TURCU, Gr.; TEITEL, P.; BRATU, V.; ZAHARIA, M.; LEONTESCU, A.

Erythrocytic biochemical lesion rendered evident by radioactive phosphorus. Studii cerc biochimie 6 no.1:97-108 '63.

1. Laboratorul de biochimie si izotopi radiactivi, Centrul de hematologie, Bucuresti.

LEONTESCU, N.

Destruction of the water chestnut by chemical methods. C. Zaharidi, N. Leontescu, P. Popovici, and V. Popovici. *Comun. acad. rep. populare Romîne* 6, 563-9(1956).—The results of preliminary investigations in weed control with chem. substances are reported. The expts. were made on two lakes in the easily flooded region of the Danube, invaded with different varieties of water chestnut (*Trapa natans*). The following weed killers were used: 2,4-D, 8M-4C (esters of 2,4-D), 2,4-D ethyl and butyl esters, mixts. of 2,4-D esters and 2,4,5-T. Contact weed killers like secondary dinitrobutylphenol-NH_4 and emulsifiable oils to which 4% Na dinitroorthocresol has been added, were also tried. The contact weed killers gave poor results, while the growth regulators of the 2,4-D type succeeded in destroying 85 to 90% of the water chestnut.

R. Mavrodineanu

LEONTIEV, N.F.

Type of administrative, economic, and informative map of a region.
Probleme geog 9:27-34 '62. (publ. '63)

MICKIEWICZ, Leonid; LEONTJEWA, Marija

A case of a live parasite in the crystalline lens in man. Klin. oczna 32 no.1:59-62 '62.

1. Z Kliniki Kursow Doksztalcajacych dla Lekarzy Kierownik: doc. L. Mickiewicz przy Katedrze Chorob Oczu Kazachskiego Instytutu Lekarskiego Kierownik: prof. W.Roszczin.
(FILARIASIS case reports) (LENS CRYSTALLINE parasitol)

MICKIEWICZ, Leonid; LEONTJEWA, Marija

Contribution to the surgical technic of shortening the muscle by means of folding in strabismus. Klin. oczna 32 no.4:341-344 '62.

1. Z Kliniki Okulistycznej Kursow Specjalizacji Lekarzy Kierownik: doc. L. Mickiewicz przy Klinice Chorob Oczu Kazachskiego Instytutu Lekarskiego Kierownik: prof. W. Roszczin.

(STRABISMUS) (OCULOMOTOR MUSCLES)

AID P - 5477

Subject : USSR/Aeronautics - maintenance

Card 1/1 Pub. 135 - 23/29

Author : Leontovich, A. G., Eng.-Col.

Title : From the test stands to the test panels

Periodical : Vest. vozd. flota, 2, 85-86, F 1957

Abstract : The advantages of using the light-weight test panels instead of bulky test stands when checking the radio-technical equipment of the aircraft are discussed by the author in this article.

Institution : None

Submitted : No date

VIL'YAMS, A.P.; V'YUGOV, P.N. [V'iuhov, P.M.]; LEONTOVICH, A.K. [Leontovych, A.K.]

Amplitude analyzer with a single channel. Ukr. fiz. zhur. 5 no. 5:666-671 S-O '60. (MIRA 14:4)

1. Fiziko-tekhnicheskiy institut AN USSR.
(Pulse height analyzers)

GALANIN, M.D.; LEONTOVICH, A.M.; CHIZHIKOVA, Z.A.

Coherence and directionality of the emission of a ruby optical maser. Zhur. eksp. i teor. fiz. 43 no.1:347-349 Jl '62.
(MIRA 15:9)

(Masers)

DICHENKO, Pavel Mikhaylovich, inzh.; LEONTOVICH,A.M., inzh., retsenzent; KOVAL'CHUK,A.V., inzh., red.izd-va; MATUSEVICH,S.M., tekhn.red.

[Handbook for designers of electric power distribution networks and substations] Spravochnik proektirovshchika elektricheskikh setei i podstantsii. Kiev, Gos.izd-vo tekhn. lit-ry USSR, 1963. 708 p. (MIRA 17:2)

LEONTOVICH, A. M.

USSR

6311. Photoelectric investigation of the spectrum of the channel of a spark discharge. L. A. VAINSHTEIN, A. M. LEONTOVICH, L. P. MALYAVKIN AND S. MANDEL'SHTAM. *Zh. eksper. teor. Fiz.*, 24, No. 3, 325-38 (1953) *In Russian.* 537.523.4

Describes the procedure and apparatus for photoelectric recording (with the use of an oscillograph) of the intensities of spectral lines in the unit impulse of the spark discharge. For the intensities of spectral lines of N at different degrees of ionization and of the H_α line, their variation is investigated during the process of generation of the spark discharge. Some regularities have been established for the spectrum excitation in the channel of the discharge. E.g. the relative intensity of 3 pairs of N II lines with different energies of excitation of upper levels varies the less during the discharge the smaller the difference between the energies of upper levels for the lines involved. This leads to the assumption $I = A \exp(-E/kT)$, i.e. that the distribution of atoms on the excitation levels is of the Boltzmann type.

E. LACHMAN

LEONTOVICH, A.M.

51-6-3/26

AUTHOR: Leontovich, A. M.

TITLE: Absorption Spectra of Crystals of Plutonium Salts. (Spektry pogloshcheniya kristallov soley plutoniya.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.II, Nr.6, pp. 695-703. (USSR)

ABSTRACT: The following substances were studied: (1) salts of quadrivalent plutonium: sulphate $Pu(SO_4)_2.4H_2O$, nitrate $Pu(NO_3)_4.(1-2)H_2O$, chloride (exact composition unknown) and trichloracetate with lanthanum $PuLa(CCl_3COO)_7$. (2) double sulphate of trivalent plutonium with potassium $KPu(SO_4)_2.5H_2O$, (3) salts of hexavalent plutonium: plutonyl perchlorate $PuO_2(ClO_4)_2.xH_2O$ and plutonyl chloride $PuO_2Cl_2.xH_2O$. The dimensions of the crystals of the substances studied were from 0.03 to 0.5 mm. The method used was that described by Sverdlov (Ref.1). Measurements were carried out at temperatures from + 20 to - 170°C.

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Absorption Spectra of Crystals of Plutonium Salts.

the theory given in Ref.12. The absorption spectra of plutonium salts are due to degenerate dipole transitions from the lowest level. Quadrivalent plutonium sulphate spectrum exhibits the greatest similarity with the spectra of rare-earth salts. The splitting of levels by the crystal field in plutonium sulphate (80 cm^{-1}) agrees with theory. The author thanks M.D. Galanin and M.V. Fok for advice and criticism, and R. Yu. Deberdeyeva and I.S. Sklyarenko for preparation of the crystals. There are 4 figures, 3 tables and 17 references, 2 of which are Slavic.

ASSOCIATION: Physics Institute imeni P.N. Lebedev, Academy of Sciences of the USSR. (Fizicheskiy institut im. P.N. Lebedeva, AN SSSR.)

SUBMITTED: November 10, 1956.

AVAILABLE: Library of Congress.

LEONTOVICH, A. M.

LEONTOVICH, A.M., Cand Phys-Math Sci -- (diss) "Study of Spectra of Absorption and Conductivity of Crystals of Plutonium Salts", Mos, 1958, 7 pp (AS USSR. Phys Inst im P.N. Lebedev). Bibliography at end of text (3 titles). 125 copies. (KL ,10-58, 118).

GALANIN, M.D., KORBKIN, V.V., LEONTOVICH, A.M., SMORYCHKOV, V.M.
AND CHIZHIKOVA, L.A.

"Coherence, spectra time scanning and pulsations of the ruby laser emission."

Report submitted to the Third. Intl. Symp. on Quantum Electronics.
Paris, France 11-15 Feb 1963

GALANIN, M.D.; LEONTOVICH, A.M.; SVIRIDENKOV, Z.A.; SMORCHKOV, V.N.; CHIZHIKOVA, Z.A.

Pulsations in the radiation from an optical ruby maser. Opt. i spektr. 14 no.1:165-166 Ja '63. (MIRA 16:5)
(Masers) (Quantum electronics)

L 10726-63 EWA(k)/EWT(1)/EWP(q)/EWT(m)/FBD/BDS/T-2/3W2/EEC(b)-2/
ES(t)-2 AFFTC/ASD/ESD-3/RADC/APGC/AFWL Pl-4/Po-4 IJP(C)/WH/WG/K/JHB/EM
ACCESSION NR: AP3003109 S/0056/63/044/006/1847/1851

88
AUTHOR: Korobkin, V. V.; Leontovich, A. M. 15 25 83

TITLE: Coherence and time scan of radiation spectra of a ruby laser

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 1847-1851

TOPIC TAGS: laser emission coherence, laser radiation spectra, laser mode excitation, ruby lasers, axial modes in ruby

ABSTRACT: An experiment has been conducted to determine the time dependence of mode excitation under pulse operation. For this purpose, the coherence and time scan of output radiation were investigated in ruby crystals at room temperature and -165C. The coherence was investigated by observation of the interference pattern with a Michelson-type interferometer in which one of the mirrors was replaced by a prism, so that the mirror and prism images were superimposed on film. The interference pattern observed on the film confirmed that each mode was coherent with respect to the others and

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L 10726-63

ACCESSION NR: AP3003109

propagated in different directions. Contrary to A. L. Schawlow and others (A. L. Schawlow, C. H. Townes. Phys. Rev., 112, 1940, 1958; A. G. Fox, T. Li. Bell. Syst. Techn. J., 40, 453, 1961), this supports the view that the wave front is not a plane wave. The coherence of radiation emerging from different points of the ruby face was demonstrated by inserting a lens at its focal distance from the face, an arrangement which produced two images over the entire face superimposed on the film. The interference phenomena were best observed at a pumping energy only slightly above the threshold (not more than 2%). At higher energies the pattern became indistinct. The time scan showed a discrete number of directions diverging at a general angle up to 30 to 40 min. At a crystal temperature of -165C the scan displayed a nearly perfect regularity of oscillation pulses, and the discreteness of directions of propagation was less pronounced. Oscillations appeared at several frequencies, apparently in axial modes. The room-temperature time scan of the spectra, carried out by photographing the emission from a vertical strip of the face, showed that 5 to 8 axial modes were generated simultaneously at a spectral interval of 0.3 cm^{-1}. At -165C, 3 to 4 axial modes were generated with high background

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L 10726-63

ACCESSION NR: AP3003109

frequencies. All points of the face were found to emit at the same frequencies. The 30- to 40-min magnitude of the overall divergence, which cannot be explained by optical inhomogeneities of the crystal or by dispersion of light in it, is thought to be caused by a change of the refractive index of the crystal within the R_1 line owing to a change in the population of the upper level. Modulation of the optical length of the crystal during the pulse might also lead to modulation of the emission frequency, which would explain the presence of background radiation between the axial modes observed a crystal temperature of -165C.

"The authors express their thanks to M. D. Galavin for discussion, V. N. Lukavin for making the optical parts, and V. N. Smorchkov for making available the laser device, as well as to A. P. Veduta for helping in the work." Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences SSSR)

SUBMITTED: 19Jan63 DATE ACQ: 23Jul63 ENCL: 00
SUB CODE: 00 NO REF SOV: 002 OTHER: 008

Card 3/3

ACCESSION NR: AP4012525 S/0056/64/046/001/0071/0079

AUTHORS: Leontovich, A. M.; Veduta, A. P.

TITLE: Mode excitation and explanation of the divergence of radiation from a ruby laser

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 71-79

TOPIC TAGS: laser, ruby laser, natural oscillation, resonant mode, resonator, plane parallel resonator, spherical resonator, laser spike, spike mode content, laser beam divergence, ruby homogeneity

ABSTRACT: The natural modes excited in each spike for a ruby laser with plane parallel mirrors was investigated with a high-speed SFR-2M camera operating in the "time magnification" mode. Rubies 5 cm long and 7 mm in diameter were used, and the distances between mirrors ranged from 5 to 49 cm. Simultaneous pictures of the radiation distribution in the near and far fields show that the excited modes correspond to those produced by a spherical rather than a plane-parallel resonator. This phenomenon is attributed to inhomo-

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ACCESSION NR: AP4012525

geneities produced in the crystal during its growth or by uneven heating by the pumping light. The inhomogeneities reduce strongly the region of mode excitation, decrease the distance between nearest maxima, and increase greatly the divergence of the beam. If the crystal is not of prime quality, scattering increases the divergence further. "The authors are deeply grateful to M. D. Galanin for discussion and constant interest in the work, and to L. A. Vaynshteyn for discussion." Orig. art. has: 5 figures, 10 formulas, and 2 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 12Jul63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 018

Card 2/2

GALIHIN, M. D., LEONTOVICH, A. M., SVIRIDENKOV, E. A., SUCHKOV, V. N., GUSEVA, E.A.

"Radiation properties of a ruby crystal laser."

The kinetics of generation at room temperature and low temperature (down to -165C) and properties of radiation coherence in a ruby laser were investigated.

Report presented to the 11th Conference on Luminescence (Molecular luminescence and luminescence analysis) Minsk, 10-15 Sept. 1962.

LEONTOVICH, A.M.; VEDUTA, A.P.

Excitation of modes and explanation of the divergence of the radiation beam from a ruby laser. Zhur. eksper. i teor. fiz. 46 no.1:71-79 Ja'64. (MIRA 17:2)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

L-26950-65 EWG(j)/EWA(k)/FBD/EWT(l)/EWP(e)/EWT(m)/ESC(k)-2/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(m)-2/EWA(h) Pn-4/Po-4/Pf-4/Peb/Pi-4/Pl-4 IJP(c) WH/WC

ACCESSION NR: AP5004377 S/0056/65/048/001/0078/0086

AUTHOR: Korobkin, V. V.; Leontovich, A. M.; Smirnova, M. N.

TITLE: Excitation of modes and the kinetics of generation in a ruby laser with a confocal resonator

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 1, 1965, 78-86

TOPIC TAGS: ruby laser, laser generation, generation kinetics, mode excitation

ABSTRACT: An investigation is made of mode excitation in a ruby laser with a confocal resonator (filled with external spherical dielectric coated mirrors) under various generating conditions. The mirrors had radii of curvature of 30 or 50 cm; the distance between them was 60 or 100 cm. The polished ruby rod (0.015% Cr) was 75 mm long, 10 mm in diameter, end had plane-parallel ends. The rod was pumped by an IFK-1500 xenon lamp supplied from a 900 μf bank of condensers; the pumping energy was from 1.3 kj (threshold) to 4 kj. The field distribution pattern in the resonato was obtained by means of

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ACCESSION NR: AP5004377

an SFR-2M photorecorder; an IT-51-30 Fabry-Perot interferometer with dielectric mirrors was used in obtaining the emission spectrum. Coherence was studied from the Fraunhofer diffraction through two openings 0.3 mm in diameter and 11.5 mm apart on a diaphragm placed behind the resonator mirror. The emitted radiation was found coherent throughout the entire resonator, i.e., in a confocal resonator modes are excited simultaneously in the entire resonator. A great number of transverse modes are excited under regular conditions with damping. Fewer modes indicate a less regular generation. In order to achieve regular damped generation, conditions for the excitation of a great number of low-Q modes must be provided, and the higher-Q modes must have a lower volume of excitation. Irregular generation is achieved essentially when modes with different Q are excited. Orig. art. has: 3 formulas and 5 figures. [YK]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 08Jul64 ENCL: 00 SUB CODE: EC

NO REF SOV: 008 OTHER: 009 ATD PRESS: 3189

Card 2/2

L 25283-65 EWG(j)/EWA(k)/FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(m)-2/EWA(h) Pn-4/Po-4/Pf-4/Pi-4/Pl-4/Peb IJP(c) WG/WH

ACCESSION NR: AP5004378 S/0056/65/048/001/0087/0093

AUTHOR: Veduta, A. P.; Leontovich, A. M.; Smorchkov, V. N.

TITLE: Changes in a ruby laser resonator due to heating by the pumping source

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 1, 1965, 87-93

TOPIC TAGS: ruby laser, resonator distortion, gas laser interferometer, thermal distortion, g— laser, ruby laser heating

ABSTRACT: An interferometric method was used to study the changes in the resonator of a ruby laser caused by heating by the pumping source. An He-Ne gas laser with emission at $\lambda = 6328$ Å was used as a coherent light source for the interferometer. The gas laser beam, transformed into a parallel beam by means of lenses, was allowed to pass through a semitransparent plate and to strike a pumped ruby at right angles. The front end of the ruby was 65—85% transparent, the rear end silver coated. The pattern set up by the interference of two beams reflected in the resonator was photographed by means of an SFR-2M camera during the pumping of the ruby. The emission from the ruby laser and the scattered pumping radiation were eliminated by filters for $\lambda = 6328$ Å. The ruby rods were 50 and (approximately) 74 mm long and their lateral surfaces were polished. The pumping was by an IFK-15,000 lamp. The

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L 25283-65
ACCESSION NR: AP5004378

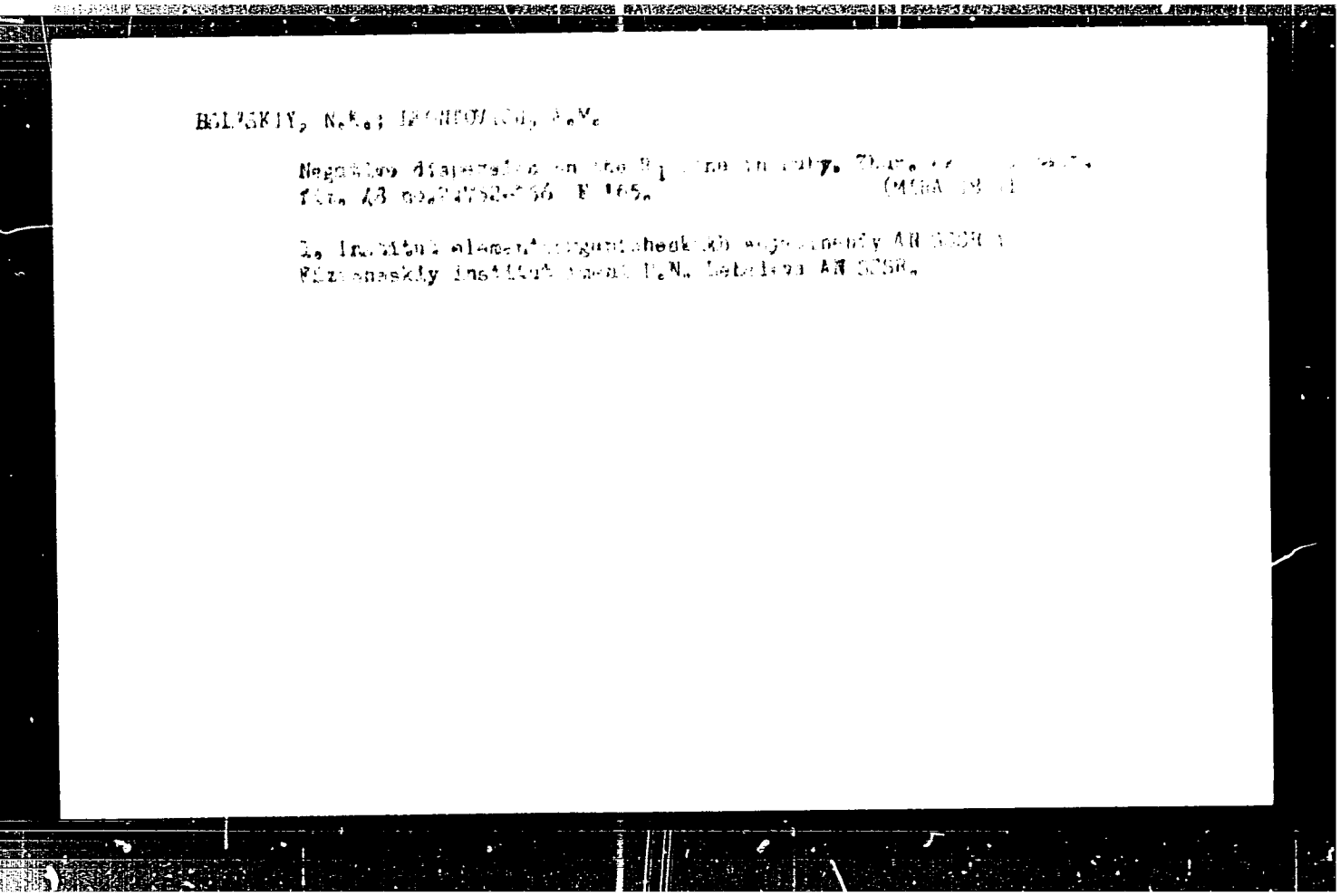
distribution, number, and shape of the interference bands varied during pumping, which indicates that the total optical length and shape of the resonator undergo considerable changes due to heating. The nonuniform heating is due to the focusing of the pumping light by the lateral surfaces of the ruby and the generation of internal modes in the ruby. Heating of the ruby rods was proportional to the concentration of chromium in the ruby. The energy absorbed by various ruby rods during pumping and the efficiency of the pumping source were calculated. The theoretical and experimental results varied by a factor of 1.5—2. The discrepancy has not yet been investigated, but it is suggested that it might be due to the absorption of light in the metastable state or to excitation of internal modes which reduce the laser power output and decrease the lifetimes in the excited state. Orig. art. has: 4 figures and 1 table. [YK]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics, Academy of Sciences, SSSR)

SUBMITTED: 08Jun64 ENCL: 00 SUB CODE: EC

NO REF SOV: 009 OTHER: 004 ATD PRESS: 3184

2/2



L 52251-65 EWA(k)/FBD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/EWP(i)/T/EEC(b)-2/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c) WG/WH

ACCESSION NR: AP5019209 UR/0056/65/049/001/0010/0015

AUTHOR: Korobkin, V. V.; Leontovich, A. M. 15

TITLE: Beats between oscillation modes in a ruby laser

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 1, 1965, 10-15

TOPIC TAGS: laser, ruby laser, laser resonator, resonator mode, beat frequency, intensity modulation

ABSTRACT: An SFR ultra-speed camera was used to investigate the high-frequency modulation of individual ruby laser spikes. In none of the earlier investigations of this effect was a thorough study made of the connection between the observed modulation frequency and the frequency theoretically calculated on the basis of the known resonator dimensions and configuration. The present study was made at frequencies lower than c/2L' (c = speed of light, L' = resonator optical path length), using a semi-confocal resonator consisting of a spherical mirror (100 cm radius) and a flat mirror in the focus of the spherical one. The distance between mirrors was 50 cm. The optical system used for the measurement was similar to that described by one of the authors (Leontovich, with A. P. Veduta, ZhETF v. 46, 71, 1964). Discrimination between the angular modes was effected with a special diaphragm placed inside the resonator. The order of the transverse mode increased

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ACCESSION NR: AP5019209

4

with increasing diaphragm diameter. In addition to the confocal mirror system, a plane-parallel resonator, consisting of reflecting coatings deposited directly on the ends of the crystal, was also tested and the frequency distribution of beats in the various modes determined. The results indicate that high-frequency modulation of the intensity in individual spikes is due to beats between the different modes. The beat frequency is greatly affected by the distortion due to inhomogeneities produced in the ruby crystal by heat. The most likely beat frequencies are estimated on the basis of an analysis of the most likely combinations of longitudinal and transverse modes excited simultaneously in the spike. The bandwidths of the individual modes were estimated from the beat frequencies and found not to exceed 2 Mcs. "The authors thank M. D. Galanin for continuous interest and a discussion." Orig. art. has: 5 figures and 5 formulas. [02]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 26Dec64 ENCL: 00 SUB CODE: EC

NO REF SOV: 005 OTHER: 013 ATD PRESS: 4075

Card 2/2 ADP

KOROBKIN, V.V.; LEONTOVICH, A.M.

Beats between types of oscillations (modes) in a ruby laser.
Zhur.eksp.i teor.fiz. 49 no.1:10-15 Jl '65. (MIRA 18:8)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

L 1618-66 EWA(k)/FBD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/EWP(i)/T/EWP(k)/EWA(m)-2/EWA(h)
SCTB/IJP(c) WG/WH
ACCESSION NR: AP5023361

UR/0020/65/164/001/0075/0077
621.375.8:539.1.073.3

AUTHOR: Gorbunkov, V. M.; Korobkin, V. V.; Leontovich, A. M.

TITLE: Illumination of a bubble chamber by means of a ruby laser

SOURCE: AN SSSR. Doklady, v. 164, no. 1, 1965, 75-77 and top third of insert facing page 76

TOPIC TAGS: laser, ruby laser, laser illuminator, bubble chamber

ABSTRACT: A concentric-resonator ruby laser (λ = 6943 Å) was used to illuminate particle tracks in a bubble chamber. The experimental setup is shown in Fig. 1 of the Enclosure. The resonator consisted of dielectric-coated, concave spherical mirrors with a transmission of ~1% and 50-cm radii placed at a 100-cm distance. The ruby rod, 75 mm long and 9 mm in diameter, was pumped by 0.1-j pulses approximately 0.6 msec in duration from a 4-kj IFK-1500 flash lamp. The laser beam was uniformly distributed with an ~2° angular divergence which was magnified by an f = 50 mm lens to 20°. The experiments were carried out on a bubble chamber model consisting of a plane-parallel plate filled with air bubbles which corresponded to a 25 cm hydrogen bubble chamber described elsewhere (T. D. Blokhintseva, et al, Pribory i

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L 1618-66
ACCESSION NR: AP5023361

4

tekhnika eksperimenta, no. 5, 51, 1962). The test object T was placed 50 cm from the lens O and was illuminated by a concave spherical mirror M_0 (radius of curvature, 65 cm; diameter, 23 cm) placed 70 cm from O. The laser-illuminated bubble tracks were photographed from a distance of ~50 cm with an f = 53 mm camera on a film with a 70 line/mm resolving power. The excess light was filtered by a combination of an interference filter at λ = 694 mμ with a 30% transmission and a neutral filter with an 11% transmission. The test object was photographed 5 times at different camera angles. The results indicate that the use of a laser illumination system without a filter makes it possible to record bubbles up to 0.06 mm in diameter in hydrogen. Small bubbles in larger chambers (e.g., Wilson's chamber) can be recorded at higher generation energies. Recording at reduced energies can also be effective in cases where low-sensitivity, high-resolution film is used for better contrast and accuracy. Orig. art. has: 1 formula and 2 figures.

[YK]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences SSSR); Moskovskiy fiziko-tekhnicheskiy institut (Moscow Physicotechnical Institute) 44

SUBMITTED: 15Jan65 44 ENCL: 01 SUB CODE: EC,NP

NO REF SOV: 005 OTHER: 003 ATD PRESS: 4095

Card 2/3

L 1618-66

ACCESSION NR: AP5023361 ENCLOSURE: 01

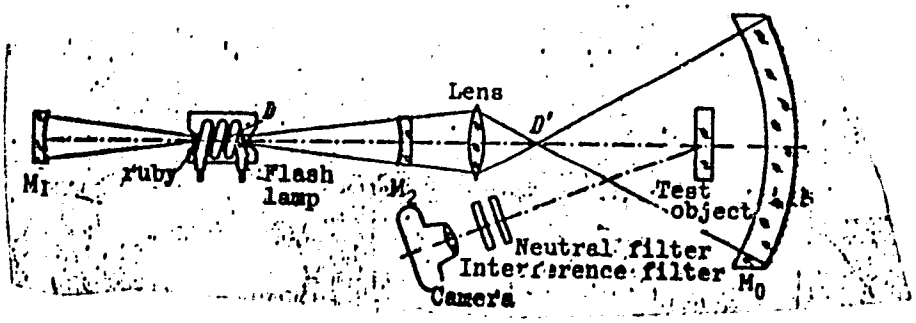

Fig. 1. Diagram of systems for illumination and photography of bubbles

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L 21436-66 FBD/EWT(1)/EEC(k)-2/T/EWP(k)/EWA(h) IJP(c) WG
ACC NR: AP6011498 SOURCE CODE: UR/0386/66/003/007/0301/0303

AUTHOR: Korobkin, V. V.; Leontovich, A. M.; Popova, M. N.; Shchelev, M. Ya.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Dynamics of the field and generation frequency in a giant pulse of a laser with passive shutter

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 7, 1966, 301-303

TOPIC TAGS: ruby laser, laser pulsation, laser modulation, electromagnetic field

ABSTRACT: The authors have previously investigated (ZhETF v. 48, 78, 1965) the dynamics of the field and the generation frequency experimentally for a laser in the free mode. This paper reports a similar investigation of the dynamics of the field and the generation frequencies in the giant pulse of a ruby laser with passive shutter. The passive shutter used was a cell with a solution of cryptocyanine in ethanol. The initial transmission of the cell was 15% for 6943 Å wavelength. The cell was placed between the flat mirror with reflection coefficient 98% and a ruby crystal 120 mm long and 11.5 mm in diameter. The second mirror, located 50 cm from the first, had a reflection coefficient of 30%. The laser action, initiated

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on the end face and on the 30% mirror, bleached the cryptocyanine solution and a giant pulse developed. The pulse energy was 0.5—0.8 J and the duration was 12 to 15 nsec at the half-power level. The time sweep of the field pattern and the time spectra of the generations were with the aid of an electron-optical converter (EOC) operating in the slit-scanning mode and providing a resolution of 0.5 nsec. Photographs are presented of the scanned generation field on the end of the crystal, of the development of the generation field in the far zone, and the time sweep of the giant pulse as observed with a Fabry-Perot interferometer. The results show that individual small regions, spaced 0.3—1 mm apart, are in operation on the end surface. In each such region is observed a pulse of duration 1.8—4 nsec. The subdivision of the generation region into individual sections can be attributed to the operation of higher-order modes and to the inhomogeneity of the crystal. The beam divergence increases in time from 1.2—1.5' to 20', and this variation of the field must be taken into account in calculations of the power of the field at the focus of a lens. The lasing frequency shifts toward the violet side during the course of generation. This shift amounts to 0.012—0.015 cm^{-1}, and the line width at each instant is ~0.01 cm^{-1}. The observed change in the generation field of the giant pulse of a laser with passive shutter is in good qualitative agreement with the results of the theoretical paper of V. S. Letokhov and A. F. Suchkov (ZhETF v. 50, no. 6, 1966), which pertains to the case of instantaneous Q-switching and not

L 21430-66
ACC NR: AP6011498

to the case of a passive shutter. There are no calculations as yet for passive shutters. The change in the generation field is evidence of the change in the transverse of the mode index from low values of the order of 1 to a value of the order of 50. If the axial index does not change, then the increase in frequency, ≈ 0.3 cm^{-1}, which is larger by one order of magnitude than the measured value 0.02 cm^{-1}. The cause of the measured frequency shift is still unclear. The authors thank M. D. Galanin, V. S. Letokhov, and A. F. Suchkov for discussions. Orig. art. has: 3 figures. [02]

SUB CODE: 20/ SUBM DATE: 22Feb66/ ORIG REF: 002/ OTH REF: 001
ATD PRESS: 4221

Card 3/3

L 12922-66 EWT(m) IJP(c)

ACC NR: AP6000952 SOURCE CODE: UR/0286/65/000/022/0039/0039

44,55 44,55 44,55 44,55

AUTHORS: Galanin, M. D.; Gorbunkov, V. M.; Delone, N. B.; Korobkin, V. V.; Leontovich, A. M.; Saitov, I. S.

44,55 44,55

11 B

ORG: none

19,55,44

TITLE: A method for illuminating particle tracks in chambers for the visual observation of tracks. Class 21, No. 176332

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 39

TOPIC TAGS: laser, particle track, coherent light

ABSTRACT: This Author Certificate presents a method for illuminating the particle tracks in chambers for visual observation of tracks by pulsed light radiation. To increase the accuracy of the physical experiment, an optical quantum generator (laser) with confocal resonators is used for illuminating.

SUB CODE: 14/ SUBM DATE: 18Jun64

Card 1/1 HW

UDC: 621.375.8:539.1.073.8

S/020/62/145/003/004/013
B172/B112

AUTHOR: Leontovich, An. M.

TITLE: Existence of unbounded oscillating trajectories in a billiard problem

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 3, 1962, 523-526

TEXT: The movements of a sphere on a plate of infinite length is considered, this plate being bounded on one side by the x-axis and on the other by a bell-shaped curve $y = f(x)$. (1. $f(x) > 0$, $f(0) = 1$, $f(x) \to A \geq 0$ for $|x| \to \infty$ ... $f'(x) < 0$ for $x > 0$, $f'(x) > 0$ for $x < 0$; 3. $f''(x) > 0$ for $|x| > ...$. The trajectories are open polygons. At the boundary the angle of incidence is equal to the angle of emergence. A trajectory is called unbounded if it does not fit into the strip $x_1 \leq x = x_2 (-\infty < x_1 < ... < +\infty)$. It is called oscillating if it intersects the y-axis an infinite number of times. Conditions are stated for $f(x)$ under which unbounded oscillating trajectories exist and for which the cases $A = 0$ and $A > 0$, need to be distinguished.

Card 1/2

S/020/62/143/003/005/029
B112/B102

AUTHOR: Leontovich, An. M.

TITLE: Stability of the Lagrangian periodic solutions of the restricted three-body problem

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 3, 1962, 525 - 528

TEXT: The stability of the equidistant solution of the restricted three-body problem (cf. J. L. Lagrange, Oeuvres, 6, Paris, 1873, p. 272 - 292) is investigated. The first approximation stability condition $(m_1 + m_2)^2 > 27\, m_1 m_2$ of E. T. Whittaker is shown to be valid exactly.

There are 6 references: 2 Soviet and 4 non-Soviet. The English-language reference is: J. E. Littlewood, Proc. Lond. Math. Soc., 3, 9, no. 35, 343 (1959).

PRESENTED: November 11, 1961, by A. N. Kolmogorov, Academician

SUBMITTED: November 10, 1961

Card 1/1

KISELEV, Gennadiy Yelliyevich; OSTAPENKO, V.I., kand. biol. nauk, red.; KNYAZEV, A.A., red.; VOROB'YEV, D.M., red.; LEONTOVICH, G.N., kand. arkhit. nauk, red.; SAVZDARG, V.E., red.; TAIROVA, V.N., red.

[Floriculture] TSvetovodstvo. Izd.3., ispr. i dop. Moskva, Izd-vo "Kolos," 1964. 983 p. (MIRA 17:8)

1. Starshiy sadovod Botanicheskogo sada Botanicheskogo instituta im. V.L.Komarova (for Knyazev). 2. Starshiy sadovod Tresta ob"yedinennogo sadovodstva (for Vorob'yev, Riga). 3. Direktor tekhnikuma zelenogo stroitel'stva, Khar'kov (for Leontovich).

USSR/Geology
Stratification
Petrology

Jul/Aug 48

"The Study of Middle Carboniferous Fusulinidae of the Saratov Volga Region," F. S. Putrya, G. Ye. Leontovich 36 pp

"Byul Mosk Obshch Ispy Prirody, Otdel Geolog" Vol XXIII, No 4

Describes those Foraminifera, of Saratov Volga region Middle Carboniferous deposits, which are the most important from a stratigraphic standpoint. Describes 28 species of Fusulinidae, eight of which are new. On basis of examination of vertical distribution of

17/49T46

USSR/Geology (Contd)

Jul/Aug 48

Fusulinidae, correlates individual sections with each other and also with other areas of the Volga region and the eastern Donbass.

17/49T46

LEONTOVICH, G. YE

LEONTOVICH, K.A.

26.2312

S/058/60/000/006/004/040
A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 6, p. 30, # 13142

AUTHORS: Sinel'nikov, K.K., Zeydlits, P.M., Nekrashevich, A.M., [illegible], Shtutsherer, Ya.S., Akshanov, B.S., Kovrak, N.Ye., Leontovich, K.A., Akhiyezer, A.I., Lifshits, I.M., Faynberg, Ya.B., Rozenzveyg, L.N., Lyubarskiy, G.Ya., Kaganov, M.I., Fargasanik, [illegible]

TITLE: A 20.5-Mev Linear Proton Accelerator

PERIODICAL: Tr. Sessii AN UkrSSR, po mirn. ispol'zovaniyu atomn. energii. Kiyev, AN UkrSSR, 1958, pp. 5-15

TEXT: The physical substantiation of the parameter choice is presented and the design of a linear proton accelerator with a drift tube at 20.5 Mev energy is described; the accelerator was constructed in the Fiziko-tekhnicheskiy institut AN UkrSSR (Institute of Physical Engineering of the AS UkrSSR). The main computational data of the accelerator are the following: the operational wave length is λ = 215 cm; the injection energy is 1.7 Mev; the length of the accelerator is 1,446.8 cm; the synchronous phase is 20°; the length of the first half-tube is 4.875 cm; that of the last one is 16.725 cm; the length of the first gap is

Card 1/2

3.380 cm; that of the last one is 11.150 cm; the length of the first drift tube is 0.145 cm; that of the last one is 32.955 cm. Altogether, the number of drift tubes is 50, that of the half tubes is 2; the acceleration system begins and ends with the latter. At the entrance of every drift tube, focusing grids are fixed consisting of parallel tungsten wires of 0.07 mm thickness; their total geometric transmittance amounts to 30%. The drift tubes are installed within the resonator by means of a suspension system; the resonator is made as a 1,446.8-cm long regular 16-face prism. The resonator is fed from 20 h.f. generators. The Q-factor of the resonator in the loaded state is equal to $6.5 \cdot 10^4$ in consequence of which the h.f. power needed for accelerating particles to the rated energy amounts to 1.2 Mw. An electrostatic generator operating by pulses with the pulse duration of 500 μ sec at about 1 ma current intensity and 1.7 mv voltage serves as proton injector. The principal circuit and the design of the individual accelerator units are presented.

ASSOCIATION: Fiz.-tekhn. in-t AN UkrSSR (Physico-Engineering Institute of the Ukrainian Academy of Sciences)

A.P. Fateyev

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

Card 2/2

GRIGORENKO, V.G. [Hrykhorenko, V.H.]; LEONTOVICH, K.A. [Leontovych, K.A.]

Multi channel television installation. Ukr.fiz.zhur. 5 no.3: 423-426 My-Je '60. (MIRA 13:8)

1. Fiziko-tekhnicheskiy institut AN USSR.
(Television)

S/120/61/000/001/033/062
E194/E184

9.6000 (1040, 1067, 1089)

AUTHORS: Stupak, V.G., Leontovich, K.A., and Zalyubovskiy, I.I.

TITLE: A High-Speed Time Converter

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp.109 and 108.

TEXT: This instrument can assess the time interval between impulses in the range 2 x 10^{-6} to 1 sec. This problem is frequently encountered in the study of nuclear decomposition, in the investigation of short-lived elements and also in studies on neutrons. Time reckoning commences from application of an impulse to the control grid $Л_1$ (L_1). The flip-flop oscillator $Л_2$ (L_2) converts the impulse into one of standard wave shape and amplitude. After differentiation the standard impulse starts the variable line voltage generator based on the valves $Л_{3-6}$ (L_{3-6}); here L_5 serves as a charging resistance for the capacitances C_{18-23} (S_{18-23}). As the pentode current is independent of the anode voltage a saw-tooth wave-shape is obtained with an amplitude up to 140 V with a high degree of linearity. This saw-tooth wave-shape is then applied to the addition circuit. Л7 Л8 Л3

Card 1/2

L 35972-66 EWT(1) RB

ACC NR: AP6016041 (N) SOURCE CODE: UR/0185/66/011/005/0491/0496

AUTHORS: Hryhorenko, V. H.--Grigorenko, V. G.; Dushyn, L. O.--Dushin, L. A.; Leontovych, K. A.--Leontovich, K. A. 51 B

ORG: Physicotechnical Institute, AN UkrSSR, Khar'kov (Fizyko-tekhnichyy instytut AN URSR)

TITLE: Microwave interferometers with amplitude modulation

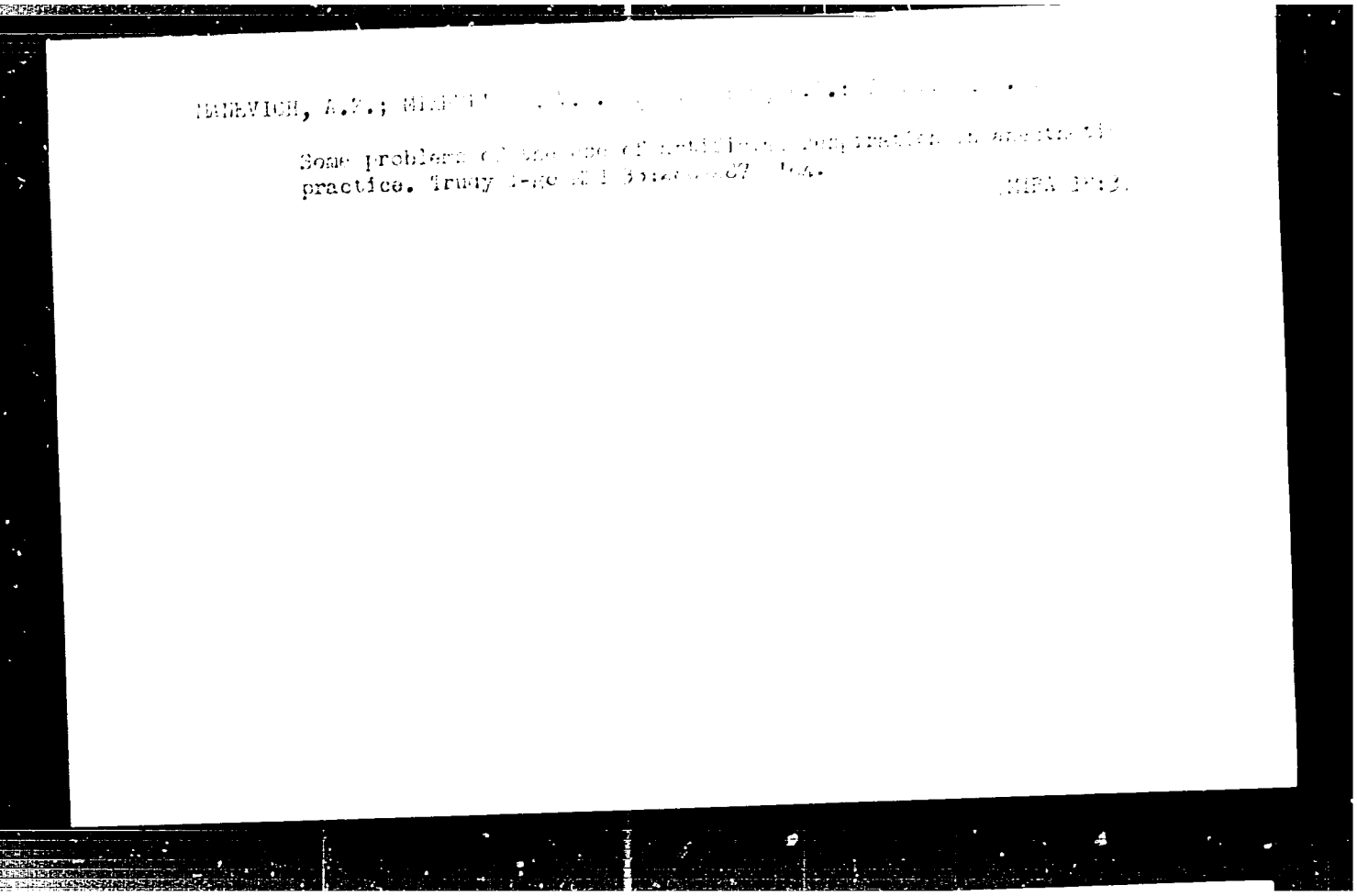
SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 11, no. 5, 1966, 491-496

TOPIC TAGS: interferometer, amplitude modulation, phase measurement, PHASE SHIFT

ABSTRACT: An analysis has been made of problems in designing microwave interferometers with amplitude modulation, which permit transferring the phase shift measurement from the microwave band to the radio-frequency band. A description of possible interferometer layouts is given. Orig. art. has: 8 figures. [Based on authors' abstract] [NT]

SUB CODE: 09 / SUBM DATE: 10Jul65/ ORIG REF: 003/OTH REF: 004

Card 1/1



LEONTOVICH, L.V.

127-10-23/24

SUBJECT: USSR/Mining

AUTHORS: Leontovich, L.V. and Davydov, S.A., Engineers.

TITLE: On Pyroxylin Application in Open Mines (O primenenii piroksilinovykh porokhov na otkrytykh rabotakh)

PERIODICAL: Gornyy Zhurnal, 1957, #10, p 78 (USSR)

ABSTRACT: The authors dispute the conclusions drawn by Starikov, N.A. et al. in the paper published in the "Gornyy Zhurnal", 1956, # 12, pp 21-23, about the better results obtained with pyroxylin as compared to ammonite #6.

These conclusions are considered to be not founded well enough because the data pertaining to both kinds of explosives were not obtained under identical conditions.

One Slavic reference is cited.

ASSOCIATION: Industrial-Experimental Department of the "Soyuzvzryvprom" Trust (Proizvodstvenno-eksperimental'noye upravleniye tresta "Soyuzvzpyvprom")

PRESENTED BY:

SUBMITTED: No date indicated.

AVAILABLE: At the Library of Congress

Card 1/1

31735

S/081/61/000/021/062/094
B138/B101

11,7170

AUTHORS: Grinberg, D. M., Leontovich, L. V., Ruchkin, V. M., Shishkin, A. F.

TITLE: Apparatus for measuring the moisture content of ammonium nitrate explosives

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 391, abstract 21L446 (Bezopasnost' truda v prom-sti, no. 4, 1961, 23 - 24)

TEXT: The article describes a portable electrical instrument ПЭВ (PEV) designed for the rapid measurement of the moisture content of ammonium nitrate explosives and of ammonium nitrate. The instrument measures the electrical resistivity of samples of the substance. This value is a function of humidity. To calibrate the PEV, the resistivity of several samples is measured, and at the same time their moisture content is determined by the oven-drying method. The PEV consists of an electric circuit for measuring resistance, and a transmitting unit which is a

Card 1/2

31735

S/081/61/000/021/062/094
B138/B101

Apparatus for measuring the moisture...

cylindrical plastic container with an inside diameter of 65 mm and depth of 27 mm. It has two aluminium electrodes in the shape of rectangular plates 27 mm in length and 10 mm wide. The test substance, in powder form, is placed in the transmitting unit, resistivity is measured, and the moisture content is found from the calibrating curve. With the appropriate calibration, the instrument can be used to measure the moisture content of various different substances which have high electrical conductivity, e.g. mineral salts and fertilisers. [Abstracter's note: Complete translation.]

Card 2/2

ACC NR: AP7004571 SOURCE CODE: UR/0056/65/049/005/1624/1630

AUTHOR: Leontovich, M.

ORG: none

TITLE: Diffusion in a solution near the critical point of vapor formation

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 5, 1965, 1624-1630

TOPIC TAGS: critical point, fluid diffusion, thermodynamic characteristic

ABSTRACT: The author uses general equations of the macroscopic theory of diffusion and the thermodynamic characteristics of the critical point of a solution to analyze the behavior of diffusion near the critical point. Citing the experiments of A. V. VORONEL' et al. on the logarithmic singularity in specific heat at constant volume, the author states that analogous behavior of thermodynamic functions can also be expected for solutions, but that this question has not yet been studied. The present article uses the thermodynamic description of the critical point that was customary before these experiments, based on the assumption of the expansibility of the expression for free energy in a power series in the neighborhood of the critical point, and with the usual expression for the free energy of a dilute solution containing the logarithm of concentration. Therefore, the author states, the formulas obtained by him may not be applicable in the immediate neighborhood of the critical point. The article also discusses the question of applying conclusions on the macroscopic diffusion coefficient of dilute solutions to the Brownian movement of individual particles. It is shown that no conclusions can be drawn

Card 1/2

ACC NR: AP7004571

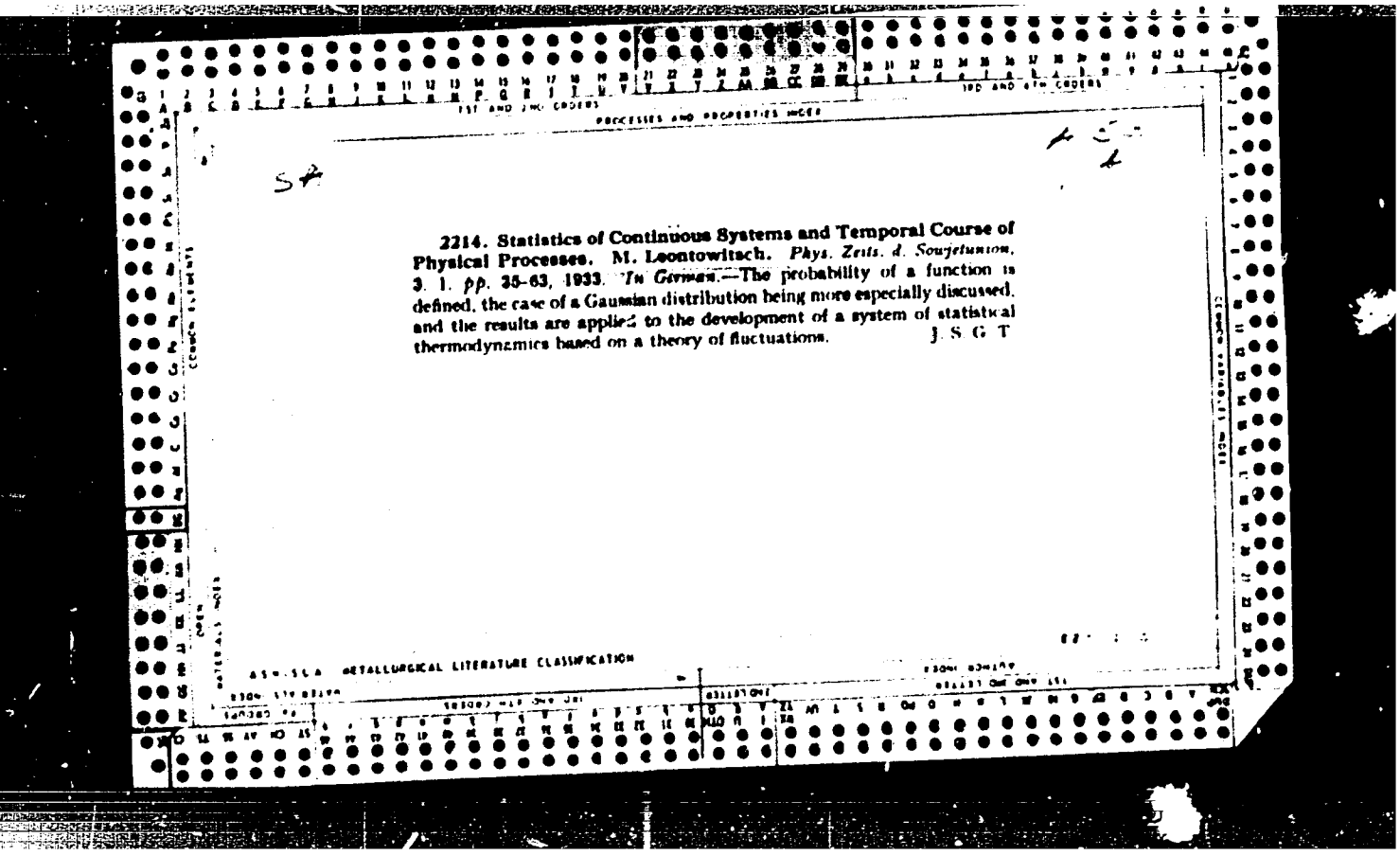
from the vanishing of the diffusion coefficient at the critical point as to the diminution of Brownian movements of particles which are identified only by their mobility. Orig. art. has: 16 formulas. [JPRS: 34,657]

SUB CODE: 20 / SUBM DATE: 14Jun65 / ORIG REF: 007 / OTH REF: 001

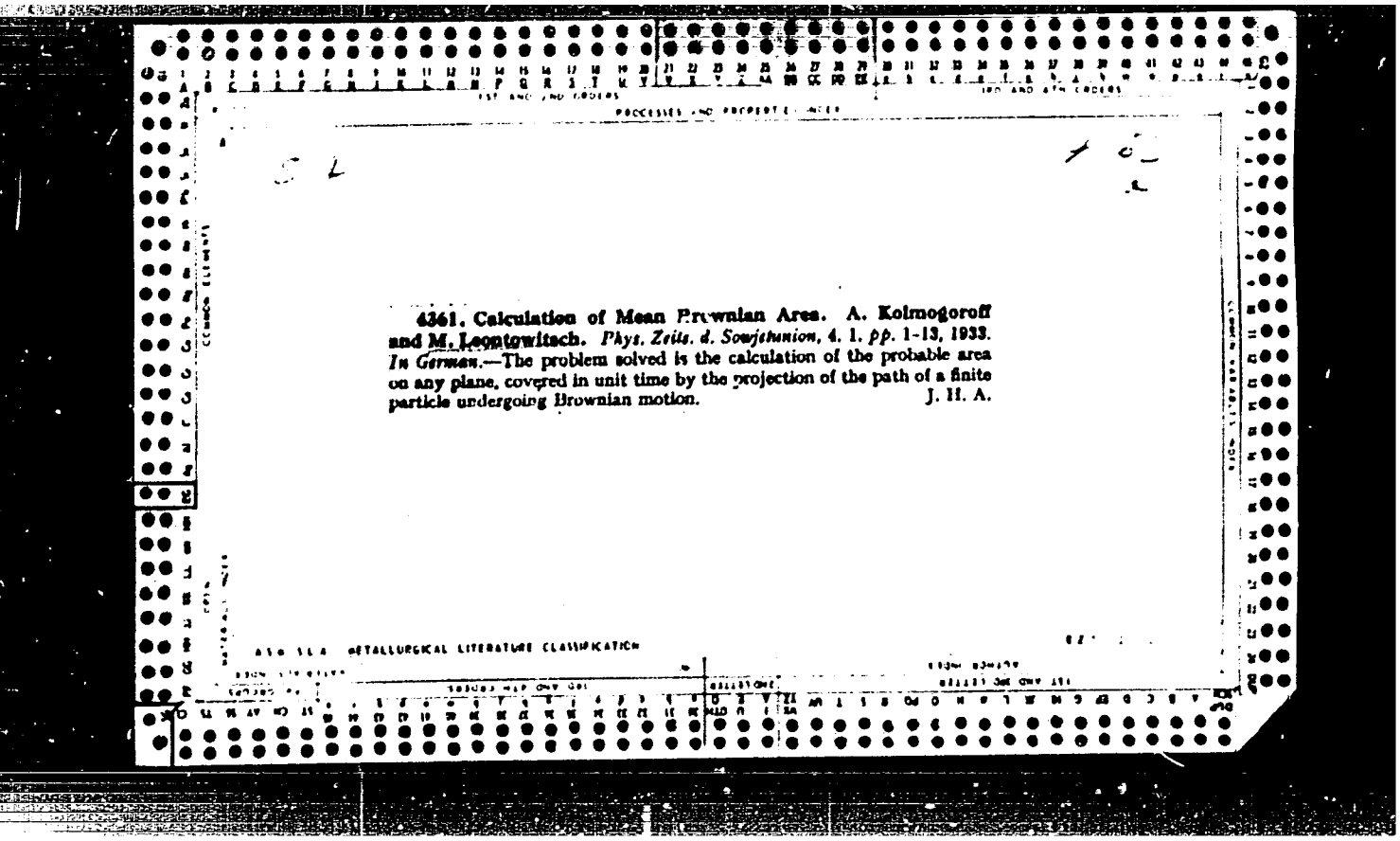
Card 2/2

LEONTOVICH, M.

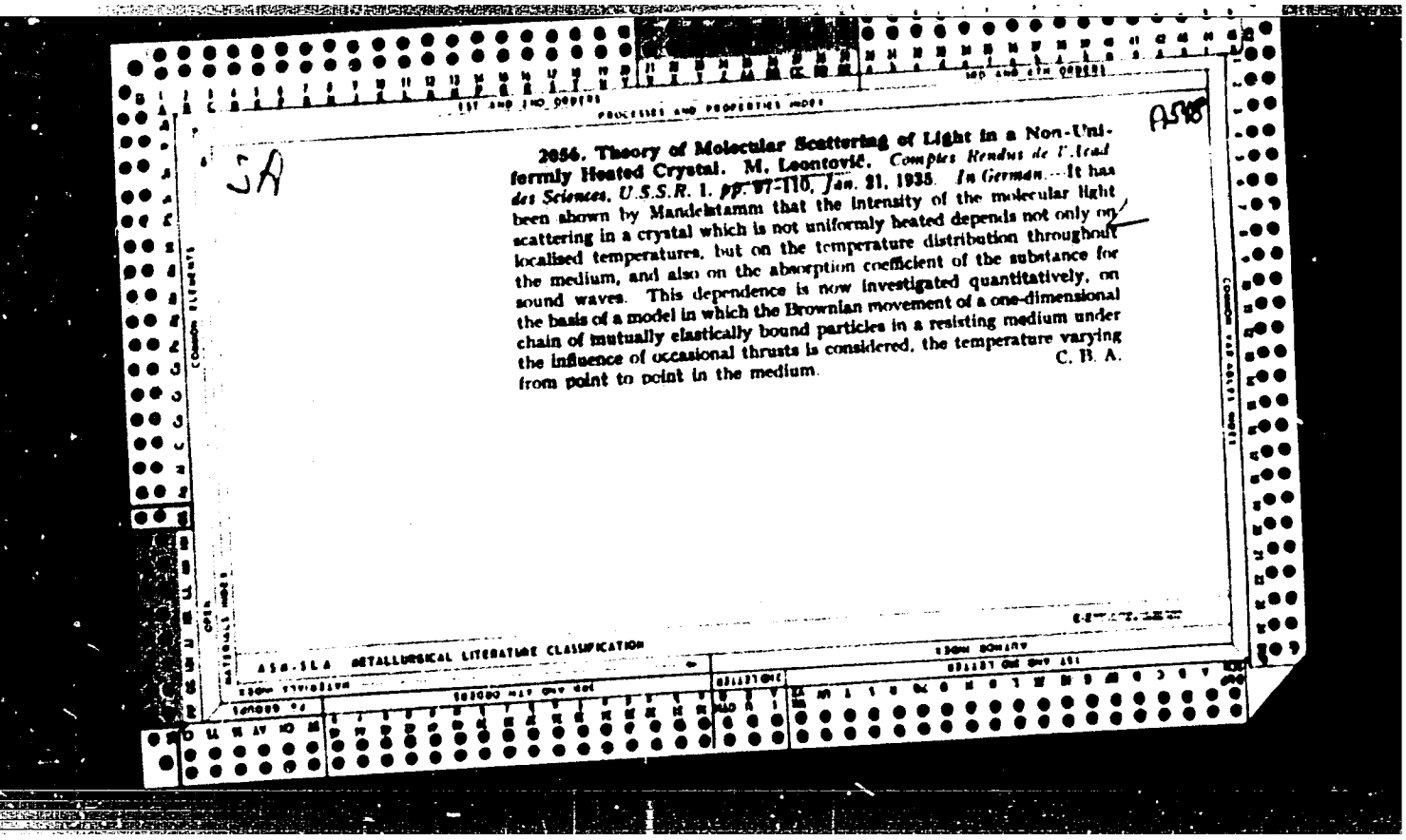
"Fundamental basis of thermodynamic statistics." J. Exptl. Theoret. Phys. vol. 2, No. 5-6, 365-79 , 1932.



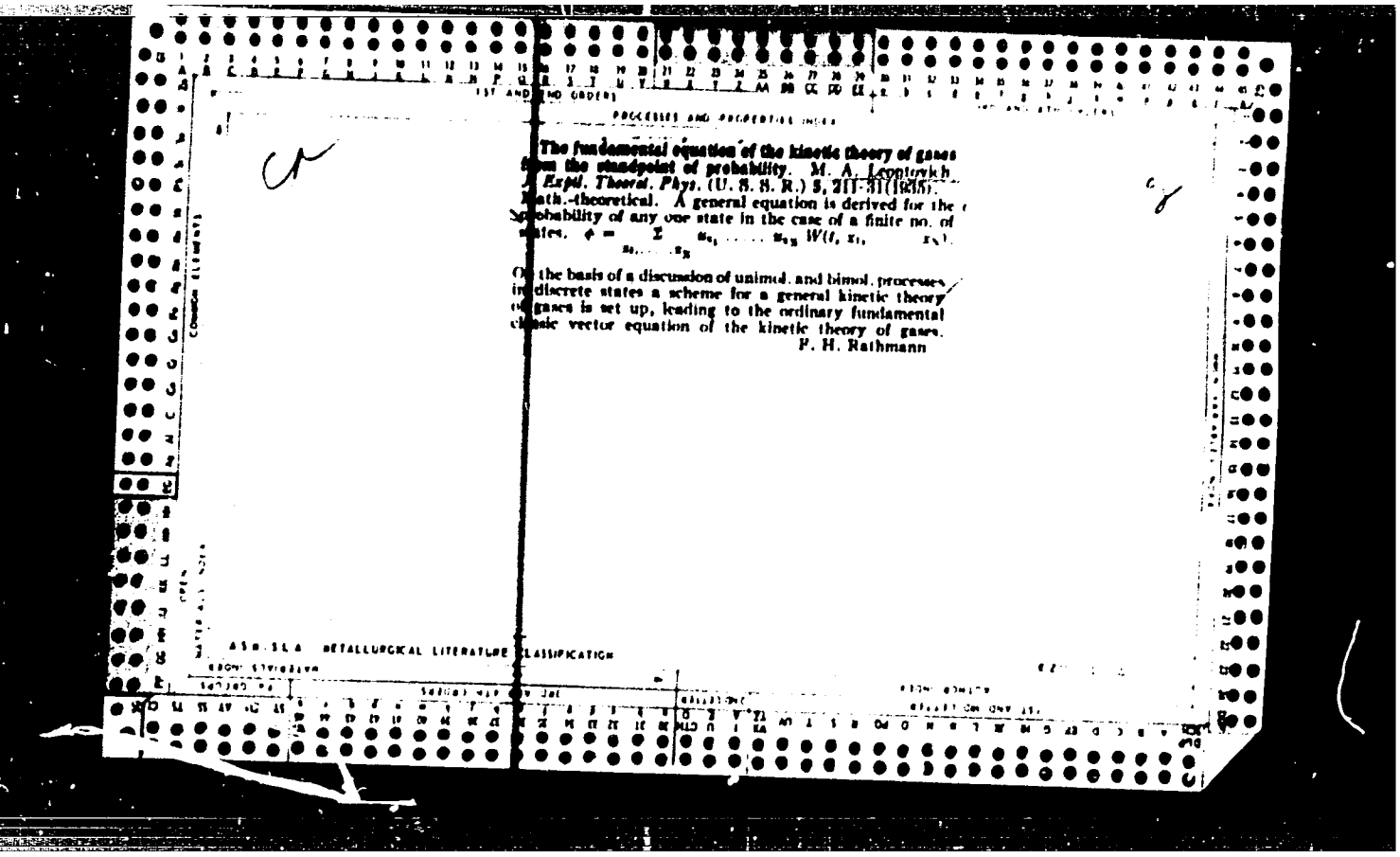
2214. **Statistics of Continuous Systems and Temporal Course of Physical Processes.** M. Leontowitsch. *Phys. Zeits. d. Sowjetunion*, 3. 1. *pp.* 35-63, 1933. *In German.*—The probability of a function is defined, the case of a Gaussian distribution being more especially discussed, and the results are applied to the development of a system of statistical thermodynamics based on a theory of fluctuations. J. S. G. T



4361. **Calculation of Mean Brownian Area.** A. Kolmogoroff and M. Leontowitsch. *Phys. Zeits. d. Sowjetunion*, 4. 1. *pp.* 1-13, 1933. *In German.*—The problem solved is the calculation of the probable area on any plane, covered in unit time by the projection of the path of a finite particle undergoing Brownian motion. J. H. A.



2656. **Theory of Molecular Scattering of Light in a Non-Uniformly Heated Crystal.** M. Leontovič. *Comptes Rendus de l'Acad des Sciences, U.S.S.R.* 1. pp. 97-110, Jan. 21, 1935. *In German.*—It has been shown by Mandelstamm that the intensity of the molecular light scattering in a crystal which is not uniformly heated depends not only on localised temperatures, but on the temperature distribution throughout the medium, and also on the absorption coefficient of the substance for sound waves. This dependence is now investigated quantitatively, on the basis of a model in which the Brownian movement of a one-dimensional chain of mutually elastically bound particles in a resisting medium under the influence of occasional thrusts is considered, the temperature varying from point to point in the medium. C. B. A.



The fundamental equation of the kinetic theory of gases from the standpoint of probability. M. A. Leontovich. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 5, 211-31 (1935). Math.-theoretical. A general equation is derived for the probability of any one state in the case of a finite no. of states. $\phi = \sum_{n_1, \ldots, n_R} W(t, x_1, \ldots, x_R)$.

On the basis of a discussion of unimol. and bimol. processes in discrete states a scheme for a general kinetic theory of gases is set up, leading to the ordinary fundamental classic vector equation of the kinetic theory of gases.
P. H. Rathmann

CA

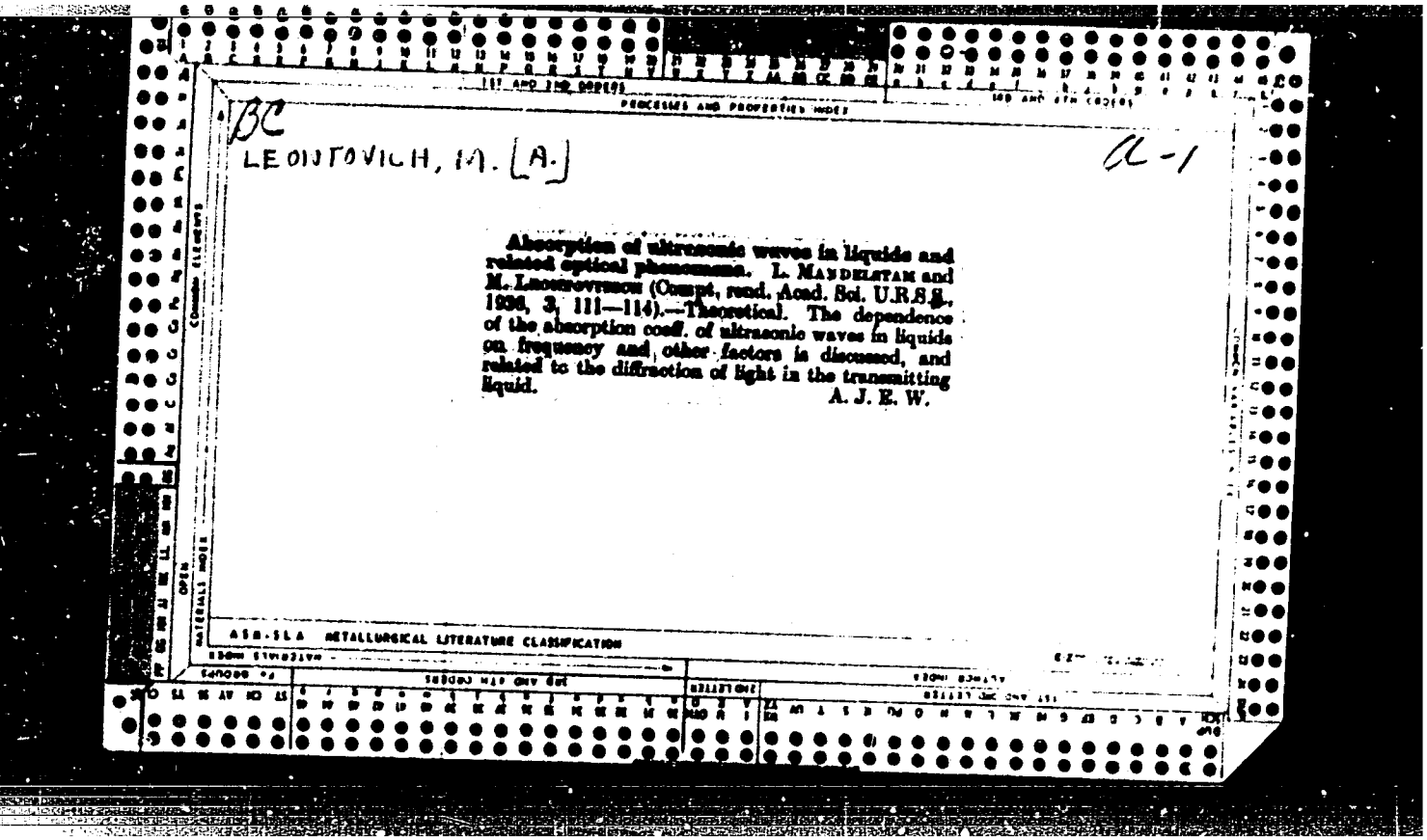
2

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Theory of sound absorption in polyatomic gases M. A. Leontovich. *Bull. Acad. Sci. U. R. S. S., Classe sci. math. nat., Ser. phys.* **1936**, 633-42 (in French, 642). The second index of viscosity in the hydrodynamic theory may be omitted and duplication thereby avoided. The kinetic theory for such gases is derived from hydrodynamic equations for low frequencies, and connects with Kneser's theory (cf. C. A. 31, 4173[9]) in these frequencies. Gregg M. Evans

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



BC

LEONTOVICH, M. [A.]

A-1

Absorption of ultrasonic waves in liquids and related optical phenomena. L. MANDELSTAM and M. LEONTOVITSCH (Compt. rend. Acad. Sci. U.R.S.S., 1936, 3, 111—114).—Theoretical. The dependence of the absorption coeff. of ultrasonic waves in liquids on frequency and other factors is discussed, and related to the diffraction of light in the transmitting liquid.

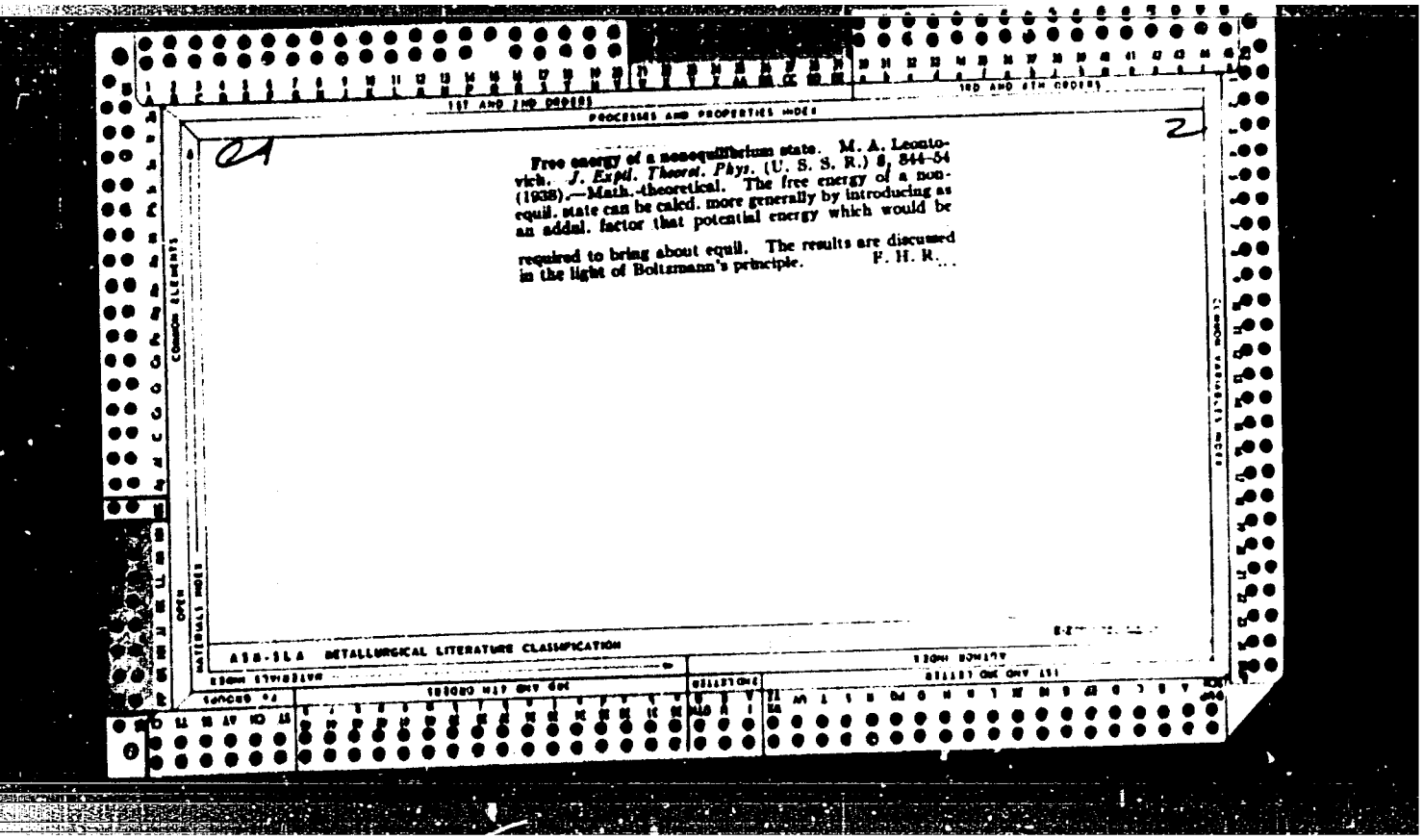
A. J. E. W.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

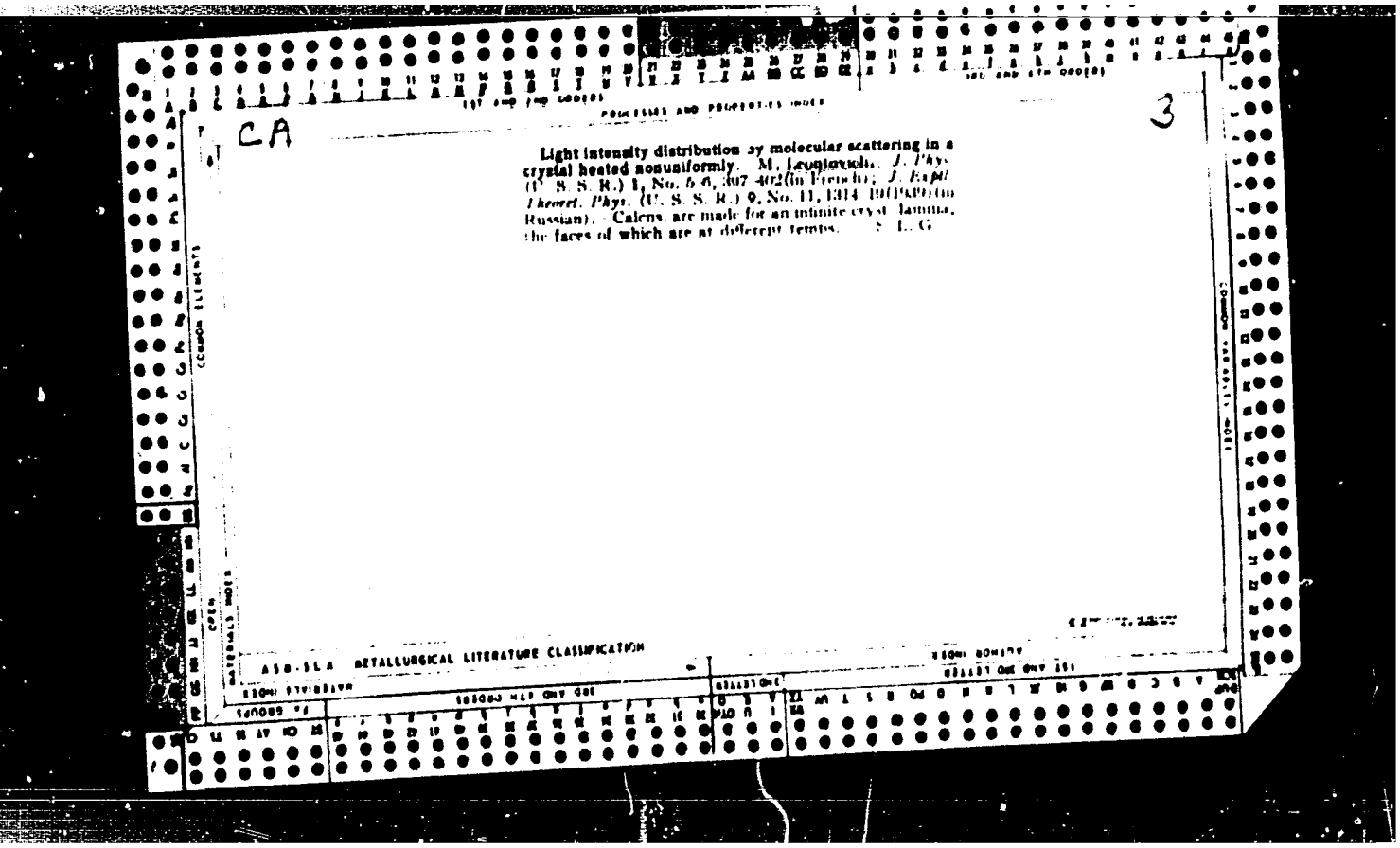
Absorption of sound in strong electrolytes. M. Leontovich. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 8, 41-51 ([illegible]).—Sound absorption and velocity in strong electrolytes from the standpoint of their free energy in a nonequil. state is discussed theoretically and mathematically.

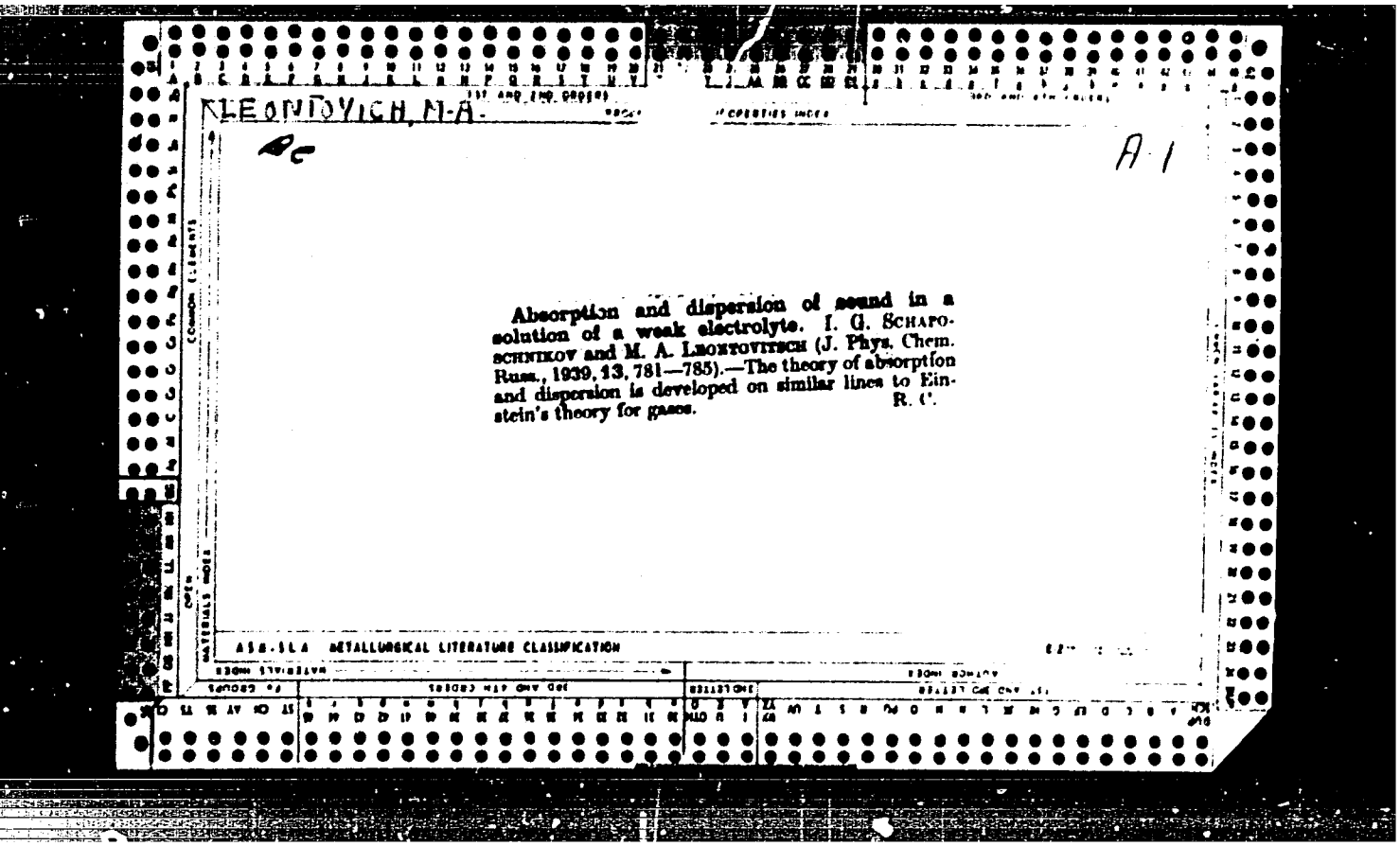
F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Free energy of a nonequilibrium state. M. A. Leontovich. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 8, 844-54 (1938).—Math.-theoretical. The free energy of a nonequil. state can be calcd. more generally by introducing as an addnl. factor that potential energy which would be required to bring about equil. The results are discussed in the light of Boltzmann's principle. F. H. R...





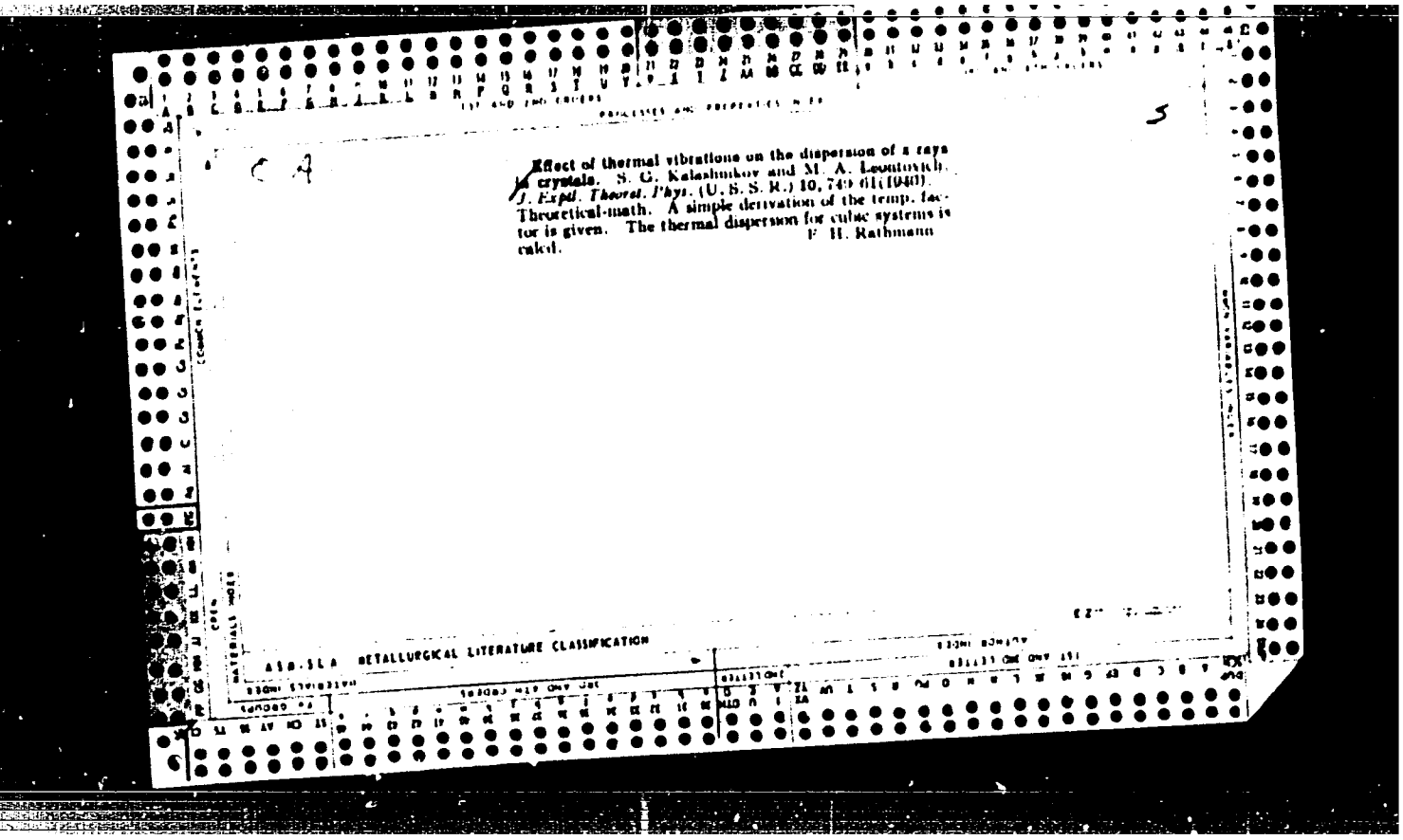
KLEONTOVICH, M.A.

Ac

A-1

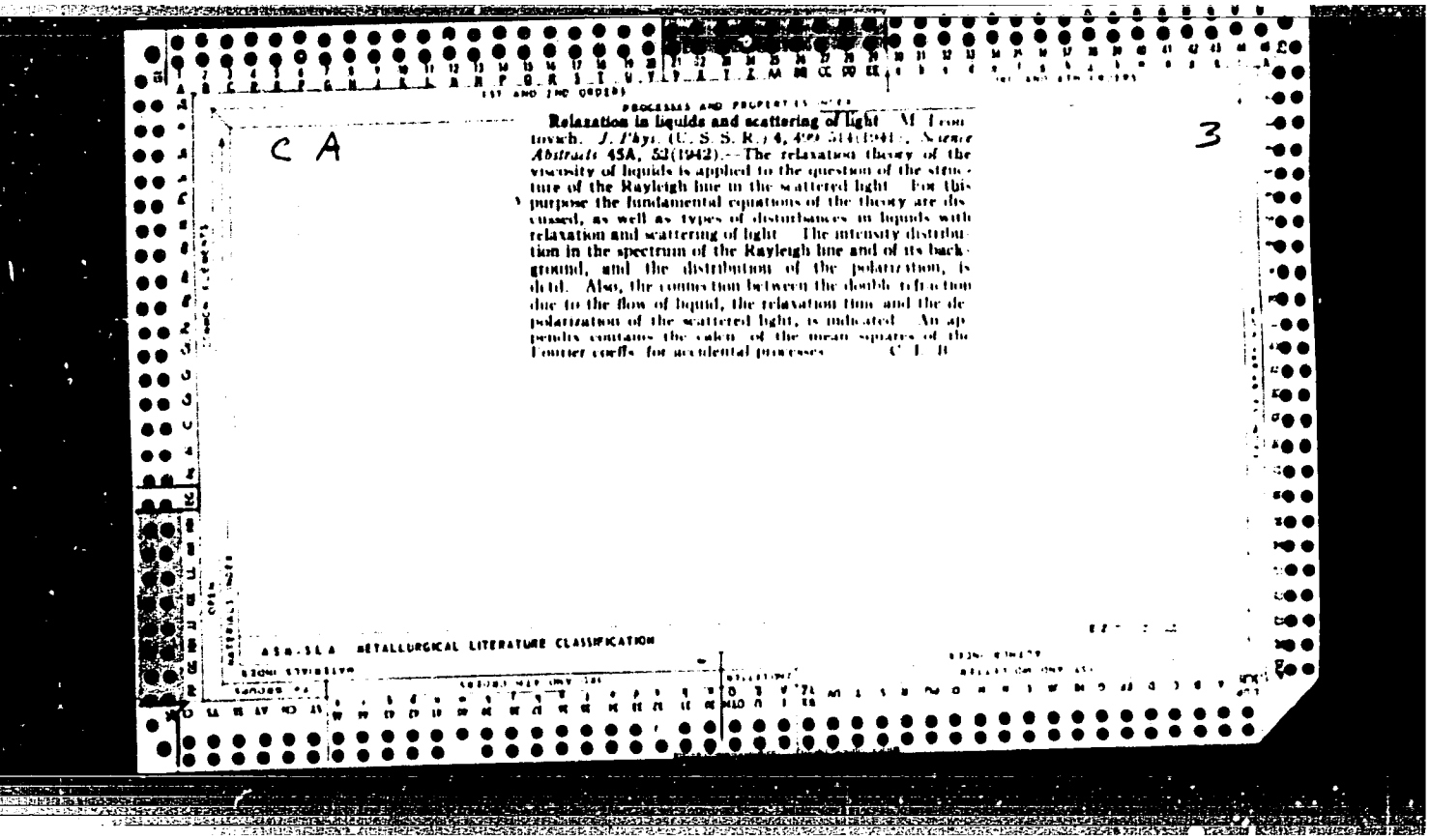
Absorption and dispersion of sound in a solution of a weak electrolyte. I. G. Schaposchnikov and M. A. Leontovitsch (J. Phys. Chem. Russ., 1939, 13, 781—785).—The theory of absorption and dispersion is developed on similar lines to Einstein's theory for gases. R. C.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Effect of thermal vibrations on the dispersion of x rays in crystals. S. G. Kalashnikov and M. A. Leontovich. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 10, 749 dil (1940). Theoretical-math. A simple derivation of the temp. factor is given. The thermal dispersion for cubic systems is calcd.
F. H. Rathmann

A10-5L4 METALLURGICAL LITERATURE CLASSIFICATION

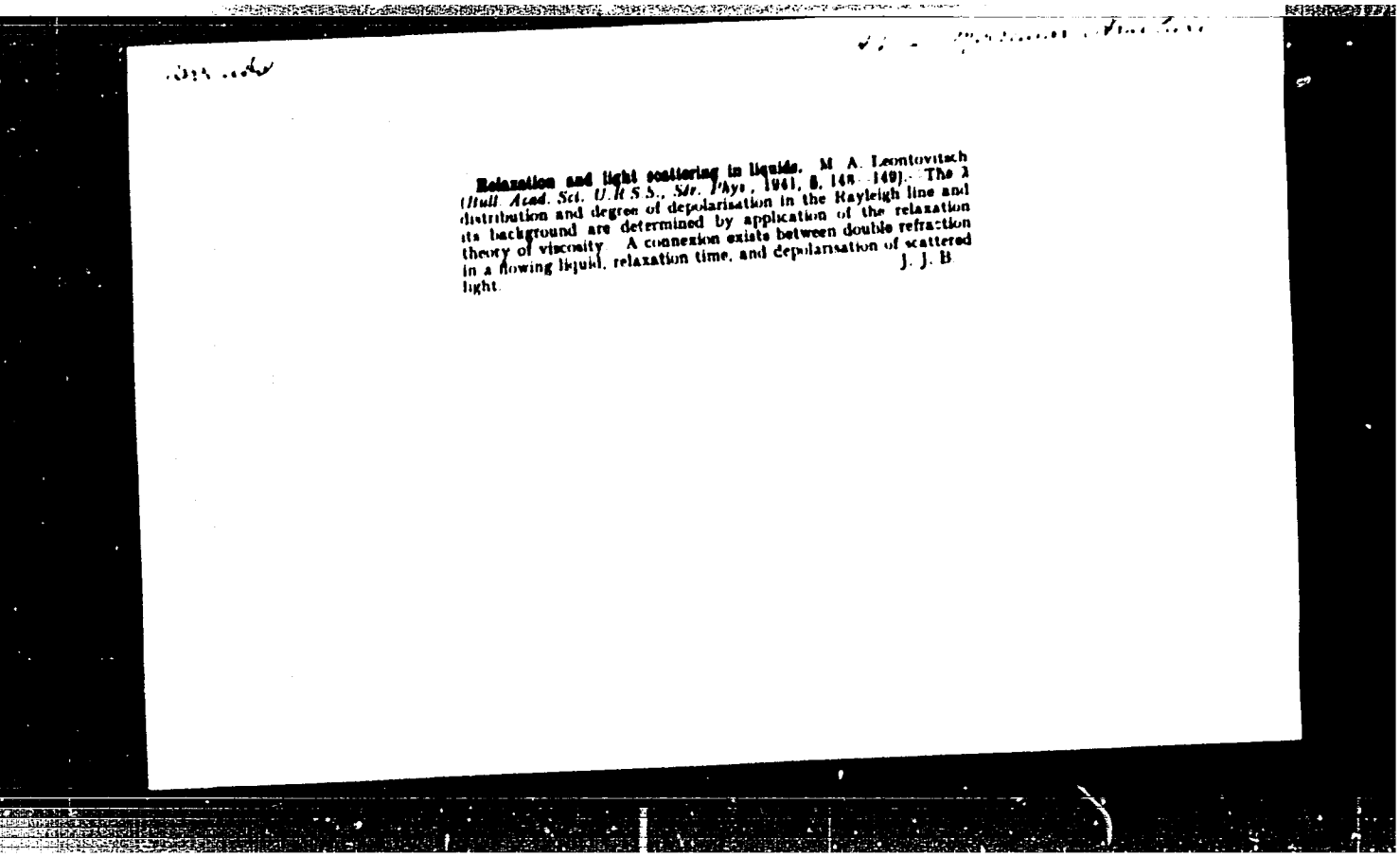


C A

3

Relaxation in liquids and scattering of light M. Leontovich. *J. Phys.* (U. S. S. R.) 4, 499-514 (1941). *Science Abstracts* 45A, 53(1942).--The relaxation theory of the viscosity of liquids is applied to the question of the structure of the Rayleigh line in the scattered light. For this purpose the fundamental equations of the theory are discussed, as well as types of disturbances in liquids with relaxation and scattering of light. The intensity distribution in the spectrum of the Rayleigh line and of its background, and the distribution of the polarization, is detd. Also, the connection between the double refraction due to the flow of liquid, the relaxation time and the depolarization of the scattered light, is indicated. An appendix contains the calcn. of the mean squares of the Fourier coeffs. for accidental processes. C. L. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Relaxation and light scattering in liquids. M. A. Leontovitsch (*Bull. Acad. Sci. U.R.S.S., Sér. Phys.*, 1941, 5, 148–149).—The λ distribution and degree of depolarisation in the Rayleigh line and its background are determined by application of the relaxation theory of viscosity. A connexion exists between double refraction in a flowing liquid, relaxation time, and depolarisation of scattered light. J. J. B

LEONTOVICH, M. A.

Mathematical physics. Moskva, Gos. izd-vo tekhn.-teoret.lit-ry, 1944. 255 p.

Propagation of Waves

W.E.

LEONTOVICH, M.

4534. CONCERNING A CERTAIN METHOD FOR SOLVING PROBLEMS OF PROPAGATION OF ELECTROMAGNETIC WAVES ALONG THE EARTH'S SURFACE.—M. Leontovich. (Journ. of Phys. of USSR), ~~No. 6,~~ Vol. 8, 1944, p. 381, in English, summary only: in full in Nos 1-4, Bull. de l'Ac. des Sci. de l'URSS, Série Physique, 1944.)

"The fact that the modulus of the complex
dielectric constant of the earth is much larger than
unity is taken into account at the very start of the
solution. This, first of all, permits one to use
approximate boundary conditions on the surface
of the earth; secondly, and this is the main idea
of the method, different length units which depend
on the dielectric constant of the earth are intro-
duced for the vertical and horizontal axes. Intro-
duction of the corresponding undimensional units
leads to a differential equation of the parabolic
type for the function of the weakening of the field
Illustration of the Sommerfeld problem leads
directly to the well known Weyl - van der Pol
formula."

1945

LEONTOVICH, M.

621.396.11 3000

On a Certain Method of Solving Problems of Propagation of Electromagnetic Waves along the Surface of the Earth. M. Leontovich. (*Bull. Acad. Sci. U.R.S.S., sér. phys.*, 1944, Vol. 8, No. 1, pp. 16-22. In Russian.) Complete paper, of which an English summary was abstracted in 2512 of 1945.

2836

621.396.67 : 538.56

On the Excitation of Vibrators in Antennae. M. A. Leontovich & M. L. Levin. (*Bull. Acad. Sci. U.R.S.S., sér. phys.*, 1944, Vol. 8, No. 3, pp. 156-163. In Russian.) Complete paper, of which an English summary was abstracted in 2018 of 1945.

LEONTOVICH, M. A. (Cor. Mbr)

"One Method for Solving the Problem of Propagation of Radio Waves Along the Earth's Surface," a report submitted at the General Assemblies of URSI in 1944.

IAN-Ser Fiz, Vol 9, No 3, 1945

Leontovich, M.

5

Leontovich, M., and Fock, V. Solution of the problem of propagation of electromagnetic waves along the earth's surface by the method of parabolic equation. Acad. Sci. USSR. J. Phys. **10**, 13–24 (1946).

The method was proposed by Leontovich [Bull. Acad. Sci. URSS. Sér. Phys. [Izvestia Akad. Nauk SSSR] **8**, 16–22 (1944); these Rev. **6**, 109]. In the first section of the present paper the discussion of propagation of electromagnetic waves over a plane earth is repeated since the considerations in the original paper by Leontovich need some modifications: the result is again the well-known formula of Weyl and van der Pol, which now appears as the exact solution of the (approximate) parabolic partial differential equation with suitable boundary conditions. In the second section the same problem with a spherical earth is discussed and it is shown that the method leads to the approximation recently obtained (in a different manner) by Fock [C. R. (Doklady) Acad. Sci. URSS (N.S.) **46**, 310–313 (1945); these Rev. **7**, 100].

The paper concludes on a note of (justified) caution. Since the method is based on neglecting some of the derivatives of the highest order in the partial differential equation governing the problem, it is difficult to estimate the quality of the approximation obtained. From this point of view it is encouraging to observe that the results obtained by Leontovich's method for both plane and spherical (homogeneous) earth agree with results obtained by more reliable, if more cumbersome, processes. *A. Erdélyi.*

Source: Mathematical Reviews, Vol 8, No. 3

Leontovich, M.

Leontovich, M. On a theorem in the theory of diffraction and its application to diffraction by a narrow slit of arbitrary length. Akad. Nauk SSSR. Zhurnal Eksper. Teoret. Fiz. 16, 475–479 (1946). (Russian. English summary)

The paper discusses the diffraction of plane electromagnetic waves through an opening in a thin plane screen of perfect conductivity. It is first shown, by an argument essentially due to Rayleigh [Scientific Papers, vol. 4, Cambridge University Press, 1903, p. 324] that the problem can be strictly reduced to that of the diffraction of plane waves by a thin plane lamina, of infinite magnetic permeability, agreeing in size, shape and position with the screen-aperture in the original problem. This is transformed, on replacing the electric and magnetic vectors E, H by $H, -E$, respectively, into the problem of diffraction by a thin perfectly conducting lamina. The results of an investigation by the author of this last problem in the special case where the lamina is a thin strip are then applied to give corresponding results concerning diffraction through a thin slit. Finally, results of the author and M. Levin [Zhurnal Tech. Fiz. 14, 481–506 (1944)] are applied to show that, with normally incident waves, there is a resonance effect, resulting in the passing of a larger amount of energy, when the ratio of slit-length to wavelength is slightly less than half an odd integer.

E. H. Linfoot (Bristol).

Source: Mathematical Reviews, Vol 8, No. 3

PA 40T98

USSR/Physics — Aug 1946
Electromagnetic Waves
Mathematics, Applied

"Solution of the Problem of Propagation of Electromagnetic Waves along the Earth's Surface by the Parabolic Equation Method," M. Leontovich, V. Fok, Academy of Sciences of USSR, Moscow, 16 pp

"Zhur Eksper i Teoret Fiz" Vol XVI, No 7

Problem of propagation of electromagnetic waves along the surface of the earth is solved by the method of parabolic equation proposed by Leontovich. In the first section the surface of the earth is considered as a plane and the well-known Veyl-van

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USSR/Physics (Contd) — Aug 1946

der Pol formula is deduced. This formula turns out to be the exact solution of the parabolic equation with corresponding boundary conditions. In the second section the surface is considered as spherical, and the resulting formula coincides with that obtained by Fok by the method of summation of infinites, which is the strict solution of the problem. Submitted, 20 Apr 1945.

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LEONTOVICH, M

LEONTOVICH, M. A. and BUNIMOVICH, V. I.

"On the Distribution of the Number of Large Deviations in Electrical Fluctuations," Dokl. AN SSSR, No.21, 1946

LEONTOVICH, M. A.

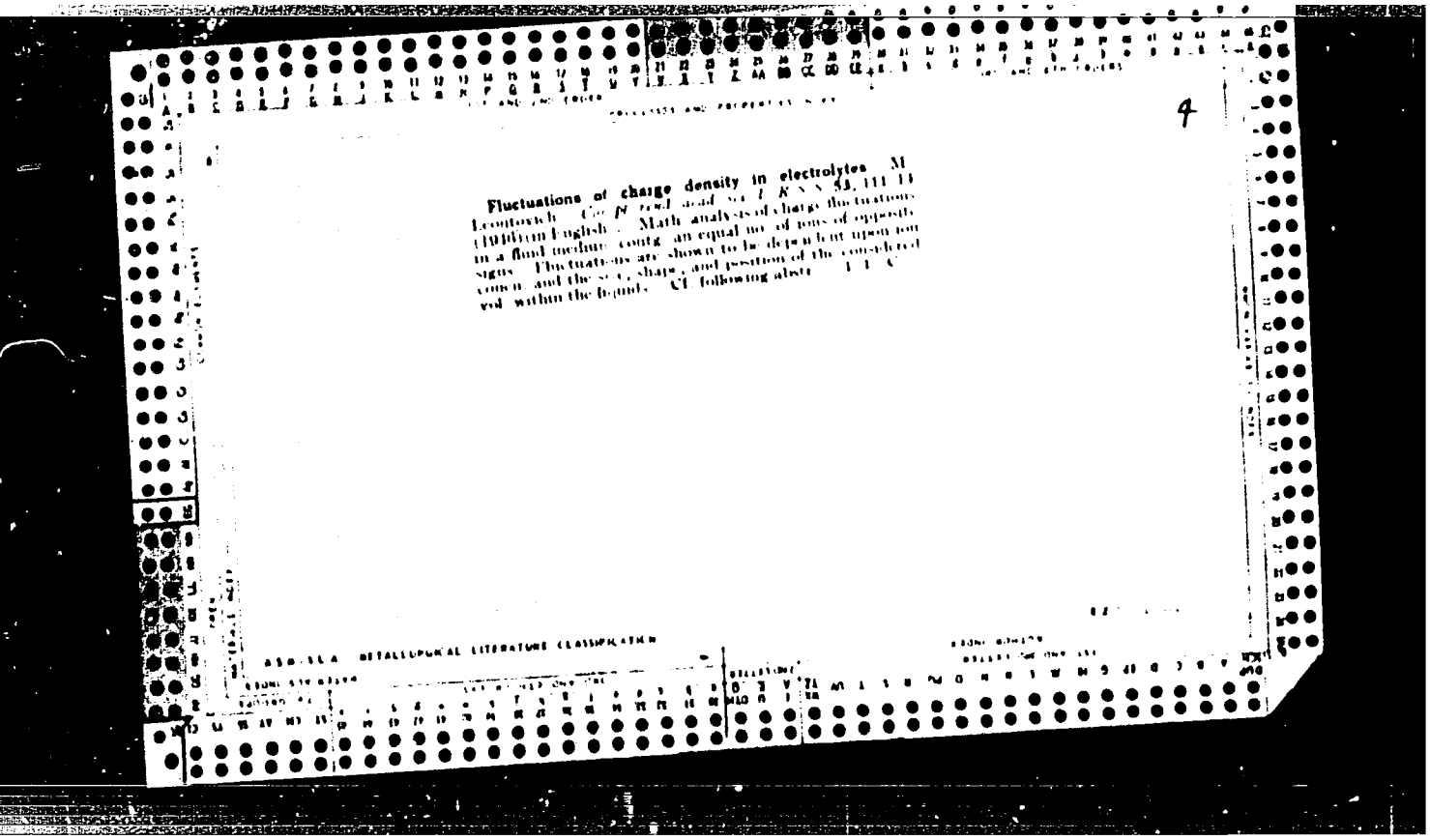
Bunimovich, V. I., and Leontovich, M. A. On the distribution of the number of large deviations in electric fluctuations. C. R. (Doklady) Acad. Sci. URSS (N.S.) 53, 21–23 (1946).

Statistical properties of the noise voltage across the condenser of an RLC circuit are studied. It is shown by an intuitive argument that if the damping is small the average number of a-values of the noise voltage $x(t)$ (normalized by $\bar{x}^2 = 1$), per unit time, is (*) $(\frac{1}{2}\omega_0/\pi) \exp(-a^2)$, where ω_0 is the proper frequency of the circuit. It should be pointed out that (*) and more general results were obtained by S. O. Rice and the reviewer [see Rice, Bell System Tech. J. 24, 46–156 (1945); these Rev. 6, 233]. In particular, the assumption that the damping is small is redundant inasmuch as (*) holds for all RLC circuits.

The authors also study the problem of a-values of the amplitude curve which they define as the "broken line joining the maxima of $x(t)$." The reviewer was, however, unable to understand the connection between this definition and the subsequent calculations.

M. Kac.

Source: Mathematical Reviews, Vol No. 7



LEONTOVICH, M. A.

Jan 1947

USSR/Physics Gases - Thermodynamics

"An 'Antiscientific' Book on Thermodynamics," M B Vargaftik, M A Leontovich and L P Smirnov, 6 pp

"Zhurn Eksh Fiz" Vol XVII, No 1

The author in the revised book formulates a new law of thermal capacities according to which (at 0° centigrade) for gases and vapors = 2.2.0075 cal/degrees. Formula for solid and liquid bodies also given.

LEONTOVICH, M. A.

USSR/Physics Jul 1947
Waves, Ultrasonic
Absorption

"Absorption of Supersonic Waves in Liquids," P. A. Bazhulin, M. A. Leontovich, Academician, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 1 p

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 1

Discusses recent report by S. B. Gurevich which confirms that relaxation ideas on absorption and dispersion of supersonic waves, only confuse and complicate interpretation of experimental results.

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LUCHANSKIY, M. A.

[illegible] 1¾ p. diagrs.

(Introduction to Thermodynamics.)

DLC: TJ311.L38

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

LEONTOVICH, M. A.

An introduction to thermodynamics; a textbook. Izd. 2., ispr. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1951. 199 p. (51-38954)

MH

LEONTOVICH, M. A.

USSR/Physics - Skin Effect Sep 52

"Differential Law of Intensity of Electric Fluctuations and Their Behavior Under Skin Effect," M. A. Leontovich, S. M. Rytov, Phys Inst imeni Lebedev, Acad Sci USSR

"Zhur Eksper i Teoret Fiz" Vol 23, No 3, pp 246-252

Under the condition that it be quasi-stationary the authors indicate the form of the correlation function of the lateral elec field causing integral emf of thermal elec fluctuations, whose spectral intensity is given by Nyquist formula. They show that the condition that spectral intensity

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of integral random emf be proportional to the active resistance of the conductor is effected by setting the radius of correlation of the lateral field very small, in comparison with the radius of the conductor and width of skin layer. Received 21 May 52.

(PA 56 no. 668: 5446, '53)

227T81

LEONTOVICH, M.A.

"An Experimental Method of Deterining the Coordinates of Bursts of Radio Emission." Dok. Akad. Nauk. 86 (1952), 1, 39-42.

SO: Translation- 2524467, 30 Apr 1954.

RYTOV, S.M.; LEONTOVICH, M.A., redaktor

[Theory of electrical fluctuations and thermal radiation] Teoriia elektricheskikh fluktuatsii i teplovogo izlucheniia. Moskva, Izdvo Akademii nauk SSSR, 1953. 231 p. (MLRA 7:2)
(Electromagnetic theory)

MEN', A.N.; ORLOV, A.N.; LEONTOVICH, M.A., akademik.

Spectrum of vibrational frequencies of the simplest model of an alloy being set in order. Dokl.AN SSSR 90 no.5:753-756 Je '53. (MLRA 6:5)

1. Institut fiziki metallov Ural'skogo filiala Akademii nauk SSR (for Men', Orlov). 2. Akademiya nauk SSSR (for Leontovich). (Vibration) (Alloys) (Spectrum analysis)

GEYLIKMAN, B.T.; LEONTOVICH, M.A., akademik.

Theory of strong coupling for meson fields. Dokl. AN SSSR 90 no.6:991-994 Je '53. (MLRA 6:6)

1. Moskovskiy gosudarstvennyy pedagogicheskiy institut im. V.I.Lenina (for Geylikman). 2. Akademiya nauk SSSR (for Leontovich). (Mesotrons)

PROKHOROV, A.M.; BASOV, N.G.; LEONTOVICH, M.A., akademik.

Determination of 0- and ½- spins of nuclei from microwave molecular spectra. Dokl. AN SSSR 90 no.6:1003-1004 Je '53. (MLRA 6:6)

1. Fizicheskiy institut im. P.N.Lebedeva Akademii nauk SSSR. 2. Akademiya nauk SSSR (for Leontovich). (Nuclear physics) (Spectrum analysis)

GEYLIKMAN, B.T.; LEONTOVICH, M.A., akademik.

On the theory of binding energy. Dokl. AN SSSR 91 no.1:39-42 Jl '53.
(MLRA 6:6)

1. Akademiya nauk SSSR (for Leontovich). 2. Moskovskiy gosudarstvennyy pedagogicheskiy institut im. V.I.Lenina. (Atomic theory)

BOROVIK, Ye.S.; LEONTOVICH, M.A., akademik.

Electric conductivity of metals in high current density. Dokl.AN SSSR 91 no.4:771-774 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Leontovich).
(Electric conductivity)

LEVIN, M.L.; LEONTOVICH, M.A., akademik.

Passive emission systems in wave guides. Dokl.AN SSSR 91 no.4:807-810 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Leontovich). 2. Tyumenskiy gosudarstvennyy pedagogicheskiy institut (for Levin).
(Wave guides)

ROZENBERG, L.D.; LEONTOVICH, M.A., akademik.

Duplex mirror ultrasonic concentrator. Dokl.AN SSSR 91 no.5:1091-1094 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Leontovich). (Ultrasonic waves)

VITKEVICH, V.V.; LEONTOVICH, M.A., akademik.

Wide band radio interferometer. Dokl.AN SSSR 21 no.6:1301-1303 Ag '57.
(MIRA 6:8)

1. Akademiya nauk SSSR (for Leontovich).
(Interferometer) (Radio astronomy)

GERSHMAN, S.G.; LEONTOVICH, M.A., akademik.

Interference method in the measurement of correlation factors of stationary sounds. Dokl.AN SSSR 92 no.1:33-35 S '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Leontovich). 2. Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR (for Gershman). (Sound--Measurement)

LEONTOVICH, M. A.

USSR/Physics - Sound, Dispersion of

11 Sep 53

"Dispersion of Sound Velocity in Certain Organic Liquids," I. L. Fabelinskiy and O. A. Shustin, Phys Inst im Lebedev, Acad Sci USSR

DAN SSSR, Vol 92, No 2, pp 285-288

Continue experiments described by T. Lamb et al in "Nature" 167 (1951), and analyze disscussions by M. A. Leontovich and L. I. Mandelshtam, ZhETF 7 (1937), to evaluate in what case a noticeable dispersion of sound velocity may be anticipated. Presented by Acad G. S. Landsberg 10 Jul 53, whom authors also thank for discussions.

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VILENSKIY, I.M.; LEONTOVICH, M.A., akademik.

Effect of nonlinearity of the medium on radio waves propagating in the ionosphere. Dokl.AN SSSR 92 no.3:525-528 S '53. (MLRA 6:9)

1. Akademiya nauk SSSR (for Leontovich). (Radio waves)
(Atmosphere, Upper)

KIKOIN, A.K.; FEDOROV, G.D.; LEONTOVICH, M.A., akademik.

Investigation of thin films of intermetallic alloys. Dokl.AN SSSR 92 no.6: 1163-1165 O '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Leontovich). (Metallic films)

KOMAR, A.P.; REYNOV, N.M.; LEONTOVICH, M.A., akademik.

Temperature changes of magnetization curves of nickel-zinc ferrites at low-intensity (magnetic) fields. Dokl.AN SSSR 93 no.1:19-20 N '53.
(MLRA 6:10)

1. Akademiya nauk SSSR (for Leontovich). (Ferrite) (Electromagnetism)

KONDORSKIY, Ye.I.; SMOK'KOV, N.A.; LEONTOVICH, M.A., akademik.

Ferromagnetic resonance of nickel-zinc ferrites. Dokl.AN SSSR 93 no.2:237-240 N '53. (MLRA 6:10)

1. Nauchno-issledovatel'skiy institut fiziki Moskovskogo gosudarstvennogo universiteta imeni M.V.Lomonosova. 2. Akademiya nauk SSSR (for Leontovich). (Ferrite) (Electromagnetism)

SALIKHOV, S.G.; LEONTOVICH, M.A., akademik.

Resonance absorption in metals on centimeter waves. Dokl.AN SSSR 93 no.2:241-244 N '53. (MLRA 6:10)

1. Fiziko-tekhnicheskiy institut Kazanskogo filiala Akademii nauk SSSR.
2. Akademiya nauk SSSR (for Leontovich).
(Electroragnetism) (Thermomagnetism)

DEKHTYAR, I.Ya.; LEONTOVICH, M.A., akademik.

Variation of the electrical resistance of Ni-Mn alloys in a magnetic field depending on the composition. Dokl.AN SSSR 93 no.4:637-639 D '53.
(MLRA 6:11)

1. Akademiya nauk SSSR (for Leontovich).
(Nickel-manganese alloys) (Electric resistance)

LEONTOVICH, M.A.

MANDEL'SHTAM, L.I.; LEONTOVICH, M.A., akademik; ANDRONOV, A.A., akademik [deceased]; LANDSBERG, G.S., akademik; TAMM, I.Ye., akademik; GUROV, K.P., redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor

[Complete works] Polnoe sobranie trudov. Pod red. M.A.Leontovicha. [Moskva] Izd-vo Akad. nauk SSSR. Vol.4. 1955. 511 p. (MLRA 8:6)
(Vibration)