thus the problem of diffusion of the longitudinal wave caused by the seismic di-poles can be solved when the constants A, B, A' and B' for the limiting conditions Eqs (1.5) and (1.6) are determined. This can be performed as shown in Eqs (1.7) and (1.15). In order to obtain the integral of the longitudinal potential of the total dislocation, the value of u_o for the point (x_o, y_o, z_o) is calculated from Eq (2.1) and the relation $u_o = \partial\varphi/\partial z_o$ is defined as Eq (2.2). From this expression the integral equation for the potential φ is derived as Eq (2.3) which can be written in the form Eq (2.6). The latter is solved by Eqs(2.8) and (2.9). By substituting Eq (2.9) into (2.8), the velocity of propagation of the longitudinal wave a in the 2-component

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medium is obtained as Eqs (2.10) and (2.11). In order to determine the effective parameters the reflected wave should be derived from the second and third terms of the equation (2.6) for negative values of z_o . When Eq (2.9) is substituted into these terms, the Eqs (2.14) and (2.15) are obtained, which gives an accuracy of the order: $u^2|k/a\ R|$ and $v^2|k/a\ R|$ for a/al and D expressed by Eqs (2.11) and (2.13). If f is sufficiently small and P , Q_1 , Q_2 , M are limited, then the effective parameters can be found from Eq (2.16). Thus the coefficient of the reflection for the plane, longitudinal wave φ at the boundary of two media can be defined as Eqs (3.1) and (3.2) and the ratio a/a_1 as Eq (3.3). By equalising the equations (3.2) and (3.1) with application of the equation (3.3), a system of two equations is obtained, from which the effective dynamic parameters (the effective velocity of the longitudinal wave and the effective density of the 2-component medium) are obtained as Eqs (3.4) and (3.5). These parameters may have complex meanings but the latter, in the case of homogeneous elastic media,

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are insignificant. Thanks are given to Professor G. I. Petrashen. There is 1 figure and there are 4 references, of which 3 are Soviet and 1 English.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut razvedochnoy geofiziki (All-Union Scientific Research Institute of Survey Geophysics)

SUBMITTED: February 27, 1957.

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SOV/49-59-6-3/21

AUTHORS: Khaykovich, I. M., Khalfin, L. A.

TITLE: On the Effective Dynamic Parameters of an Elastic Medium in the Propagation of a Plane, Transverse, Polarized Wave.

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 6, pp 815-826 (USSR)

ABSTRACT: This work is a continuation of a similar one on the propagation of seismic waves published in this journal, 1959, Nr 4, where the basic theoretical calculations were described (Fig 1). The polarized wave is determined in the present work by the potential, Eq (1.1), where b_1 - velocity of the transverse wave, j - ort in the direction of the axis y . The following assumptions are made: (1) The wavelength is much greater than the diameter of the sphere and (2) the field, diffused by the sphere, is described by the longitudinal φ and the transverse ψ potentials, Eq (1.4). The potentials inside the sphere are as shown by Eq (1.6). Thus the problem of diffusion is confined to the determination of the constants A , B , A' , B' (Eqs 1.7 to 1.23). The formula expressing the field of diffusion is defined in its final form as Eq (1.24). The method of determining the effective dynamic parameters is based on the integral equation of the transverse potential

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of the total field displacement, the solution of which can be written as a potential of the plane, transverse, polarized wave. The total displacement u_x at the point (x_o, y_o, z_o) consists of the displacement of the wave, Eq (2.1) and the displacement caused by the diffusion due to all spheres. This total displacement in the direction of the axis z depends on the coordinate z_o and is related to the potential ψ as shown in Eq (2.2). The displacement along the axis x is defined by Eq (2.3). Thus the expression (2.4) is obtained, which can be written as Eq (2.5). The latter can be shown in the simplified form Eqs (2.7) and (2.8), when the assumption, Eq (2.6) is made. Now it is possible to determine ψ as it is shown in Eqs (2.9) to (2.17). The condition (2.18) can be defined

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in two ways: from the effective wave velocity or from the effective density of the medium, the determination of which is shown in Eqs (3.1) to (3.7). Thanks are given to G. I. Petrashen' for taking part in the solution of the problems described in the article. There is 1 figure and there are 2 Soviet references.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut razvedochnoy geofiziki (All-Union Scientific Research Institute of Geophysical Prospecting)

SUBMITTED: April 22, 1957.

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24(5) SOV/56-36-4-13/70

AUTHOR: Khalfin, L. A.

TITLE: On New Dispersion Relations in the Quantum Field Theory (O novykh dispersionnykh sootnosheniyakh v kvantovoy teorii polya)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4 pp 1088-1092 (USSR)

ABSTRACT: In the present paper two dispersion relations between the module and the phase shift of the forward scattering amplitude f(E) are derived. f(E) is here represented by means of the Fourier integral $f(E) = \int_0^\infty \tilde{F}(t) e^{iEt} dt \equiv \psi(E) e^{i\varphi(E)}$; for $\tilde{F}(t)$ it holds that $\tilde{F}(t) = \begin{cases} F(t) & t > t_0 \\ 0 & t < t_0 \end{cases}$ $t_0 \leq 0$. f(E) must satisfy the symmetry condition $f(E) = f^*(-E)$, and on the basis of the "optical" theorem it holds that $\mathrm{Im}\, f(E) = \frac{k}{4\pi} \sigma(E)$, $E \in [\mu, \infty]$, where $\sigma(E)$ denotes the total scattering cross section and $k^2 = E^2 - \mu^2$, μ - rest mass of the particles. By proceeding herefrom relations between $\log \psi(E)$ and $\varphi(E)$ are derived in the

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following on the basis of the analyticity of f(E) in the upper semiplane Im E > 0 and of the criterion of physical realizability by means of a method which is analogous to that employed in the quantum decay theory. The expressions obtained, formulas (8) and (9), are very complicated. They are, however, contrary to the usual relations between real and imaginary parts of forward scattering amplitudes, independent of the detailed behavior (degree of increase or decrease) of the forward scattering amplitude at infinitely high energies $E \to \infty$. In connection with the relations derived here, the problem concerning the possible zeroes of f(E) in the upper semiplane Im E > 0 is discussed. Within the range of analyticity, it holds for particles with the rest mass $\mu = 0$ that Im $f(E) \neq 0$, $E \in [0, \infty]$ and for particles with finite rest mass $0 < \mu < \infty$: Im $f(E) \neq 0$, $E \in [\mu, \infty]$. The two versions are finally discussed in short. There are 17 references, 8 of which are Soviet.

SUBMITTED: June 17, 1958

KHALFIN, L. A., Cand Phys-Math Sci -- (diss) "Quantum theory of the decay of physical systems." Moscow, 1960. 6 pp; (Academy of Sciences USSR, Physics Inst im P. N. Lebedev); 250 copies; free; (KL, 26-60, 131)

KHALFIN, L.A.

PHASE I BOOK EXPLOITATION SOV/4981

Soveshchaniye po teorii veroyatnostey i matematicheskoy statistike, Yerevan, 1958

Trudy Vsesoyuznogo soveshchaniya po teorii veroyatnostey i matematicheskoy statistike, Yerevan, 19-25 sentyabrya 1958 g. (All-Union Conference on the Theory of Probability and Mathematical Statistics. Held in Yerevan 19-25 September, 1958. Transactions) Yerevan, Izd-vo AN ArmSSR, 1960. 291 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk Armyanskoy SSR.

Editorial Staff: G.A. Ambartsumyan, B.V. Gnedenko, Ye.B. Dynkin, Yu.V. Linnik and S. Kh. Tumanyan; Ed. of Publishing House: A.G. Slipuni; Tech. Ed.: M.A. Kaplanyan.

PURPOSE: The book is intended for mathematicians.

COVERAGE: The book contains 41 articles submitted to the Conference and dealing with the theory of probability and mathematical statistics. Some of the articles are the papers read at the Conference and edited for publication, while others outline the theses of papers which appeared or are scheduled to appear, wholly or in part, in other publications; in some cases, such publications are quoted. A list of the papers whose contents were published elsewhere is included and the places of publication are indicated. Individual articles examine theories of mass service, spectral instruments, numbers, games, and certain functions, and discuss the theorems of Shannon, Markov's chains, and certain processes, quantities, and functions. Such items as the method of least squares, the stochastic, Markov's and diffusion processes, measures and their applications, a scheme of Bernoulli experiments, Markov-type random fields, visible distribution of stars, Brownian motion, capacity of radio channels, and defective products are considered. No personalities are mentioned. References accompany some of the articles.

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24.3300

S/044/62/000/006/064/127
B168/B112

AUTHOR: Khalfin, L. A.

TITLE: Information-theoretical to the theory of spectroscopic apparatus

PERIODICAL: Referativnyy zhurnal. Matematika, no. 6, 1962, 15, abstract 6V75 (Tr. Vses. soveshchaniya po teorii veroyatnostey i matem. statistike, 1958. Yerevan, AN ArmSSR, 1960, 187-205).

TEXT: The spectroscopic apparatus in question are those which determine the number of particles of different energy values. It is assumed that instead of the true energy spectrum $\varphi(E)$ the apparatus gives $\psi(E) = \int K(E,E')\varphi(E')dE' + n(E)$, where $K(E,E')$ is the spectral characteristic of the apparatus, and $n(E)$ is the interference. For a comparison of different spectroscopic apparatus the use of a method worked out by the author and named the "theoretical information theory for the interpretation of geophysical observations" (RZhMat, 1960, 8072) is proposed.
[Abstracter's note: Complete translation.]

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S/056/60/039/002/041/044
B006/B070

AUTHOR: Khalfin, L. A.

TITLE: A Possibility in Principle of Measuring Time

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 2(8), pp. 504 - 506

TEXT: All the usual methods of measuring time depend on the measurement of the frequency of some periodic process. The so-called atomic and molecular clocks are the most exact for this purpose; they use as the standard the electromagnetic emission on transition of the system from one energy level to another. They are very stable and are very little sensitive to external processes. In principle, however, their accuracy is limited by the width of the spectral lines and, thus, by the lifetimes of the energy states. The smallest time interval such clocks can measure lies between 10^{-10} - 10^{-6} sec. The author now suggests a new method for measurement of time that differs in principle from the "frequency" methods, and leads to a greater accuracy of measurement. He calls it the "nuclear"

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method. It is very simple and uses the number of decays of radioactive nuclei (or unstable particles) for measuring time. Such a clock would have the following main constituents: a) the source - radioactive nuclei or unstable particles, b) a donor that records the products of decay, c) an electronic converter, and d) an output device - a counter, calibrated directly in time units corresponding to a certain number of particles. The stability of such "nuclear clocks" would be essentially greater as they would be practically independent of any external processes. The limitations, in principle, of the method due to the nature of the process used for the measurement of time are discussed. First the uniformity of the law of decay is considered. It is shown that the smaller Γ/E_0 (Γ - width of the decaying level, E_0 its energy) is, the better is the uniformity. One would, therefore, choose states with small Γ and, thus, of long life-time. In this manner it would also be possible to avoid having to make corrections for the decay of the source. The use of the longest-lived isotopes is limited, however, because of the requirement of a large quantity of the radioactive material. If the alpha emitter U^{238} with $T_{1/2} = 4.5 \cdot 10^9$ years

is used, the required correction for non-exponential nature of the process would amount to $\sim 10^{-60}$ in $\sim$1000 years. The accuracy of the measurement of time is then limited only by the statistical accuracy of the recording of the particles. For measuring 0.1 sec with an accuracy of 10^{-11}, 1 g-atom of Li^8 would be required; 1 minute with an accuracy of $10^{-11} \sim$ 1 g-atom C^{11}; 1 year with an accuracy 10^{-11} sec $\sim 10^8$ g-atom U^{238} or 10 g-atom Ni^{63} would be needed. Finally, the technical difficulties are discussed in a few words. The author thanks Academician I. Ye. Tamm, Professor V. L. Ginzburg, Professor Ye. L. Feynberg and all participants of the theoretical seminar of the FIAN (Institute of Physics of the AS USSR), as well as Professor G. I. Petrashen', Professor S. E. Khaykin, Yu.N.Demkov, and A. M. Khalfin for discussions. There are 2 references: 1 Soviet and 1 US.

SUBMITTED: May 14, 1960

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84404

S/056/60/039/004/022/048
B006/B063

24.6520

AUTHOR: Khalfin, L. A.

TITLE: Effect of Inelastic Processes on Elastic Scattering in the Neighborhood of the Thresholds of Inelastic Reaction Modes

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 4(10), pp. 1020-1022

TEXT: The specific effects of inelastic processes on elastic scattering characteristics in the neighborhood of energy thresholds has already been mentioned in Refs. 1-4. These effects consist in the appearance of points of discontinuity in the neighborhood of thresholds. The present paper shows that the specific threshold effects may be studied in the general case by the method of dispersion relations. As a mathematical basis, the author employs a theorem published by N. I. Muskhelishvili in Ref. 5, which describes the behavior of Cauchy integrals near their end points: If $g(E) \equiv \mathrm{Im}\, f(E)$ at the section $E \in [E_1, \infty)$ satisfies Gelder's condition with the index $\mu \leq 1$, and if $g(E_1) = \mathrm{Im}\, f(E_1) = 0$, then the Cauchy

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integral (1), $h(E) \equiv \frac{1}{\pi} P \int_{E_1}^{\infty} \frac{g(E')}{E'-E} dE'$, determines the function $h(E) \equiv \mathrm{Re}\, f(E)$ which, at $E \in [E_1, \infty)$, satisfies also Gelder's condition with the index μ, if $\mu > 1$, as well as that with $\mu' = 1 - \epsilon$, where $\epsilon > 0$ (an arbitrary small number for $\mu = 1$). When $E < E_1$, $h(E)$ is an analytical function tending to a definite limit for $E \to E_1 - 0$. At $E \in [E_1, \infty)$, $g(E)$ satisfies Gelder's condition with the index $\mu > 0$, if the relation $|g(E_k) - g(E_m)| \leq A |E_k - E_m|^{\mu}$ (where $A > 0$) holds for any E_k and E_m from $[E_1, \infty)$. $\mu < 1$ is assumed to be the maximum value of Gelder's index which, at $E \in [E_1, \infty)$, satisfies the function $g(E) = \mathrm{Im} f(E)$, where $g(E_1) = 0$. Then, the Cauchy integral (1) determines the function $h(E) \equiv \mathrm{Re}\, f(E)$, which at $E \in [E_1, \infty)$, also satisfies Gelder's condition with the maximum value of the index $\mu < 1$. This theorem

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is proved and then used to show that, if $g(E) = \mathrm{Im}\, f(E)$ has no finite derivative at $E = E_1$, Gelder's condition with the maximum index $\mu < 1$ will be satisfied. Hence, also $h(E) = \mathrm{Re}\, f(E)$ has no finite derivative at $E = E_1$ and satisfies Gelder's condition with the maximum value of the index $\mu < 1$. Thus, the following results are obtained: When the total inelastic scattering cross section has a point of discontinuity at the threshold $E=E_1$ and, consequently, no finite derivative at $E=E_1$, then also Re f(E), which is the real part of the elastic scattering amplitude determined by phase-shift analysis, has no finite derivative at $E=E_1$. Besides, the maximum values of Gelder's index at $E=E_1$ coincide for $\sigma_{inel}(E)$ and Re f(E). If E_1 is the threshold of a first-order inelastic scattering, that is to say, if $\sigma_{inel}(E) \sim \sqrt{E - E_1}$ for $E \sim E_1$, then the singularities of Re f(E) at $E=E_1$ are of the same order. L. I. Lapidus and Chzhou Guan-chzhao are mentioned. There are 6 references: 3 Soviet and 3 US.

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84404

Effect of Inelastic Processes on Elastic Scattering in the Neighborhood of the Thresholds of Inelastic Reaction Modes

S/056/60/039/004/022/048
B006/B063

SUBMITTED: April 16, 1960

Card 4/4

24.4500
~~24(5)~~

SOV/20-130-2-15/69

AUTHOR: Khalfin, L. A.

TITLE: On a New Form of Dispersion Relations

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 2, pp 299 - 302 (USSR)

ABSTRACT: The present paper gives new dispersion relations based on the use of the theorem by M. V. Keldysh and L. I. Sedov (Ref 2) as a criterion of the analyticity of the scattering amplitude f(E). New additional relations are thus obtained which must be satisfied by the real part and the imaginary part of the scattering amplitude. To formulate as simple results as possible, the case is studied in which f(E) - the forward scattering amplitude - decreases rapidly enough when $|E| \to \infty$. On the basis of the Keldysh-Sedov theorem an expression is derived for f(E) and then transformed. Next, new dispersion relations and additional conditions for two important special cases are derived and discussed on the basis of the aforementioned Keldysh-Sedov formulas. $f^*(-E) = f_{an}(E)$ holds,

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particle. All integrals can be reduced to integrals over positive energies. In principle, the dispersion relations found here offer nothing new compared to the ordinary dispersion relations, for they are derived from the same fact, i.e., the analyticity of the forward scattering amplitude f(E). Nevertheless, the relations derived have certain advantages over the ordinary dispersion relations because the experimental data (Im f(E), Re f(E)) are erroneous. The new dispersion relations derived here have the following advantages: 1) They allow to utilize experimental data with the greatest efficiency (as, e.g., in utilizing data on phase analysis (Re f(E)) in the region where they are sufficiently determined) and data on the total cross section (Im f(E)) in the other energy regions. 2) By changing E_1 and E_2 it is possible to check errors resulting from a disturbance of the dispersion relations, which are connected with the experimental determinations of Im f(E) and Re f(E) in the various regions of the energy E. In the new dispersion relations, the integrals converge for $|E| \to \infty$ much more rapidly than in the dispersion relations hitherto employed. The additional

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relations for the dispersion relations obtained in this paper offer really new information, that is to say, less experimental data are necessary. Next, various particularities of the dispersion relations derived in this paper are pointed out. The author thanks Academician V. A. Fok for discussing the present paper and for his attention as well as Professor B. Ya. Levin for discussing the mathematical problems. There are 3 references, 2 of which are Soviet.

PRESENTED: September 19, 1959, by V. A. Fok, Academician

SUBMITTED: September 16, 1959

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S/020/60/132/05/22/069
B014/B125

AUTHOR: Khalfin, L. A.

TITLE: On the Connection Between the Law of Decay and the Moment of the First Order of the Energy Distribution

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 5, pp. 1051 - 1054

TEXT: As an introduction, reference is made to the theorem worked out by N. S. Krylov and V. A. Fok (Ref. 1) on the connection between the law of decay L(t) and the energy distribution $\widetilde{\omega}(E)$ of a physical system. Further, the reverse problem, the regeneration of the energy distribution according to the law of decay, was studied by the author (Refs. 2-6). In the present paper new results in this direction are reported. These results are given in the form of a theorem, according to which the law of decay of a physical system the energy distribution of which corresponds to relations (3) has a moment of the first order according to formula (4), where relation (5) must be fulfilled. From the conclusions which are drawn from the theorem given above it follows

On the Connection Between the Law of Decay and the Moment of the First Order of the Energy Distribution

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that relation (9) derived here $\int_0^\infty \frac{|\ln L(t)|}{t^2}\,dt < \infty$ represents the generalization of the decay of a physical system. The constancy of (9) at the lower limit leads to a further physical conclusion. From this a restriction of the rate of change of the law of decay of a physical system results at the beginning of decay. Further it is concluded that the decay at the end ($t \to \infty$) can not be very great. Further, integral (11) for the minimal value of the moment of the first order and formula (12) for the moment of the first order are derived. The desired expression (14) is derived for the problem of the regeneration of the energy distribution. It is shown that this expression definitely determines the energy distribution. The author thanks Academician V. A. Fok for his discussion of the results and his valuable advice, as well as Professor G. I. Petrashen' for his help with the paper. There are 15 references: 9 Soviet, 3 American, 1 Italian, and 1 German.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000721710019-3"

On the Connection Between the Law of Decay and the Moment of the First Order of the Energy Distribution

S/020/60/132/05/22/069
B014/B125

PRESENTED: March 7, 1960, by V. A. Fok, Academician

SUBMITTED: March 2, 1960

VC

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S/044/62/000/007/014/100
C111/C333

AUTHOR: Khalfin, L. A.

TITLE: On some problems of the functional theory in the quantum theory of the decomposition of physical systems

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 36, abstract 7B172. ("Issled. po sovrem. probl. teorii funktsiy kompleksn. peremennogo." M., Fizmatgiz, 1961, 428-439)

TEXT: From the dispersion relations for the characteristic function p(t) (the square of the absolute value of this function is equal to the probability of the decomposition) follows the system of integral equations

$$M(t)\cos N(t) = -\frac{2}{\pi}\int_0^\infty \frac{t' M(t')\sin N(t') - t M(t)\sin N(t)}{t'^2 - t^2}\,dt',$$

$$M(t)\sin N(t) = \frac{2t}{\pi}\int_0^\infty \frac{M(t')\cos N(t') - M(t)\sin N(t)}{t'^2 - t^2}\,dt',$$

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where the integrals are understood in the sense of Cauchy principal values and $p(t) = Me^{iN}$. The problem is to determine N(t) when given the (physically measureable) function M(t). Assuming that p(t) has no zeros in the lower half-plane and decreases polynomially for $t \to \infty$, then

$$N(t) = \frac{2t}{\pi}\int_0^\infty \frac{\log M(t')}{t'^2 - t^2}\,dt'$$

(in the sense of the principal value). If the polynomial decrease is not assumed, then N(t) is calculated by a more complicated formula. Several other problems related to the dispersion relations are formulated.

[Abstracter's note: Complete translation.]

Card 2/2

S/056/61/040/002/019/047
B112/B214

AUTEOR: Khalfin, L. A.

TITLE: Asymptotic behavior of the scattering amplitude at infinitely large energies

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 493-497

TEXT: The present paper is concerned with the asymptotic behavior of the forward-scattering amplitude f at infinitely large energy E. Unlike the usual procedure, no concrete model of interaction has been used. The study is based only on general quantum-theoretical principles, particularly on an "optical" theorem which forms the basis of the unitarity condition. It is known that the scattering amplitude f as a function of E is an analytical function in the complex semi-plane Im E > 0 and has no essential singularity in the neighborhood of infinity, but has a first-order pole at infinity itself in the case of elastic scattering. The basis of the present investigation is the "optical" theorem:

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Im $f(E) = (k/4\pi)\sigma(E)$, where $k^2 = E^2 - \mu^2$, μ is the rest mass of the scattering particle, and $\sigma(E)$ is the total scattering cross section. This theorem is an immediate consequence of the unitarity condition for the forward-scattering amplitude. It leads to the inequality:

$$|f(E)|^2 - \frac{k^2}{4}\left[\int_0^{\vartheta_1} \sin\vartheta |f(E,\vartheta)|^2 \, d\vartheta\right]^2 \geq 0, \vartheta_1 < \pi \ .$$

Further, it is assumed that the scattering amplitude f is an analytic function of the scattering angle ϑ in the neighborhood of the point $\vartheta = 0$, so that it is possible to substitute the series

$$|f(E,\vartheta)|^2 = |f(E)|^2 + \sum_{k=1}^{\infty} \frac{\vartheta^k}{k!} \frac{\partial^k |f(E,0)|^2}{\partial \vartheta^k}$$

in the above inequality. In this way, it is found that for the elastic forward-scattering amplitude f an inequality $|f(E)| < A/|E| + B$, $A, B > 0$ holds if the functions

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KHALFIN, L.A.

Asymptotic behavior of the scattering amplitude at infinite energies. Zhur. eksp. i teor. fiz. 40 no.2:493-497 F '61. (MIRA 14:7)

(Scattering (Physics))

KHALFIN, L.A.

Supposed relation between the pole position and the residue of the scattering amplitude in this pole. Zhur.eksp.i teor.fiz. 41 no.4:1233-1240 O '61. (MIRA 14:10)

1. Matematicheskiy institut AN SSSR.
(Quantum field theory)

KHALFIN, L.A.

Quantum theory of unstable elementary particles. Dokl. AN SSSR 141 no.3:599-602 N '61. (MIRA 14:11)

1. Leningradskoye otdeleniye Matematicheskogo instituta im. V.A. Steklova AN SSSR. Predstavleno akademikom V.A. Fokom.
(Quantum theory)
(Particles (Nuclear physics))

40631

S/263/62/000/009/009/010
I007/I207

AUTHOR: Khalfin, L. A.

TITLE: On the use of optimum filters for counting radioactive radiations

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 32. Izmeritel'naya tekhnika, no. 8, 1962, 57, abstract 32.9.402 (In collection Vopr. rundn. geofiz) M., Gosgeoltekhizdat, no. 2, 1961, 79–85

TEXT: Conditions of using optimum filters for separating the active (useful) signal at the level of fluctuation noise in measuring radioations are studied. Remote-control (RC) pulse-integrating devices, the time constant of which determines their optimum efficiency, are used (serve) as optimum filters. It is shown that the time constant is selected so as to ensure statistical precision and minimum distortion of the shape of the time function to be found. The RC-filter consists of two, series-connected filters with the time constants τ_1 and τ_2. The sum of the constants $\tau_1 + \tau_2 = \tau$ represents the time constant of the optimum filter. The value of τ_1 should be as small as possible. The active signal P(t) and noise n(t), i.e. $\phi(t) + n(t)$ are fed to the input of the second filter the true constant of which is τ_2. The solution of this typical problem is provided for by the theory of optimum filtration of random processes. Input signal separation $\phi(t) + n(t)$ is assumed to ensure optimum filtration, since it gives maximum ratio of peak signal to mean root-square value of noise. The

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On the use of optimum filters for counting radioactive radiations.

S/263/62/000/009/009/010
1007/1207

RC-filter permits optimum separation of damped-expenential signals only, but not of anomalies. Analytical expressions for a general solution to the problem of optimum observation of statistical processes, owing to their great number, are illustrated only by an example without any further detailed analysis. There are 7 references.

[Abstracter's note: Complete translation.]

Card 2/2

KHALF'IN, L.A.

Best filter for calculating radioactive radiation. Vop.rud.geof. no.2:79-85 '61. (MIRA 15:4)
(Radioactive prospecting--Equipment and supplies)

KHAYKOVICH, I.M.; KHALFIN, L.A.

Change in the intensity of the gamma radiation from a semispace covered with a layer which is impermeable to gas. Vop.rud.geof. no.2:131-134 '61. (MIRA 15:4)
(Gamma rays) (Radioactive prospecting)

Transactions of the 6th Conf. on Probability Theory and Mathematical Statistics and of the Symposium on Distributions in Infinite-Dimensional Spaces held in Vil'nyus, 5-10 Sep '60. Vil'nyus Gospolitizdat Lit SSR, 1962. 493 p. 2500 copies printed

THEORY OF GAMES AND THEORY OF QUEUES

Card 12/17

L 19622-63 EWT(1)/BDS AFFTC/ASD/IJP(C)

ACCESSION NR: AP3007084 S/0056/63/045/003/0631/0636

AUTHOR: Khalfin, L. A.

TITLE: The regge pole hypothesis in quantum field theory and threshold features of inelastic processes

SOURCE: Zh. eksper. i teoret. fiziki, v. 45, no. 3, 1963, 631-636

TOPIC TAGS: Regge pole , quantum field theory, inelastic process, threshold feature , s-channel, t-channel

ABSTRACT: A specific feature of the Regge-pole hypothesis, connected with crossing symmetry, are investigated, and in particular the connection between the hypothesis is reconciled in quantum field theory with the threshold singularities in the s-channel (but not in the t-channel). New additional consequences of the hypothesis, involving the asymptotic behavior of inelastic processes, are obtained and hypothetical experiments for their verification are sug-

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ACCESSION NR: AP3007084

gested. "I am thankful to Prof. P. Matthews for a preprint of his paper, to V. N. Gribov for a preprint and for a discussion of papers devoted to the Regge pole hypothesis in quantum field theory, and to Ya. I. Azimov for a preprint. I am also grateful to the participants of the seminar of the Theoretical Physics Division of the Leningrad State University for interesting discussions." Orig. art. has 12 formulas.

ASSOCIATION: Leningradskoye otdeleniye Matematicheskogo instituta Akademii nauk SSSR (Leningrad Division of the Mathematics Institute of the Academy of Sciences SSSR)

SUBMITTED: 27Feb63 DATE ACQ: 08Oct63 ENCL: 00

SUB CODE: PH NO REF SOV: 011 OTHER: 012

L 22760-66 EWT(m)/T

ACC NR: AP6008739 SOURCE CODE: UR/0386/66/003/003/0129/0134

AUTHOR: Khalfin, L. A.

ORG: Leningrad Division of the Mathematics Institute im. V. A. Steklov, Academy of Sciences SSSR (Leningradskoye otdeleniye Matematicheskogo instituta Akademii nauk SSSR)

TITLE: Concerning the decay $K_L^0 \to \pi^+ + \pi^-$

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 3, 1966, 129-134

TOPIC TAGS: K meson, lepton, parity principle, meson interaction, elementary particle, strong nuclear interaction

ABSTRACT: The author proposes one more idea for explaining various experiments in which it was observed that, contrary to the theoretical prediction based on the assumed validity of CP invariance,

$$\frac{K_L^0 \to \pi^+ + \pi^-}{K_L^0 \to (\text{all charged channels})} \simeq 2 \times 10^{-3}. \qquad (1)$$

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It is noted that in no other experiment for checking CP invariance (in particular, lepton decays of K^0) were any effects of the same order observed. The idea is based on the specific character of creation and decay of K^0 and involves essentially the answer to the question whether the properties of unstable particles depend on the method of preparation or not. If it is assumed as usual that strong interactions create a K^0 which is a coherent mixture of K_1^0 and K_2^0 (eigenstates of the combined-parity operator) which decay (and are also produced in place of K^0) as a result of weak interaction, then the assumption and K_1 and K_2 decay independently calls for the existence of some mechanism that "filters" the energy (mass) distribution of K^0 so as to separate K_1^0 and K_2^0 individually. If the properties of unstable elementary particles do not depend on the preparation, and consequently also on the mass filtering, then the filtering will affect only the intensity of the observed effects, but will not change the properties of the unstable particles. On the other hand, if the properties of the unstable particles depend on the preparation, the situation changes radically, for then filtering the K^0 masses to separate K_2^0, account must be taken of the part of K_1^0 which passes through this mass filter. Then K_L^0, which is a decaying state having the same lifetime as K_2^0, will be a mixture of K_2^0 and of K_1^0, i.e., a state with a mixture of states CP = -1 and CP = 1. Consequently the decay products of K_L^0 will also have different CP. This

explains qualitatively the $K_L^0 \to \pi^+ + \pi^-$ effect. The method indicated for solving the $K_L^0 \to \pi^+ + \pi^-$ problem agrees well with the following known facts: (a) nowhere except in the decay of K_L^0 is there any apparent violation of CP; (b) the effect of filtering is manifest, by virtue of the properties of K_1^0, only in the hadron channel of the decay, and there are no such effects in the lepton channels of K^0 decay; (c) there should be no dependence of (1) on the momentum of K_L^0; (d) under condition (b) it is clear that the $K_L^0 \to \pi^+ + \pi^-$ effect does not influence at all the parameters of K_1^0, K_2^0, and K^0, which are determined on the basis of the lepton channels of K^0. At the same time, the following new effect is predicted:

$$\frac{K_L^0 \to \pi^0 + \pi^0}{K_L^0 \to (\text{all char. chan.})} \simeq 2 \times 10^{-3} \times \frac{0.3}{0.7} \simeq 0.9 \times 10^{-3}$$

independently of the details of the filtering mechanism. This prediction is fundamental and its experimental verifican can decide finally the fate of the proposed method of solving the $K_L^0 \to 2\pi$ problem. Orig. art. has: 7 formulas.

SUB CODE: 20/ SUBM DATE: 17Dec65/ ORIG REF: 007/ OTH REF: 009

KHALFIN, L. I.

Problem of the Lower Devonian of Rudnyy Altay

After a critical review of the stratigraphical work of N. L. Bublichenko (Izv. Geol. Komiteta, 46, No. 10, 1927; Izv. AN Kaz SSR, Ser. geol., No. 9, 1948 and No. 14, 1951), the author comes to a conclusion concerning the wide distribution of the lower Devonian in the Altay. To the deposits of this age the author also refers "leptodontell fauna," which characterize in Rudnyy Alty the "Losishensk horizon" of N. L. Bublichenko. (RZhGeol, No. 5, 1955) Tr. Gorno-geol. in-ta Zap. Sib. fil. AN SSSR, No. 13, 1953, 129-137.

SO: Sum. No. 744, 8 Dec 55 - Supplementary Survey of Soviet Scientific Abstracts (17)

KHALFIN, L.L., redaktor; MATVEYEV, A.K., redaktor; SLAVOROSOV, A.Kh., redaktor izdatel'stva; KOROVENKOVA, Z.A., tekhnicheskiy redaktor

[Problems in the geology of the Kuznetsk Basin] Voprosy geologii Kuzbassa. Moskva, Ugletekhizdat. Vol. 1956. 248 p. (MIRA 9:10)

1. Soveshchaniye po stratigrafii uglenosnykh otlozheniy, 2-d, 1956. (Kuznetsk Basin--Geology)

KHALFIN, L. L.

KHALFIN, L.L.

Some general problems on stratigraphy and some old "methods" of scientific review deserving attention. Trudy Gor.-geol.inst. Zap.-Sib.fil.AN SSSR no.13:47-74 '53. (MLRA 8:12)
(Geology, Stratigraphic)

KHALFIN, L. L.

Lower Devonian of the Rudnyy Altai. Trudy Gor.-geol.inst.Zap.-Sib.fil.AN SSSR no.13:129-137 '53. (MLRA 8:12)
(Altai Mountains--Geology, Stratigraphic)

KHALFIN, L.L.

USSR/ Scientific Organization - Conferences

Card 1/1 Pub. 46 - 23/24

Authors : Senderzon, E. M.; Khalfin, L. L.; and Yablokov, V. S.

Title : On the stratigraphy of the Kuznetsk Basin

Periodical : Izv. AN SSSR. Ser. geol. 6, 151-154, Nov-Dec 1954

Abstract : Minutes are presented of the general meeting called by the Ministry of Geology and Preservation of Natural Resources, USSR at which the stratigraphy of the Leninsk-Kuznetsk coal basin was discussed. Table showing the stratigraphy of the coal-bearing Kuzbas region is included.

Institution : .....

Submitted : August 2, 1954

KHALFIN, L. L.

15-57-2-1262

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 2, p 8 (USSR)

AUTHOR: Khalfin, L. L.

TITLE: The Biostratigraphic Contact Between the Balakhonskaya and the Kuznetsy Strata in the Kuzbass (O biostratigraficheskoy granitse mezhdu balakhonskoy i kuznetskoy svitami Kuzbassa)

PERIODICAL: Tr. Tomskogo un-ta, ser. geol. 1954, Vol 132, pp 155-158

ABSTRACT: Bibliographic entry

Card 1/1

R.T.; YEGOROVA,L.I.; IVANIYA,V.A.; KRAYEVSKAYA,L.N.; KRASNOPEYEVA, P.S.; LEBEDEV,I.V.; LOMOVITSKAYA,M.P.; POLETAYEVA,O.K.; ROGOZIN,L.A.; RADCHENKO,G.P.; RZHONSNITSKAYA,M.A.; SIVOV,A.G.; FOMICHEV,V.D.; KHALFINA,V.K.; KHALFIN,L.L.; CHERNYSHEVA,S.V.; NIKITINA,V.N., redaktor; GUROVA,O.A., tekhnicheskiy redaktor

[Atlas of leading forms of fossils in the fauna and flora of Western Siberia] Atlas rukovodiashchikh form iskopaemykh fauny i flory zapadnoi sibiri. Pod red. L.L.Khalfina. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po geologii i okhrane nedr, Vol.1. 1955. 498 p. Vol.2. 1955. 318 p. [Microfilm]
(MLRA 9:3)

1. Tomsk. Politekhnicheskiy institut imeni Kirova.
(Siberia, Western--Paleontology)

ANDREYEVA, Ye.M.; MANDEL'SHTAM, M.O.; RADCHENKO, G.P.; ROTAY, A.P.; KHALFIN, L.L.; YAVORSKIY, V.I.; OVCHINNIKOVA, S.V., redaktor izdatel'stva; GUROVA, O.A., tekhnicheskiy redaktor

[Atlas of principal forms of fossil fauna and flora of the Permian deposits in the Kuznetsk Basin] Atlas rukovodiashchikh form iskopaemykh fauny i flory permskikh otlozhenii Kuznetskogo basseina. Pod obshchei red. V.I.Iavorskogo. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geol. i okhrane nedr, 1956. 409 p. (MLRA 10:2)
(Kuznetsk Basin--Paleontology, Stratigraphic)

KHALFIN, L.L.

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7, p 11 (USSR) 15-1957-7-8957

AUTHOR: Belyanin, N. M., Khalfin, L. L.

TITLE: Stratigraphic System for the Kuznetsk Basin, Adopted by the Council, 1954 (General Characteristics) (Stratigraficheskaya skhema Kuzbassa, prinyataya soveshchaniyem 1954 g. (obshchaya kharakteristika)

PERIODICAL: V. sb.: Vopr. geol. Kuzbassa. 1. Moscow, Ugletekhizdat, 1956, pp 7-29

ABSTRACT: The Council adopted the following system (see table). Subdivisions into subseries and formations were adopted only for the Balakhonskiy and Kol'chuginskiy series. The Kol'chunginskiy series was subdivided into two subseries. The lower includes the former Il'inskiy series, now a formation, and a new stratigraphic subdivision, the Uskaskiy formation, to which the lower part of the Yerunakovskiy series belonged. It has been proposed to call the remaining part of

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Stratigraphic System for the Kuznetsk Basin, adopted by the Council, 1954 (Cont.) 15-1957-7-8957

the Yerunakovskiy series the Upper Kol'chunginskiy subseries, and this has been subdivided into two formations. In the northern part of the Kuznetsk basin the three lower formations of the Kolchuginskiy series are replaced by the Krasnoyarsk sandstone facies. The Ostrogskiy series, formerly belonging to the Upper Carboniferous, now belongs to the Lower Carboniferous (to the top of the Visean, the Namurian). The age of the Balakhonskiy series was not determined conclusively, and this series requires more precise definition. It was established that the conglomeratic series includes all three divisions of the Jurassic system. Cretaceous rocks, which occur in a number of places in the Kuznetsk basin, were not considered in the system adopted by the Council. The majority of the boundaries between individual subdivisions are biostratigraphic and are clearly verified by changes both in the lithology of the rocks and in the groups of fauna and flora. Detailed descriptions of the individual subdivisions and lists of guide fossils are presented.

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Stratigraphic System for the Kuznetsk Basin, adopted by the Council, 1954 (Cont.)

15-1957-7-8957

Age	Series	Subseries	Formation	Thickness, m
J_{1-3}	Conglomeratic			700-900
	b r e a k			
T_1	Mal'tsevskiy		Upper Mal'tsevskiy	300-400
			Lower Mal'tsevskiy	280-300
P_2^k	Kol'chuginskiy	Upper Kol'chuginskiy	Gramoteinskiy	1400
		Lower Kol'chuginskiy	Leninskiy / Uskatskiy / Il'inskiy	550-700
			Krasnoyarsk facies	600-900

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15-1957-7-8957

Stratigraphic System for the Kuznetsk Basin, adopted by the Council, 1954 (Cont.)

Age	Series	Subseries	Formation	Thickness, m
P_1^{ks}	Kuznetskiy			700-800
C_2-P_1	Balakhonskiy	Upper Balakhonskiy	Usyat'skiy	100-170
			Kemerovskiy	150-200
			Ishanovskiy-Intermediate	160-1200
		Lower Balakhonskiy	Alykayerskiy	200-600
			Mazurovskiy	300-550
C_1^3	Ostrogskiy			200-600

b r e a k

Card 4/5

15-1957-7-8957

Stratigraphic System for the Kuznetsk Basin, adopted by the Council, 1954 (Cont.)

Age	Series	Subseries	Formation	Thickness, m
C_1^2	Visean stage			
C_1^1	Tournaisian stage			

Card 5/5

I. N. Krylov

KHALFIN, L.L.

Stratigraphy of coal-bearing sediments in the Kuznetsk Basin.
Trudy VNIGRI no.124:123-130 '58. (MIRA 16:7)

(Kuznetsk Basin--Coal geology)

KHALFIN, L.L.

Ordovician Lamellibranchiata in the Chu-Ili Mountains. Trudy GIN no.9:139-196 '58. (MIRA 11:12)
(Chu-Ili Mountains--Lamellibranchiata, Fossil)

KHALFIN, L.L.

Outline history of upper Paleozoic pelecypods in the Kuznetsk Basin.
Trudy SNIIGGIMS no.2:117-124 '59. (MIRA 12:11)
(Kuznetsk Basin--Lamellibranchiata, Fossil)

KHALFIN, L.L.

Sedimentary geological formations from the point of view of stratigraphy. Sov.geol. 2 no.10:11-19 O '59.
(MIRA 13:4)

1. Tomskiy politekhnicheskiy institut.
(Geology, Stratigraphic)

ROZOVA, Antonina Viktorovna; KHALFIN, L.L., prof., doktor geol.-mineral. nauk, zasluzhennyy deyatel' nauk, otv.red.; KUPAYEVA, L.A., red.; MAZUROVA, A.F., tekhn.red.

[Upper Cambrian trilobites of the Salair; Tolstochikha series] Verkhnekembriiskie trilobity Salaira; tolstochikhinskaia svita. Novosibirsk, Izd-vo Sibirskogo otd-niia AN SSSR, 1960. 115 p. (Akademiia nauk SSSR. Sibirskoe otdelenie. Institut geologii i geofiziki. Trudy, no.5) (MIRA 14:11)
(Salair Ridge--Trilobites)

KHALFIN, L.L., prof., zasluzhennyy deyatel' nauki

Principles of biostratigraphic synchronization. Trudy SNIGGIMS no.8:5-26 '60. (MIRA 15:9)
(Paleontology, Stratigraphic)

KHALFIN, L.L.

Boundary of the Silurian and Devonian; concerning O.I.Nikiforova and A.M.Obut's articles. Trudy SNIIGGIMS no.23:175-177 '62. (MIRA 16:9)

(Geology, Stratigraphic)

KHALFIN, L.L.

Current state of the stratigraphic studies of the Carboniferous in the Sayan-Altai area. Trudy SNIIGGIMS no.21:7-9 '62.

Upper Paleozoic Lamellibranchiata. Ibid.:68-75

Current state of stratigraphic studies of the Permian in the Sayan-Altai area. Ibid.:361-362 (MIRA 16:12)

KHALFIN, L.L.

Necessary refinements of the generalized stratigraphic scale of the Devonian sediments in the U.S.S.R. Trudy SNIIGGIMS no.2 '64. (MIRA 18:3)

KHALFIN, L.L.

Interdepartmental Conference on the Development of Uniformed and Correlational Stratigraphic Schemes for Central Siberia. Geol. i geofiz. no.11:157-158 '64. (MIRA 18:4)

KHALFIN, L.O., prof., otv. red.; IVANIKA, V.A., dots., kand. geol.-miner. nauk, red. toma; BAZHENOV, I.K., prof., red.; BULYNNIKOV, A.Ya., prof., red.; GORBUNOV, M.G., dots., kand. geol.-miner. nauk, red.; KUZ'MIN, A.M., prof., red.; MIKOV, D.S., prof., red.; ROGOV, G.M., dots., kand. geol.-miner. nauk, red.; SULAKSHIN, S.S., dots., kand. tekhn. nauk, red.; KHAKHLOV, V.A., prof., red.

[Materials on the geology and minerals of Western Siberia; reports] Materialy po geologii i poleznym iskopaemym Zapadnoi Sibiri; doklady. Tomsk, Izd-vo Tomskogo univ., 1964. 424 p. (MIRA 18:3)

1. Konferentsiya, posvyashchennaya 100-letiyu so dnya rozhdeniya akademika M.A.Usova, Tomsk, 1963.

GRIGORENKO, Ya., inzh.; KHALFIN, M., inzh.

Contribution of Zaporozh'ye efficiency promotors to the harvesting of field crops. Tekh. v sel'khoz. 20 no.7:86-87 Jl '60. (MIRA 13:9)

1. Zaporozhskoye oblastnoye upravleniye sel'skogo khozyaystva (for Grigorenko).
(Harvesting machinery)

KHALFIN, L.A.

Determining the wear of gears. Zav. lab. 30 no.10:1260-1262 '64.
(MIRA 18:4)

1. Tallinnyy filial Gosudarstvennogo vsesoyuznogo nauchno-issledovatel'skogo tekhnologicheskogo instituta remonta i ekspluatatsii mashinno-traktornogo parka.

42028

S/229/62/000/009/001/002
E191/E135

AUTHORS: Korytov, N.V., Candidate of Technical Sciences, and Khalfin, M.Ya., Engineer

TITLE: Analysis of the power requirements of air cushion craft

PERIODICAL: Sudostroyeniye, no.9, 1962, 7-12

TEXT: The power requirements of air cushion craft of the plenum chamber and annular reaction jet (hovercraft) type are considered in turn. The power required consists of the lifting power spent on producing the cushion and the propulsive power. The lifting power for a craft outside the ground cushion is expressed on the basis of momentum theory and the lifting power of cushion craft of both types is given as a fraction of hovering power outside the ground cushion and plotted against the height parameter. For both types, the lifting power is proportional to the pressure in the air cushion and the height of the craft over the surface of the water. Analysis shows that, for the same weight of the craft and the same hovering height but different cushion pressures, the required power diminishes with increasing size of

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the craft. Other things being equal, the periphery of the platform should have the minimum length. Circular or oval platforms are the best. The hovercraft type is better than the plenum chamber type, showing a gain of 30% at equal hovering height, weight of craft, and cushion pressure. A twin profile jet or a sub-division of the craft bottom to ensure stability increases the required power. Nomograms are given for both types of cushion craft showing the power required as function of the craft weight, the hovering height and the cushion pressure. The effect of the planform is illustrated in a graph of lifting power against cushion pressure for a 200 ton craft hovering at a height of 1 m. A round platform requires about 75% of the power needed to sustain a rectangular platform with an aspect ratio of 3. The propulsive power consists of three components, namely the aerodynamic drag of the craft, the air intake drag (impulse drag) and the hydrodynamic drag due to the generation of waves by the motion of the air cushion. In the hovercraft type, the third component is negligible. Enough data exists on the aerodynamic and hydrodynamic drag. Tests at Princeton University on impulse drag have shown little agreement

KHALFIN, R. O.

15G80

USSR/Banking 4908.0200 Jan/Feb 1947

"Legal Position of State Bank of USSR," R. O. Khalfin, 13 pp

"Iz Ak Nauk Otdel Ekon i Prava" No 1

Study of methods of Gosbank control over national economy of USSR. Discusses legal rights of Gosbank in dual economic and administrative functions.

LC

15080

KHALFIN, S.L.

Petrology of differentiated massif of Kogtakh Mountain (Kuznetsk Ala-Tau). Geol.i geofiz. no.7:26-42 '61. (MIRA 14:9)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.
(Kuznetsk Ala-Tau--Petrology)

KHALFIN, S.L.

Ancient gabbroid intrusions in the convergence region of the Bateni Ridge and the Kuznetsk Ala-Tau. Geol. i geofiz. no.11: 63-73 '61. (MIRA 15:2)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.
(Krasnoyarsk Territory—Gabbro)

KHALFIN, S.L.

Nature of granophyric textures of Taraskyr granitoids in the Western Sayan. Zap.Vses.min.ob-va 90 no.3:320-326 '61. (MIRA 14:10)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR.
(Sayan Mountains--Rocks)

SERGEYEVA, Ye.S.; BOGNIBOV, V.I.; KHALFIN, S.L.

Age of the Kogtakh gabbro-monzonite-syenite complex. Geol.i geofiz. no.2:87-94 '62. (MIRA 15:4)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.
(Kuznetsk Ala-Tau--Minerals)

KHALFIN, S.L.

Geology and petrography of the massif of quartz alkali syenites of the Tuim-Karysh interfluve (Kuznetsk Alatau). Trudy Inst. geol. i geofiz. Sib. otd. AN SSSR no.33:63-77 '63.

Taraskyr igneous complex of plagioclase granites and quartz keratophyres in the Western Sayan Mountains. Ibid.:107-112

(MIRA 17:11)

KHALFIN, S.L.[deceased]; KHALFINA, S.L.; DOVGAL, V.N.; KHALFINA, N.A.; GREBENNIKOVA, M.M., red.

[Petrology of the Kogtakh gabbro-monzonite-syenite complex (Kuznetsk Alatau)] Petrologiia kogtakhskogo gabro-montsonit-sienitovogo kompleksa (Kuznetskii Alatau). Novosibirsk, Nauka, 1965. 90 p. (MIRA 18:12)

KHALFIN, SH. S. PROF 57/49T62

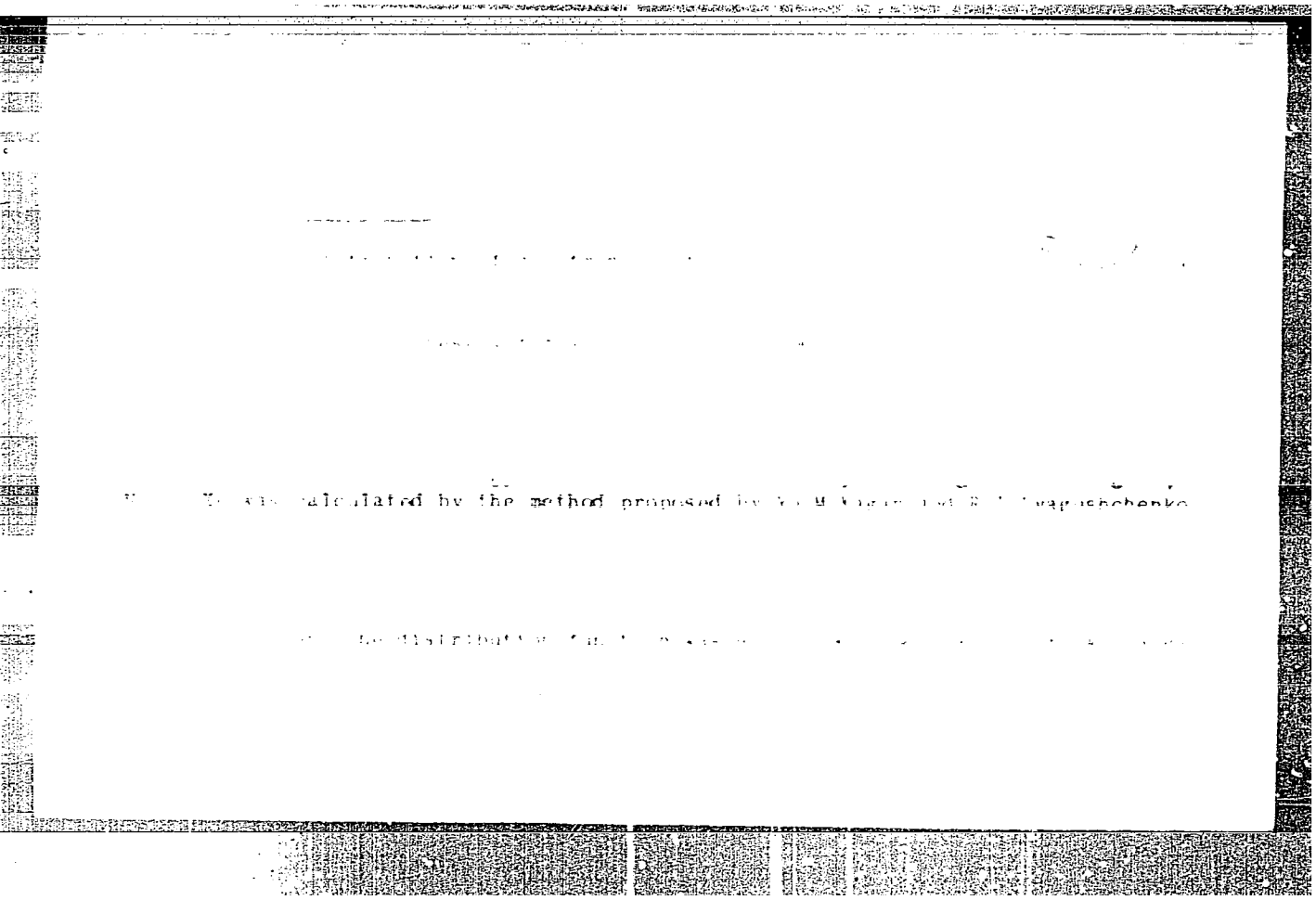
USSR/Medicine - Literature Nov/Dec 48
Medicine - Dysentery

"Review of Prof P. N. Stepanov's 'Chronic Dysentery' and Prof Sh. S. Khalfin's 'Chronic Dysentery,'" Prof B. N. Rubenshteyn, 2 pp

"Terap Arkhiv" Vol XX, No 6

Both monographs are of great practical use. Stepanov's book treats history of the disease in Stalinabad Hosp for Infectious Diseases, while Khalfin's book contains data on cases in Baku institutions. Despite certain defects, both provide valuable information on the disease, its geographical distribution, and practical aid to doctors.

57/49T62



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ACCESSION NR: AP5003255

SUBMITTED: 27Mar64 ENCL: 00 SUB CODE: ME NP

CHERKINSKIY, Boris Mendeleyevich; TOKAREV, Dmitriy Georgiyevich; MAKEYEVA, Anna Gerasimovna; ZOTOV, Petr Petrovich; GORODOV, K.I., retsenzent; SOROKINA, Ye.V., retsenzent; MOTORIN, I.V., retsenzent; KHALFIN, V.N., retsenzent; SHTEYNGART, M.D., red.; PYATNITSKIY, V.N., tekhn. red.

[Handbook for the power engineer in the textile industry] Spravochnik energetika tekstil'noi promyshlennosti. [By] B.M.Cherkinskii i dr. Moskva, Gizlegprom. Vol.2. [Heat engineering] Teplotekhnika. 1963. 615 p. (MIRA 17:2)

PAVLOV, N.N., inzh.; KHAL'FIN, V.N., inzh.

Automation and mechanization at a spinning and weaving factory.
Mekh.i avtom.proiz. 14 no.6:12-18 Je '60. (MIRA 13:7)
(Textile industry--Technical innovations)
(Automation)

KHALFIN, Ya., inzhener.

Automatic shield between cars. Mast.ugl.5 no.11:20-21 N '56.
(Coal mines and mining--Equipment and supplies) (MLRA 10:1)

GORNOPOL'SKIY, Abram Isaakovich, inzh.; KHALFIN, Ya.N., nauchn. red.

[Loading machinery and mining cutter-loaders] Pogruzochnye mashiny i prokhodcheskie kombainy. Moskva, TSentr. nauchno-issl. in-t patentnoi informatsii i tekhniko-ekon. issl., 1964. 39 p. (MIRA 18:5)

BALYKOV, Vladimir Mikhaylovich; BOGUTSKIY, Nikolay Vasil'yevich; KHALFIN, Yakov Naumovich; GERSHENOVICH, S.Ye., nauchn.red.

[Coal cutter-loaders] Ugol'nye kombainy. Moskva, TSNIIPI, 1965. 40 p. (MIRA 18:10)

AUTHORS: Berman, L. S., Raykhman, S. S., Khalfin, Z. A. 57-27-7-28/40

TITLE: A Balanced Modulator Based on the Hall-Effect in Semiconductors (Balansnyy modulyator na effekte Kholla v poluprovodnikakh).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol. 27, Nr 7, pp. 1597-1598 (USSR)

ABSTRACT: It is shown that the Hall-effect permits to build up a scheme of a balanced modulator, as the Hall-effect yields a sum and a difference of two frequenciers which are indeed required for a balanced modulator. The experiments described here were performed in order to prove that the linearity of the transformation is the advantage of such a modulator, i. e. that only the sum-frequency ($f_o + f_1$) and the difference-frequency ($f_o - f_i$) are present at the inlet and that all other frequencies are absent. The scheme of a balanced modulator was investigated with the use of a film-transmitter of HgSe. The experiments showed that the linearity of the transformation amounted to 2000 (66 db). This can also be attained in balanced modulators of the common type.

Card 1/2

A Balanced Modulator Based on the Hall-Effect in Semiconductors 57-27-7-28/40

Besides the scheme of a balanced modulator with a transmitter of n-germanium was investigated. In this case the linearity was 25 (28) db, i.e. considerably less than in the usual schemes. Thus it may be said that the balanced modulators on the basis of the Hall-effect are inferior to the usual balanced modulators with regard to sensitivity and that they offer no advantages with respect to the linearity of transformation. There is 1 figures.

ASSOCIATION: Institute for Semiconductors AS USSR, Leningrad (Institut poluprovodnikov AN SSSR, Leningrad)

SUBMITTED: February 15, 1957

AVAILABLE: Library of Congress

Card 2/2

1. Modulators-Test results 2. Modulators-Performance
3. Semiconductors-Applications

GOREV, K.V.; BEL'SKIY, Ye.I.; DANILENKO, T.P.; KHALFINA, B.Ya.

Effect of heat treatment on the mechanical properties of 35KhGSA and 4502 steels. Sbor.nauch.trud.Fiz.-tekh.inst.AN BSSR no.1:71-79 '54. (MLRA 10:1)

(Steel alloys--Heat treatment)

KHALFINA, F.A., kand. med. nauk (Khar'kov)

Aneurysms of the chiasmatic region pursuing a course typical of tumors. Vop. neirokhir. 26 no.5:17-20 S-O'62 (MIRA 17:4)

1. Otdel nevrologii Ukrainskogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta.

KHALFINA, F.A., kand. med. nauk; KANTOROVICH, V.N.

Lesion of the optic pathways in diffuse gliomas of the brain. Oft. zhur. 18 no.1:18-22 '63 (MIRA 17:4)

1. Iz otdela nevrologii i laboratorii patomorfologii Ukrainskogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta.

KHALFINA, F. A.

Khalfina, F. A. - "Eye symptoms in traumatic abcesses of the brain", Uchen. zapiski (Ukr. nauch.-issled. in-t oftalmologii im. prof. Girshmana), Vol. V, 1948, p. 65-171, - Bibliog: 134 items.

SO: U-3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 8, 1949).

KHALFINA, F.A.

MERKULOV, I.I., professor; KHALFINA, F.A.

Modifications of visual field as a remote symptom of cerebral tumors. Vop.neirokhir. 19 no.6:8-13 N-D '55. (MLRA 9:1)

1. Iz Ukrainskogo nauchno-issledovatel'skogo instituta bolezney imeni prof. Girshmana i Ukrainskogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta.

(BRAIN, neoplasms,
manifest.,visual field changes)
(VISION,
field, changes in brain tumors)

KHALFINA, F.A., kand.med.nauk; ROZENTSVEYG, I.S., kand.med.nauk

Dynamics of the chiasmal syndrome following X-ray treatment of tumorous and inflammatory processes in the ciliary zone. Oft. zhur. 12 no.5:282-287 '57. (MIRA 13:6)

1. Iz Ukrainskogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta (direktor - starshiy nauchnyy sotrudnik P.I. Kovalenko), Khar'kov.
(X RAYS--PHYSIOLOGICAL EFFECT)
(CILIARY BODY--DISEASES)

KHALFINA, F.A., kand.med.nauk

Differential diagnosis between tumorous and inflammatory processes in the chiasmal region. Oft.zhur. 14 no.5:292-296 '59.
(MIRA 12:10)

1. Iz Ukrainskogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta i Ukrainskogo nauchno-issledovatel'skogo instituta glaznykh bolezney im. prof.Girshmana (direktor - zaslushennyy deyatel' nauki, chlen-korrespondent AMN SSSR prof.I.I.Merkulov).
(EYE--INFLAMMATION) (TUMORS)

KULEV, L.P. [deceased]; KHALFINA, I.L.

Esters of 2'-formyldiphenyl-2-carboxylic acid. Zhur. ob. khim. 34 no.8:2668-2669 Ag '64. (MIRA 17:9)

1. Tomskiy politekhnicheskiy institut.

BRUSILOVSKIY, I.A.; EPSHTEYN, I.P.; KUKLINA, A.A.; BIRKUN, A.A.; KHALFINA, I.Ya.

Primary cancer of the fallopian tubes. Akush. i gin. 36 no.3:40-42 My-Je '60. (MIRA 13:12)

(FALLOPIAN TUBES—CANCER)

KHAL'FINA, M.V., red.; LAPTEV, I.A., red.; MOISEYEV, I.N., red.; ALEKSEYEV, A.G., tekhn. red.; IVANOVA, Z.V., tekhn. red.

[Hydrological yearbook] Gidrologicheskii ezhegodnik. Leningrad, Gidrometeoizdat. 1959. Vol.4.[Basin of the Caspian Sea; not including the Caucasus and Central Asia] Bassein Kaspiiskogo moria; bez Kavkaza i Srednei Azii. Nos.4, 8.[Kuybyshev Reservoir (basin of the Volga River below Cheboksary and the basin of the Kama River below the Vyatka River to the Volga Hydroelectric Power Station) and the basin of the Volga River below the Volga Hydroelectric Power Station] Kuibyshevskoe vodokhranilishche (bassein r. Volga nizhe g.Cheboksary i bassein r.Kama nizhe r.Viatka - do Volzhskoi GES) i bassein r.Volga nizhe Volzhskoi GES. Pod red. M.V.Khal'finoi, I.A.Lapteva. 1962. 165 p. (MIRA 16:5)

(Hydrology--Tables, calculations, etc.)

KHALFINA, N.A.

Some Protococcales from Lake Ik(Western Siberia). Bot. mat. Otd. spor. rast. 16:23-27 '63. (MIRA 16:10)

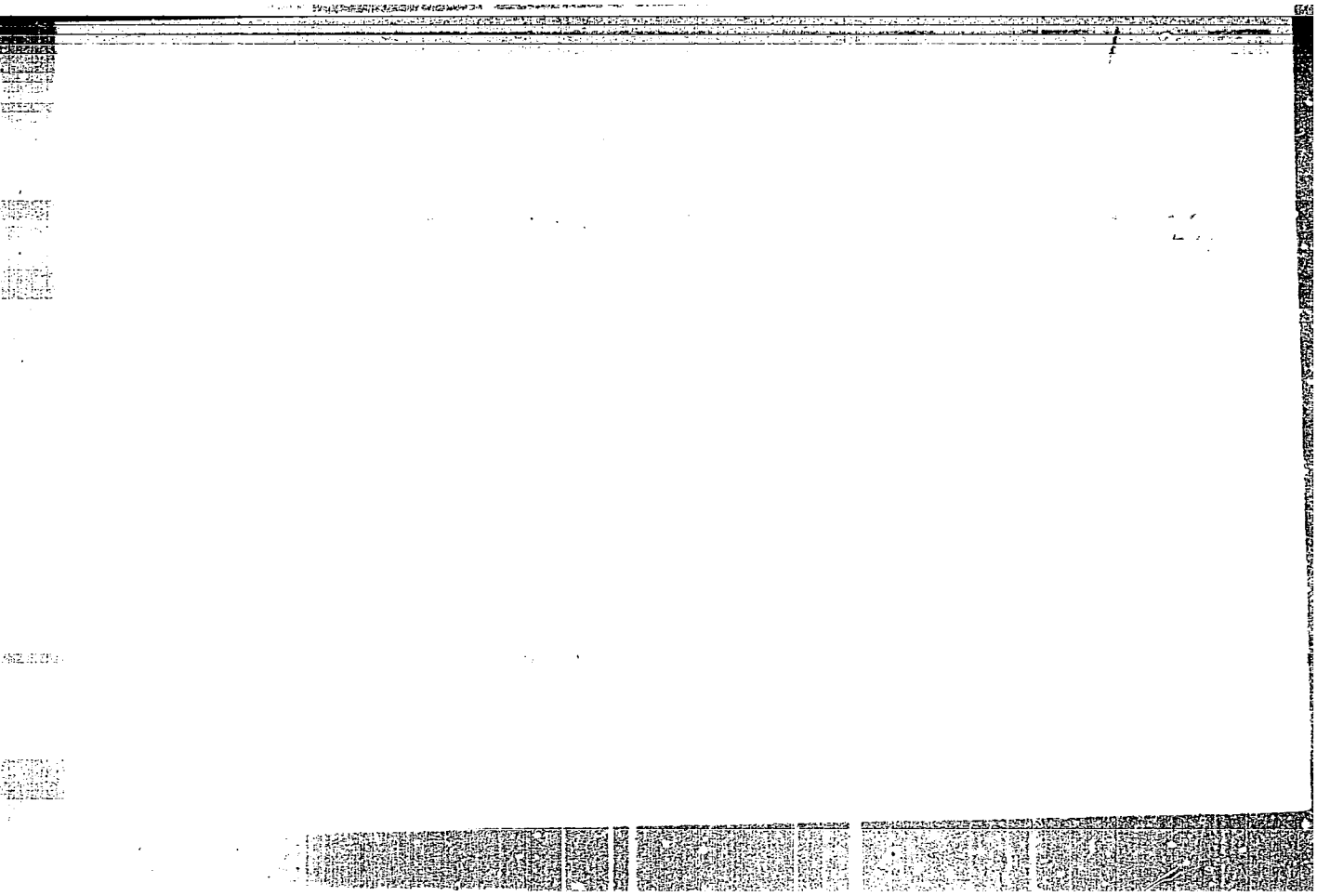
KHALFINA, N.A.

Hydrobiology of the bodies of water in the forest steppe zone of Western Siberia. Izv. SO AN SSSR no.4 Ser. biol.-med. nauk no.1: 41-48 '64. (MIRA 17:11)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

KHALFIN, S.L.[deceased]; KHALFINA, S.L.; DOVGAL, V.N.; KHALFINA, N.A.; GREBENNIKOVA, M.M., red.

[Petrology of the Kogtakh gabbro-monzonite-syenite complex (Kuznetsk Alatau)] Petrologiia kogtakhskogo gabro-montsonit-sienitovogo kompleksa (Kuznetskii Alatau). Novosibirsk, Nauka, 1965. 90 p. (MIRA 18:12)



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expectation, observed in the interval (—T, T), ...