

EYMONT, M.

The development and future of electric traction. p. 273.

PRZEGLAD KOLEJOWY ELEKTROTECHNICZNY. (Wydawnictwa Komunikacyjne) Warszawa,
Poland, Vol. 11, no. 10, Oct. 1959.

Monthly list of East European Accessions (EEAI) LC, Vol. 9, no. 1, Jan. 1960.

Uncl.

EYMONT, Michal, mgr., inż.

Modern locomotives in the Soviet Union. To be contd. Przegł
kolej elektrotechn 13 no.7:215-216 '61.

EYMONT, Michal, mgr ins.

Development of various electric traction systems.
Przeegl kolej elektrotech 13 no.3:73-76 Mr '61.

EYMONT, Michal. mgr. ins.

Comparison of the economic and technical aspects of electric
and combustion traction. Przegl kolej elektrotech 10
[i.e. 15] no.12:349-351 D'63.

EYMONT, Michal, mgr inz.

For higher quality traction engines. Przegl kolej elektrotech 11
[i.e. 16] no.4:128, 3-4 of cover Ap '64.

EYMONT, Michal, mgr inz.

The electrified railway line Moscow--Baikal. Przegi kolej
elektrotech ll no.7:223--224 J1 '64.

SHTAMM, Valentin Vol'demarovich, inzh., ~~BYKOV~~, P.A., inzh.red.; KOCHETKOV,
L.I., red.; GOLUBKOVA, L.A., tekhn.red.

[Technology of the construction of storage elevators] Tekhnologiya
stroitel'stva sagotovitel'nykh elevatorov. Fed red. P.A. Rimonts.
Moskva, Izd-vo tekhn. i ekon. lit-ry po voprosam mukomol'nokrupianoj,
kombikormovaoj promyshli. i elevatorno-skladskogo khoziaistva, 1957.
162 p. (MIRA 11:9)

(Grain elevators)

SHAKALIS, V.A. [Sakalys, V.]; EIMUTAVICHYUS, V.A. [Eimutavichius, V.]

New drawing board for the designer. Vych. i org.tekh. v stroi.
i proekt. no.3:76-77 '64. (MIRA 18:10)

1. Institut proyektirovaniya promyshlennogo stroitel'stva pri
Sovete narodnogo khozyaystva Litovskoy SSR.

ИИ. А. Я.

Improved IMD-6 mechanical shovel. Masl.-zhir. prom. 24 no.2:37-38
158. (MIRA 11:3)

1. Krasnodarskiy maslozhirkombinat.
(Oil industries--Equipment and supplies)
(Loading and unloading)

SIPOVSKIY, G.V.; EYN, N. [Ein, N.]

Content of neutral oils in alkali phenolates of shale-tar fractions.
Khim. i tekhn.gor.slun. i prod. ikh perer. no.12:201-214 '63.
(MIRA 17:2)

ALIYEV, N.; EYNALOV, A.; NASRULLAYEV, N.; MAMEDOV, A.; MAMEDOV, M.;
GADZHIYEV, F., pomoshchnik мастера; EL'DAROV, M., operator;
DERGACHEV, P., operator

A word from the petroleum workers of Peschanyy Island.
Neftianik 7 no.11:9 N '62. (MIRA 16:6)

1. Zaveduyushchiy morskim promyslom kommunisticheskogo truda
No.1 neftepromyslovogo upravleniya Peschanyyneft' (for Aliyev).
2. Sekretar' komiteta Leninskogo Kommunisticheskogo soyuza
molodezhi neftepromyslovogo upravleniya Peschanyyneft' (for
A. Mamedov).
3. Morskoy promysel kommunisticheskogo truda
No.1 neftepromyslovogo upravleniya Peschanyyneft' (for Eynalov,
Nasrullayev, M. Mamedov, Gadzhiyev, El'darov, Dergachev).
(Peschanyy Island—Oil well drilling, Submarine)

EYNASTO, L. A.

"Solution to a Linear Differential Equation in the Neighborhood of an Irregular Point." Cand Phys-Math Sci, Tartu State U, Tartu, 1954. (KL, No 3, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

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6.1210

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S/033/60/037/006/019/022
E032/E514

AUTHORS: Liygant, M. and Eynasto, Ya.
TITLE: On the Theory of Automatic Satellite Tracking Telescopes
PERIODICAL: Astronomicheskiy zhurnal, 1960, Vol.37, No.6,
pp. 1087-1095

TEXT: The problems connected with the design of automatic telescopes for satellite tracking are discussed. The first section is concerned with the various types of mounting for satellite tracking telescopes using fixed and moveable polar axes. The second section is concerned with the equations describing the apparent motion of a satellite. Expressions are derived for the apparent coordinates of a satellite and the various corrections which have to be introduced in order to take into account the rotation of the Earth. In the third section it is pointed out that although all these expressions are relatively simple, they are not very conveniently interpreted either mechanically or electro-mechanically. They are thus unsuitable for programming purposes. One of the possible ways of simplifying these expressions is the replacement of the elliptical orbit by a circular orbit. It is

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J

On the Theory of Automatic Satellite Tracking Telescopes
shown that an acceptable accuracy can be achieved in this way.
Automatic telescopes for satellite tracking using this approxima-
tion are being built at the Kiyevskiy gosudarstvennyy universitet
(Kiyev State University) and the Institut fiziki i astronomii
Akademii nauk EstSSR (Institute of Physics and Astronomy of the
Academy of Sciences of the Estonian SSR). The programming device
of the Kiyev telescope (Yakovkin, Ref.1) used this approximation,
the error involved being of the order of 10 deg. Another
automatic device has been developed by Tiyt (Ref.2). The program-
ming device is a model of the motion of the satellite with a
circular orbit. The principles of the programming device
involved were put forward independently by G. G. Kuzmin,
Ya. Eynasto and A. Sapar. In all these telescopes azimuthal
mounting is employed. Sections 4 and 5 are concerned with further
approximations to the actual satellite orbits and these are
designated as the "small circle approximation" and the "great
circle approximation", respectively. In the former case the
polar axis of the telescope is directed to the pole of the

Card 2/3

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On the Theory of Automatic Satellite Tracking Telescopes
apparent orbit of the satellite and this is achieved with the aid
of a mounting incorporating two additional axes. The paper is
concluded with a brief section on the photography of satellites.
A telescope based on the small circle approximation was first
discussed by G. G. Kuzmin, Ya. Eynasto and L. Sorgsepp in
January, 1958. A telescope of this type was built by them at
the Tartu State University. There are 9 figures, 1 table and
3 Soviet references.

ASSOCIATION: Tartuskiy gosudarstvennyy universitet Institut
fiziki i astronomii Akademii nauk EstSSR
(Tartu State University, Institute of Physics and
Astronomy, Academy of Sciences, EstSSR)

X

SUBMITTED: February 15, 1960

Card 3/3

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8/269/63/000/001/054/032
A001/A101AUTHOR: Kynasto, Ya.

TITLE: On asymmetric shift of centroids of stars

PERIODICAL: Referativnyy zhurnal, Astronomiya, no. 1, 1963, 41,
abstract 1.51.310 ("Publikatsii Turtusk. astron. observ.",
1961, v. 33, no. 5 - 6, 371 - 386, English summary)

TEXT: Strömberg's empirical formula for the asymmetric shift does not agree with the change in the radial gradient n of the density logarithm for different groups of stars. An improved formula of asymmetric shift has been found, which corresponds to the observed n -value: $\Delta = \sigma^2 d^{-1} \lg (1 + \sigma^2/e^2)$, where d and e are constants. From this viewpoint low values of circular velocity V , used by many authors lead to difficulties. A better agreement with observational data is achieved at $V = 250$ km/sec. A table of the adopted system of galactic constants is presented. $d = 85 \pm 17$, $e = 17.5 \pm 5.0$ km/sec. Numerical results of calculating the velocities of centroids of various subsystems are given. There are 9 references.

From author's summary

[Abstractor's note: Complete translation]

Card 1/1

PAIS, A. A., V. N. POMERAI, V. N. VEINER, A. M. GIBASOV.

The Earthquake in Andimian k on 3/14 December 1902. Trud: Geol.
Komiteta, New Series. Vol. 34, 1910.

IVANOV, D.N.; FAAS, A.V.

Relation between the distribution of scandium and the type of
rocks containing it. Dokl. AN SSSR 149 no.1:176-178 Mr '63.
(MIRA 16:2)

1. Leningradskoye otdeleniye Matematicheskogo instituta im.
V.A. Steklova AN SSSR. Predstavleno akademikom D.S. Korzhinskim.
(Scandium)

IVANOV, D.N.; FAAS, A.V.

Evaluation of the content of accessory minerals in thin sections
using a linear calculation method. Sov. geol. 7 no.12:140-147 D
'64. (MIRA 18:4)

1. Leningradskoye otdeleniye Matematicheskogo instituta im.
V.A. Steklova AN SSSR.

VISTELIUS, A.B.; FAAS, A.V.

Characteristics of the alteration of layers in some cross sections of sedimentary formations. Dokl. AN SSSR 164 no.3: 629-632 S '65. (MIRA 18:9)

1. Gruppya matematicheskoy geologii Leningradskoy geologii Leningradskogo otdeleniya Matematicheskogo instituta im. V.A. Steklova AN SSSR. Submitted March 13, 1965.

VISTELINS, A.B.; FRAS, A.V.

Variations in the thickness of layers in the section of the Paleozoic
flysh of the Southern Urals. Dokl. AN SSSR 164 no.5:1115-1118 0 '65.
(MIRA 18:10)

1. Gruppya matematicheskoy geologii Leningradskogo otdeleniya
Matematicheskogo Instituta im. V.A.Steklova AN SSSR. Submitted
March 13, 1965.

FAAS, V. A.

"The Use of Light Filters as a Measure Against Atmospheric Haze. Collection of Papers on Aerophotometry", No. 1, Scientific Research Institute of Aerial Survey of the Main Geological, Hydrological and Geodetic Administration of the People's Commissariat of Heavy Industry of the USSR, M., 1934.

FAAS, V. A.

"Light Filters", Publishing House ofr Literature on Motion Pictures and
Photography, M., 1936.

FAAS, V. A.

"Radial velocities of class-B stars. " Astron. Zhur., 17, No 6, 1940. (submitted 14 Apr 1940)

Report U-1518, 23 Oct 1951

FAAS, V. A.

"On the Development of the Study of Aerolandscape," Dokl. Ak. Nauk SSSR,
26, No. 4, 1940,
Inst. of Geography, Acad. Sci. USSR

FAAS, V. A.

"Spectral Transparency of the Atmosphere and the Visibility,"

Iz. Ak. Nauk SSSR, Ser. Geograf. i Geofiz., Nos. 1-6, 1942

FABA, Laszlo

Ornithological data from the diary of an old taxidermist, the
late Rezső Faba. Aquila 69/70:272-162-163 (publ. 164).

FABANA, E.

"Pneumatic Machinery for Cleaning Condenser Tubes", P. 394, (ENERBETIKA,
Vol. 4, No. 9, Sept. 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 3, No. 12,
Dec. 1954, Uncl.

YUGOSLAVIA

Dr Visnja FABECIC-SABADI, Children's Department of General Hospital
(Djecji odjel Opce bolnice) "Dra M. Stojanovica," Zagreb.

"Congenital Diaphragmatic Hernia."

Zagreb, Lijecnicki Vjesnik, Vol 85, No 5, May 63; pp 523-529.

Abstract [French summary modified]: Case reports of 2 infants and child
aged 7; surgery in 2 was successful; 3 necropsy reports are added of
one stillborn and 2 neonates with multiple congenital anomalies
including major degree of diaphragmatic agenesis and hernia; discussion
and review of literature. Four rentgenograms, 3 Yugoslav and 18
Western references.

1/1

FABELINSKIY, I. L.

3

Depolarization of diffused light in mixtures. I. I. Fabelinskiy, *J. Exptl. Theoret. Phys. (U. S. S. R.)* 10, (No. 4) (1940).—Investigation of depolarization of SnCl_2 and SnBr_2 shows that coeff. of depolarization of the mixt. is larger than that of sep. components. This increase of depolarization coeff. does not depend on the compn. of the mixt. The results of investigation lead to the conclusion of Trumpp (C. A. 25, 1735) that the increase of depolarization in mixts. could be explained by the formation of asym. mole. of intermediate products: SnCl_2Br , SnClBr_2 , SnCl_2Br_2 . The coeff. of depolarization falls rapidly with increasing temp., but this fact does not serve as proof that intermediate products decomp. because the same fall of depolarization with the temp. could be observed in the sep. components. Study of the influence of heating on the relative intensity of lines in combined diffusion permits an estimate of the heat balance corresponding to the formation of intermediate products. With SnCl_2 and SnBr_2 the heat balance is somewhat smaller than 1200 cal./mole. Roksilana Gamow

Lab. of optics, Sci. Res. Inst. of Physics, Moscow State U.

ASH 514 METALLURGICAL LITERATURE CLASSIFICATION

FADE WINSKIY, I. L.

Distribution of intensity in the wing of the Raleigh line and relaxation phenomena in liquids. *I. L. Vahelin'skiy (Leningrad Phys. Inst. of the Acad. Sci.). Bull. Acad. Sci. U.S.S.R., Ser. Phys. 9, 190 (191A) (in Russian) and preprint. (1) From Leontovich's theory (C.A. 36, 4410) and various exptl. work, the law of distribution of intensity in the wing of the Raleigh line where the depolarization coeff. is uniformly 6/7 is of the form $I = C(1 + \Delta\omega^2)^{-1}$, where I is the intensity, C a const., $\Delta\omega$ the shift in frequency (relative to the unchanged line) and τ the relaxation time of mol. anisotropy.*

(where τ is the wave length function of $\Delta\omega^2$ or of $\Delta\omega$) (where τ is the wave length function of $\Delta\omega^2$ or of $\Delta\omega$) (where τ is the wave length function of $\Delta\omega^2$ or of $\Delta\omega$).

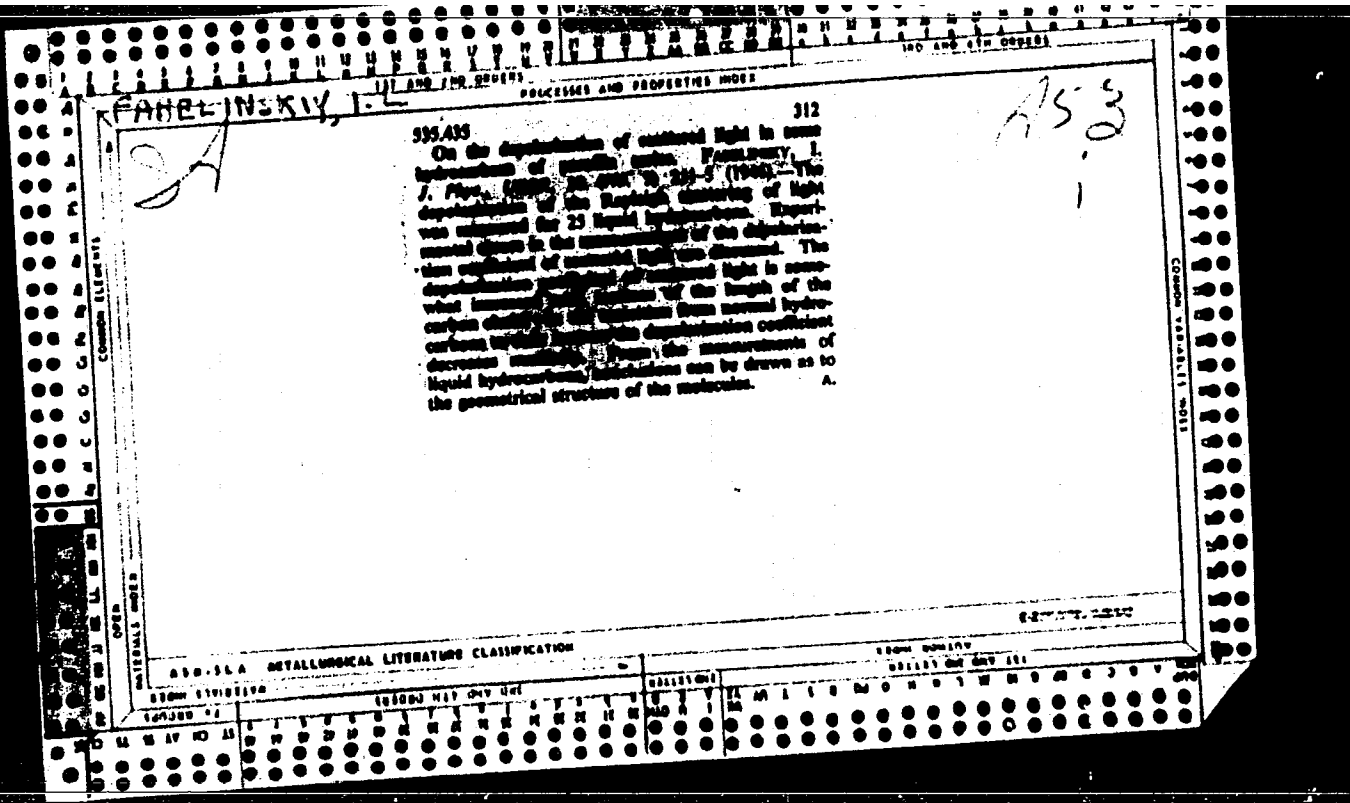
(1) Measurements to verify this relation were made on CS₂, phenol, chlorobenzene and water. data on other liquids from the literature were checked from this point of view. The linearity of I/T is confirmed in the whole interval of $\Delta\omega^2$ from 1000 to 5000 cm.⁻². Deviations are found below and above these values. The nonlinear portion at the origin is about 15-25 cm.⁻¹ wide and corresponds to a distance on the photographic plate of only 0.2-0.5 mm. In the photographic emulsion may play an essential role. The 10%-15% deviation from linearity observed in this region can be explained by this factor and the background proper to the source of light. The deviation from linearity beyond $\Delta\omega^2 = 5000$ cm.⁻² lies within the limits of exptl. error but is observed systematically, the relaxation time τ of mol. anisotropy is calcd. for benzene, AcOH, CCl₄, MeOH, CS₂, xylene, Me₂CO, chlorobenzene, CHCl₃, water, phenol; the values range from 1×10^{-11} to 7×10^{-11} sec. and are consequently all of the same order of magnitude. (3) According to the theory, τ should be proportional to η/T , where T is the temp. and η the viscosity, itself variable with the temp. Preliminary expts. on phenol confirm this relation between 18° and 100°, in which interval η varies by a factor of 2. (4) The values of τ derived from the scattering of light are compared with the relaxation times of mol. anisotropy calcd. from the Kerr effect, the dispersion of electromagnetic waves, and the flow birefringence. The τ values derived from the Kerr effect are about 1000 times greater than the figures obtained from the intensities in the Raleigh wing; the Kerr effect does not permit observation of times shorter than about 10^{-9} to 10^{-10} sec.; processes of so long a duration cannot, on the other hand, be detected in the wing, but only in the unshifted Raleigh line itself. Dispersion of electromagnetic waves and flow birefringence give τ values of approx. the same order of magnitude as the scattering of light.

N. Thon

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DEPOLARIZATION OF SCATTERED LIGHT IN PARAFFIN HYDROCARBONS. I. L. Fabelinskii, *J. Exptl. Theoret. Phys.* (U.S.S.R.) 10, 724-33 (1916); *J. Phys.* (U.S.S.R.) 10, 241 (1916) (in English). Measurements of the degree of depolarization of the Raleigh scattered light involve a series of sources of error in addition to those discussed previously, such as presence of dust particles, fluorescence, parasitic light, and nonparallelism of the primary beam. In particular, serious errors arise whenever the depolarization $\Delta = I_p/I_s$ of the unshifted scattered light is small and that of the Raman lines, $\rho = i_p/i_s$, relatively large; the observed global depolarization in white light $\Delta' = (I_s + i_s)/(I_s + i_p)$ is related to the desired Raleigh depolarization by $\Delta = (\Delta' - a\rho - \Delta')/(\rho + 1)/(1 + a(\rho - \Delta')/(\rho + 1))$, where $a = (i_p + i_s)/(I_s + I_p)$; hence $\Delta' > \Delta$ when $\rho > \Delta'$ and vice versa. It is consequently necessary either to apply corrections for which data may often be lacking or else to eliminate the Raman lines. This was done by inserting a light filter of satd. NaNO2 soln., which cuts off radiations shorter than 4000 Å., and using nonsensitized photographic plates. With an exptl. setup involving a Wollaston prism, the degrees of depolarization Δ of org. liquids, free from the sources of error described, were obtained accurate to within 5-6%. Results are given for 4 groups with increasing no. of C atoms: I. pentane 0.073; 2-methylbutane 0.03; II. hexane 0.08; 2-methylpentane 0.084; III. heptane 0.087; 2-methylhexane 0.079; 3-methylhexane 0.073; 2,4-dimethylpentane 0.07; 3,3-dimethylpentane 0.061; 2,3-dimethylpentane 0.058; 2,2,3-trimethylbutane 0.054; IV. octane 0.088; 2,4-dimethylhexane 0.078; 2,3-dimethylhexane 0.077; 2-methyl-3-ethylpentane 0.075; 3-methylhexane 0.076; 3-methyl-3-ethylpentane 0.074;

AND DEGREE OF POLARIZATION

2,5-dimethylhexane 0.073; 2,2-dimethylhexane 0.071; 4-methylhexane 0.07; 3-ethylhexane 0.065; 3,1-dimethylhexane 0.061; 3,1,1-trimethylpentane 0.061; 2,2,1-trimethylpentane 0.056; 2,2,1-trimethylpentane 0.053. The degree of depolarization is seen to increase somewhat in normal paraffins with increasing chain length, and to decrease distinctly from normal hydrocarbons to branched isomers. S. Thon

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USSR/Physics
Photometry
Atomization

Sep 1947

"Method of Obtaining Continuous Photometric Wedges by Means of Cathode Atomization," I. L. Fabelinskiy, Physics Institute Imeni P. N. Lebedev, Academy of Sciences of USSR, 5 1/2 pp

"Zhur Tekh Fiz" Vol XVII, No 9

Author describes a method of obtaining photometric wedges not possessing many of the unsatisfactory characteristics inherent in this type of clearing. Platinum, whose photometric property is generally known, was used in the role of an absorbing media for the

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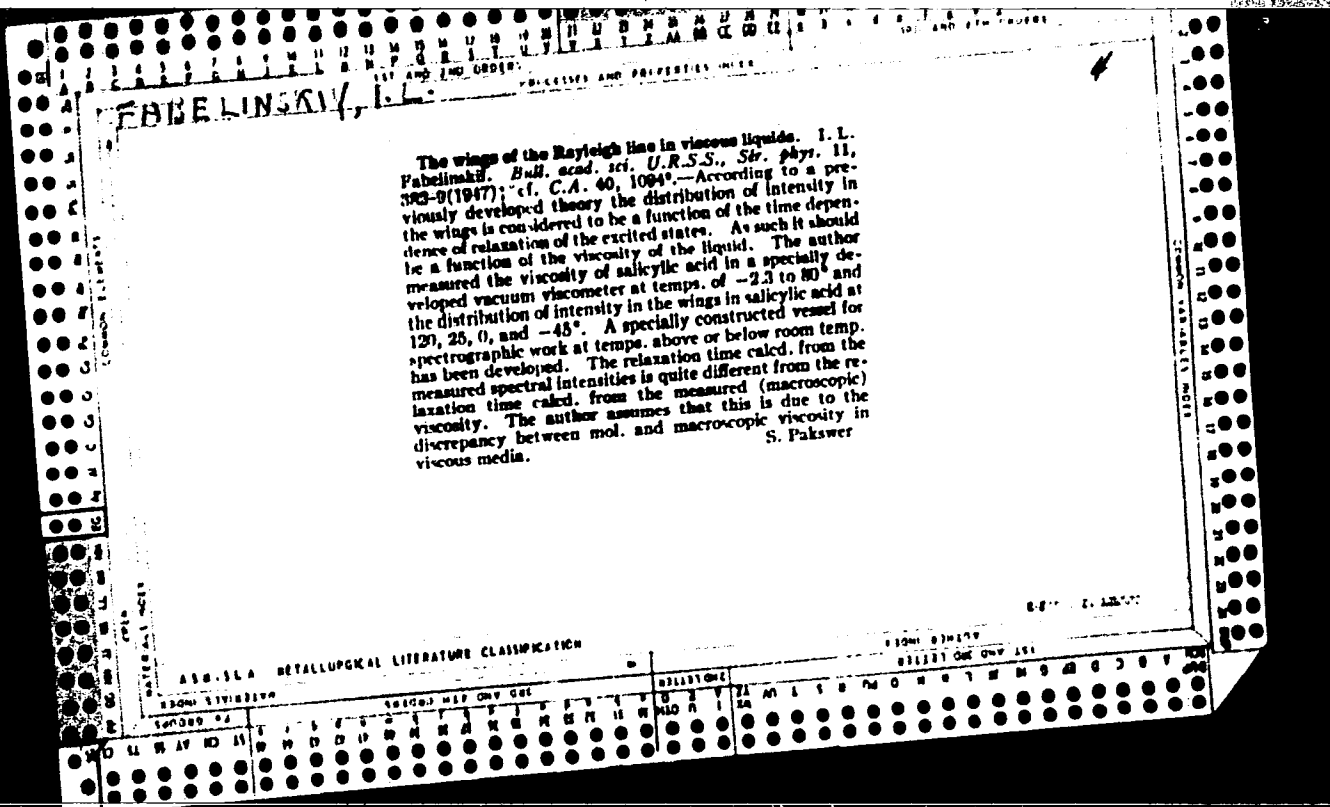
Sep 1947

USSR/Physics (Contd)

wedges obtained by the described method. A layer of platinum was deposited on a round glass pedestal by means of cathode atomization. Submitted, 25 May 1947.

FABELINSKIY, I. L.

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FABELINSKIY, I. L.

"Effect of the Viscosity on the Width of Wings of Rayleigh Lines," Dok. An, 57, No. 4, 1947

FABELINSKIY I.

USSR/Physics - Dielectrics Radar Waves

Oct 49

"Measurement of the Temperature Dependency of the Dielectric Constant and the Loss Angle in a Field of Centimeter Waves," D. Mash, L. Mayants, I. Fabelinskiy, Lab Of Oscillations imeni Acad. L. I. Madnal'shtan, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 7 pp

"Zhur Tekh Fiz" Vol XIX, No 10

1192-98
Gives theory of a method for precise determination of ϵ' and ϵ'' in the ultrashort wave band. Introduces results of measurement of temperature dependency of the dielectric constant and loss angle for glycerin using a 3.22-cm wave. Submitted 10 Aug 48.

PA 151T90

FABELINSKIY, I. L.
CA

Rayleigh scattering of light in liquids. G. P. Motulevich and I. L. Fabelinskiy. *Izvest. Akad. Nauk. S.S.S.R., Ser. Fiz. 10, 512-513 (1961)*. The isothermal first deriv. $\rho(d\sigma/d\Omega)/d\rho$, where $\rho = d$, of the liquid and $\sigma = \pi^2$, is included in the formula for the scattering coeff. This deriv. is practically equal to the adiabatic deriv. $\rho(d\sigma/d\Omega)/d\rho$, which can be measured by the interaction of a light and an ultrasonic wave. Monochromatic light, $\lambda = 4358 \text{ \AA}$, is projected on a vessel in which an ultrasonic wave is created by a piezocrystal. The light is then projected through a stepfilter on a photographic plate. The pressure of the ultrasonic wave is measured with a microradiometer. The probable errors are discussed and a value for $\rho(d\sigma/d\Omega)/d\rho$ of 0.73 is obtained for H_2O , which leads to a calcd. value of the scattering coeff. $R = 1.73$, in good agreement with measured values. A. P. Kiselev

1951

335,421
 7170. New form of phase diffraction grating.
 S. M. RYTOV AND I. L. FABELINSKIY. *J. Exp. Theor. Phys., USSR*, 20, 340-1 (April, 1958) in Russian.
 A reflection diffraction grating of a new type is described, which introduces in principle only a phase modulation into the reflected optical wave. Such a grating was made and used for a series of qualitative observations on the intensity distribution in diffraction spectra in natural and polarized light. A characteristic difference in the distribution of the intensities in spectra in natural and polarized light was observed.
 R. F. KRAUS

FABELINSKIY, I. L.
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Phys Inst - in. Lebedev, AS USSR

METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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155T70

USSR/Physics - Instruments
Acoustics, Measurement

Jan 50

"An Absolute Acoustic Microradiometer," G. P. Motu-
levich, I. L. Fabelinskiy, L. N. Shteyngauz, Phys
Inst Imeni P. N. Lebedev, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LXX, No 1 - 19.14.51

Major defect in most radiometers is that pressure
receiver (whether of plane or spherical form), de-
flecting under action of sound, is subjected to dif-
ferent effective pressures because of change in po-
sition of receiver. Devised radiometer with elec-
tromagnetic compensation for this force. Instrument

155T70

USSR/Physics - Instruments (Contd)

Jan 50

can be used to measure forces from 10^{-3} to 10^3 dynes.
This radiometer, when protected from air motion by
casing, might be used to determine amplitude of ul-
trasonic waves in liquids. Submitted by Acad G. S.
Landsberg 1 Nov 49.

FABELINSKIY, I. L.

155T70

FABELINSKIY, I. L.

USSR/Physics - Acoustics

11 Nov 50

"Method for Measuring the Velocity of Propagation of
Ultrasonic Waves in a Liquid," T. S. Velichkina,
I. L. Fabelinskiy

"Dok Ak Nauk SSSR" Vol LXXV, No 2, pp 177-180

Unique dependence of transmission coeff (D) of ultra-
sonic waves upon thickness (d) of liquid layer; depen-
dence of velocity of propagation of ultrasonic waves
(V, 1,000-1,800 m/sec) upon temp (T, -120-80°C) in
pentane and in triacetin. Describes apparatus used.
Submitted 16 Sep 50 by Acad G. S. Landsberg.

178T97

USSR/Physics - Acoustics

11 Dec 51

"Concerning an Optical Method for Checking the Character of the Acoustic Field," G. P. Motulevich, I. L. Fabelinskiy, Phys Inst Imeni Lebedev, Acad Sci USSR

"Dokl Ak Nauk SSSR" Vol LXXXI, No 5, pp 787-790

Subject method is based on the investigation of the intensity of the 1st diffraction max of light in dependence upon the direction of propagation of the ultrasonic waves. Describes the theory of the proposed method for checking the character of the acoustic field thus: If at a plane sonic wave

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USSR/Physics - Acoustics (Contd) 11 Dec 51

propagated in the XY-plane under angle θ to the y-axis a parallel beam of light is incident in the direction of the x-axis, then the intensity of the light diffracted under θ to the x-axis is determined for small amplitudes of sound by a formula. Submitted by Acad G. S. Landsberg 22 Oct 51.

FABELINSKIY, I. L.

210mg

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 PUBLISHED BY, I.L.
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Molecular scattering of light in liquids. G. P. Motulevich and I. L. Fabrikant. *Doklady Akad. Nauk S.S.S.R.* 23, 203-4 (1967); *U.S.S.R.* 48, 3247. — Einstein's formula for the scattering coeff. $R = (c^2/2\lambda^4) \rho^2 \beta_T [(1 + \Delta)/(1 - \Delta)]$ (where λ = wave length of the light, ρ = isothermal compressibility, Δ = depolarization of the scattered light, and $\alpha = \rho h/\beta_T$, with $\rho = d$, and $\alpha = \text{dirlec. const.}$) has been giving systematically too high R as compared with exptl. data. The reason for this discrepancy is seen in the use of static α , not suitable for light-scattering phenomena. The agreement between theory and exptl. becomes better if α is detd. from diffraction of light by supersonic waves; it is calcd. by $\alpha = (3.03 \Delta \lambda^2 \rho^2 / c^2) [(I_1/I_0)/F]$, where h and a are the dimensions of the radiometer prism (angle $120^\circ 30'$), n is the refractive index, v the sound velocity in the liquid, l the length of the sound column, I_1/I_0 the ratio of the intensities of the 1st diffraction max. and of the incident light, and F the force exerted by the supersonic wave on the radiometer collector; the magnitudes measured are I_1/I_0 and F . This method gives the dynamic α at const. entropy (adiabatic); the const.-temp. α is obtained therefrom with the aid of the usual thermodynamic relations. Values of the dynamic α thus obtained, in $\lambda = 4326 \text{ \AA.}$, and a frequency of 1.094 and 1.094×10^7 (2.903×10^7 for C_6H_6 , to avoid too large a correction for absorption), are: H_2O 0.795, MeOH 0.795, EtOH 0.868, Et_2O 0.867, C_6H_6 1.51, PhMe 1.515; these are distinctly lower than the static α , 0.868, 0.902, 1.041, 0.959, 1.63, 1.612, measured at 5461 \AA. Absence of a dispersion of α was ascertained with C_6H_6 in 4326 and 5461 \AA. , and with PhMe in 4047, 4326, and 5461 \AA. ; the values of α are the same within 1%. The alleged dispersion, asserted by A. F. Turner (*Thesis, Berlin 1938*) does not exist. Best agreement with

the exptl. R and Einstein's formula is obtained with dynamic α values detd. in this way; static α give a systematic discrepancy. Agreement with the King and the Lorentz-Lorentz formulas is only occasional and, when present, manifestly fortuitous. The systematic discrepancy between the dynamic and the static α cannot be explained.
 N. Thon

FABELINSKIY, I. L.

USSR/Physics - Light Scattering Sep/Oct 53

"Spectral Investigation of Classical Scattering of
Light in Liquids," I. L. Fabelinskiy

Iz Ak Nauk, Ser Fiz, Vol 17, No 5, pp 538-545

Studies superfine structure of anisotropic
scattering of light and dispersion of sound ve-
locity in benzene, toluene, methyl and ethyl al-
cohols. Tabulates results. Gives credit to G. S.
Landsberg, V. L. Ginzburg and G. P. Motulevich.

274781

11603
✓ Emission of sound from barium titanate. G. P. Matulovich and L. L. Fabelinskii. *Zhur. Exptl. i Teoret. Fiz.* 25, 605-13 (1953).—The nature of the acoustic field, the width and form of the fundamental tone and of its harmonics, and the emission energy and its dependence on the potential applied to BaTiO₃ were detd. In all samples studied 2 emission maxima were observed, at 5.4 and at 6.6×10^4 hertz. The harmonics did not exhibit this phenomenon. For an alternating potential of 100 v., the emission strength amts. to 3 w./sq. cm., but decreases by a factor of 10 after heating. At 30 v. and 0.6 w. the samples are stable. The velocity of sound waves in BaTiO₃ is 5120 ± 150 m./sec.

F. H. Rathmann BB

TRANSLATION - M-834, 19 Oct. 55

PROLINSKIY, I. L.

USSR

USSR

532.74 : 534.222
6343. Dispersion of sound velocity in certain organic liquids. I. L. FABELINSKI AND O. A. SHUSTIN. Dokl. Akad. Nauk SSSR, 92, No. 2, 285-8 (1953) In Russian English translation, U.S. National Sci. Found. NSF-17-194.

2

The velocity of sound at 10 000 Mc/s was measured in benzene, toluene and CCl₄ by finding the frequency shift of the Raleigh lines. The results (together with the percentage positive dispersion with respect to the velocity at about 50 Mc/s) were: benzene, 1470 ± 26 m/s (10%); toluene, 1297 ± 20 m/s (0%); CCl₄, about 1080 m/s (about 16%). If it is assumed that all the excess absorption at ultrasonic frequencies is due to a single relaxation process and that the dispersion is complete at 10 000 Mc/s, then the above figures imply relaxation times of 2.4×10^{-10} sec for benzene and 6.7×10^{-11} sec for CCl₄ at 20°C. It is suggested that the relaxation time for toluene is also $\sim 10^{-10}$ sec. The lower excess absorption in this substance would then yield a dispersion of 0.1%— which is too small to detect and therefore does not contradict the above result. In support of this it is noted that toluene exhibits a sharply defined fine structure and that this would not be possible if a/ω^2 remained constant up to 10 000 Mc/s. R. O. DAVIES

Handwritten signature

MOLCHANOV, V.A., FABELINSKIY, I.L.

Dispersion of the velocity of sound in carbon disulfide. Dokl.
AN SSSR 105 no.2:248-249 '55. (MLBA 9:3)

1. Fizicheskiy institut imeni P.N. Lebedeva Akademii nauk SSSR.
(Sound--Velocity) (Carbon disulfide)

Category : USSR/Optics - Physical Optics

K-5

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2342

Author : Motulevich, G.P., Fabelinskiy, I.L.

Inst : Physics Institute, Academy of Sciences USSR

Title : On the Dependence of the Index of Refraction on Density at Low Audio Frequencies

Orig Pub : Dokl. AN SSSR, 1956, 106, No 4, 637-640

Abstract : Description of the authors' original method of measuring $\partial k/\partial \rho$ at the low 50-cycle frequency. Two layers of the investigated substances are placed in the arms of a Jamin interferometer, and the density of one layer is varied sinusoidally. The authors worked out a special procedure to determine exactly the value of $\Delta \rho/\rho$ with respect to the change in density, at which the contrast of the interference pattern vanishes. The value of $\partial k/\partial \rho$ is calculated most accurately at this point. Values of 0.90 ± 0.02 and 1.61 ± 0.06 were obtained for water and benzol respectively. A summary table of previously-published results is given. The dispersion observed in the 50 to 10^7 cycle range and the fact that $\partial k/\partial \rho$ has the same values both for 0 and 50 cycles and for 10^7 -- 10^{10} cycles cannot be explained by assuming this quantity to be dependent on a certain region, the radius of which is of the order of magnitude of the radius of the action of the intermolecular forces.

Card : 1/1

FABELINSKIY, I. L.

The intensity relation in the fine-structure components of the Rayleigh scattering line

1954, Dokl. Akad. Nauk SSSR, 101, No. 5, p. 1085

101

FABELIVSKIY, I. L.

ca

The intensity ratios of some lines of the mercury spectrum. I. L. Fabelivskii. *Physik. Z. Sowjetunion* 11, 333-335 (1937) (in German). - The appearance of intercombination transitions in the Hg spectrum does not permit one to assume complete breakdown of the normal coupling to the Hg atom. Measurements of the intensity ratios of lines that have an upper level in common with the intercombination lines show that the weaker the intercombination line, the closer this ratio is to the theoretical value. By means of data on a Hg-quartz lamp at high and low pressures the lower limits for the reabsorption coeffs. of the lines at 3125 Å. and 3042 Å. have been detd. Harold Gershonowitz

3

ASTM METALLURGICAL LITERATURE CLASSIFICATION

Region	Division	Section	Subsection	Topic	Material	Language	Year	Author	Title	Source
1	1	1	1	1	1	1	1	1	1	1

FABELINSKIY, I. L.

PRIKHOT'KO, A F
24(7) 3 PHASE I BOOK EXPLOITATION SOV/1365
L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizichnyy sbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Jazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Lavdatov, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Korotkiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Milyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Fabelinskiy, I.L. Rayleigh-line Wing and Relaxation Processes in Liquids	117
Atakhodzhaev, A.K., M.F. Vaks, and V.L. Litvinov. Two Methods for the Determination of Molecular Orientation-relaxation Time	118
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Card 9/30

AUTHOR: Fabelinskiy, I.L.

51-4-16/25

TITLE: Depolarizing scattering of light in liquids and relaxation processes. (Depolyarizovannoye rasseyaniye sveta v zhidkostyakh i relaksatsionnye protsessy.)

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy) 1957, Vol.2, No.4, pp.510-513 (U.S.S.R.)

ABSTRACT: The author, together with O.A. Shustin, studying "wings" of Rayleigh scattering lines found a narrow part of depolarizing scattering with a half-width from 2.5 cm^{-1} to under 1 cm^{-1} which merges continuously into a wider wing with about 25 cm^{-1} half-width. Both the narrow and wide regions follow relaxation theory if two relaxation times are assumed. Results for not very viscous liquids (Benzene, toluene, CS_2 , acetic acid) show that relaxation times for the narrow part of the wing are $3-17 \times 10^{-12}$ sec, i.e. about 10-100 times higher than the relaxation times for the wide part of the wing ($0.1 - 0.2 \times 10^{-12}$ sec). The author reports results on the narrow part of the wing for viscous liquids: glycerine, salol (phenyl salicylate), benzophenone and triacetin, at temperatures from 20°C to 170°C . The method employed was described earlier (I.L. Fabelinskii, Izvestiya Akad. Nauk SSSR, Ser. fiz., Vol. 87, 538, 1953). Estimates of the narrow wing relaxation times for the above four viscous liquids are at 20°C - 4×10^{-11} sec, at 100°C - 1.5×10^{-11} sec, at

Card 1/3

Depolarizing scattering of light in liquids and relaxation processes. (Cont.)

51-4-16/25

at $\omega = 6 \times 10^{10}$ c/s, the dipole moment relaxation time τ_D is calculated to be 2.7×10^{-11} sec which is roughly of the same order as the experimental value (5×10^{-12} sec). Values of τ_1 for the other viscous liquids were not available, so that the above calculation for glycerin is the only quantitative support available so far for the relaxation theory of Rayleigh scattering line wings in these liquids. There are 1 figure (half-tone plate with spectra); 1 table; 13 references (11 of which are Slavic).

ASSOCIATION: P.N. Lebedev Physical Institute, Academy of Sciences of the U.S.S.R. (Fizicheskiy Institut im. P.N. Lebedeva AN SSSR)

SUBMITTED: July 4, 1956.

AVAILABLE: Library of Congress

Card 3/3

FABELINSKIY, I.L.

Rayleigh scattering lines and relaxation processes in liquids.
Fiz. sbor. no.3:117-118 '57. (MIRA 11:8)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR, Laboratoriya im.
akad. G.S. Landsberga.

(Light--Scattering)

FABELINSKIY, I. L.

AUTHOR: Motulevich, G.P. and Fabelinskiy, I. L.. 46-2-21/23

TITLE: An optical method of calibration of sound radiators at low acoustic frequencies. (Opticheskiy metod absolyutnoy graduirovki akusticheskikh izluchateley na nizkoy zvukovoy chastote)

PERIODICAL: "Akusticheskiy Zhurnal" (Journal of Acoustics), 1957, Vol.3, No.2, pp. 205-206 (U.S.S.R.)

ABSTRACT: In their previous work (1) the authors have shown the dependence of the refractive index n on density ρ at low acoustic frequencies and have obtained exact values of

$\rho \frac{\partial n}{\partial \rho}$; these results permit the application of the method

to the realisation of a purely optical method of calibration of sound sources of arbitrary construction, which radiate a low frequency into a closed, small as compared with the wavelength, volume. The source to be calibrated is connected to a heavy tube with end glass plates and filled with a liquid,

the $\rho \frac{\partial n}{\partial \rho}$ of which is well known (water, benzene). The tube

is placed in one of the arms of the Jamain, Mach-Zender or Michelson interferometer. The other arm contains a similar

Card 1/3

46-2-21/23

An optical method of calibration of sound radiators at low acoustic frequencies. (Cont.)

tube with a liquid which compensates for the heavy absorption of light in the first tube. When the source radiates, the harmonic variation of pressure or density in the first arm produces harmonic light attenuation effects. When the pressure changes are smooth the contrast of the interference image will first increase and then disappear at the moment when the difference in pressure is that given by eq. (5). If, therefore, the source driving voltage or current changes smoothly, the interferometer picture will disappear at various pressures $\Delta p_1, \Delta p_2$, etc. so that a graph of absolute calibration may be constructed. The accuracy of measurement is determined in practice by the accuracy of measurement of $e \frac{\partial n}{\partial p}$, all other quantities in eq.(5) being

determined much more accurately. The experimentally-obtained values for $e \frac{\partial n}{\partial p}$ were: water 0.337 ± 0.006 ; benzene 0.53 ± 0.02 ,

Card 2/3 taken at the light wavelength $\lambda = 5461 \text{ \AA}$ and at room temperature. As shown in (1) $e \frac{\partial n}{\partial p}$ depends very little both on wavelength

and temperature.

There are 3 Slavic references.

PROBATIONARY
TUMERMAN, L.A.; FABINSKY, L.D.

Academician Grigori Samuilovich Landsberg; obituary. *Fiz. v shkole*
17 no.3;22-24 My-Je '57. (MLBA 10:6)

1. *Fizicheskiy institut imeni P.N. Lebedeva AN' SSSR.*
(Landsberg, Grigori Samuilovich, 1890-1957)

AUTHOR: ФАБЕЛИНСКИЙ, И. Л.
Fabelinskiy, I.L. 53-2-6/9

TITLE: Some Problems of Molecular Scattering of Light in Liquids (Nekotoryye voprosy molekulyarnogo rasseyaniya sveta v zhidkostyakh)

PERIODICAL: Uspekhi Fiz. Nauk, 1957, Vol. 63, Nr 2, pp. 355 - 410 (USSR)

ABSTRACT: The present survey outlines the most important results from the study of the total Rayleigh scattering (releyevskoye rasseyaniye) of light and of the fine structure of the line of the scattered light in pure liquids. The wide scope of the problems turning up on the study of depolarized light in liquids (wings of the Rayleigh line) (liniya Reloya) the dispersion of light in liquids and glass as well as the dispersion of light in the vicinity of the critical temperature are not treated in the present summary. These problems will all be dealt with separately. Several of the results discussed here were obtained in the optical laboratory imeni G.S. Landsberg of the Physical Institute of the Academy of Science of the USSR. The survey is arranged as follows: § 1 a.) The thermodynamical theory, b.) The non-thermodynamical theory, c) The intensity of the light scatter-

Card 1/2

53-2-6/9

Some Problems of Molecular Scattering of Light in Liquids

ed on the fluctuations of anisotropy.

§ 2: The absolute measurements of the intensity of the molecular dispersion of light in liquids. A comparison with the conclusions of the theory. These measurements of the absolute intensity of the dispersed light, which are very difficult, were begun 30 years ago and last till today. § 3: The spectral composition of the Rayleigh scattered (releyevskiy) light. § 4: The dispersion of sound velocity and the velocity of ultrasonic waves. § 5: The polarization of the Mandel'shtam-Brillouin components (komponenty Mandel'shtama-Brillyuena) in liquids. § 6: The relation between the intensities of the components of the fine structure of the line of the scattered light. § 7: The width of the components of the fine structure of the line of the scattered light. There are 12 figures, 18 tables and 122 references, 59 of which are Slavic.

AVAILABLE: Library of Congress

Card 2/2

LANDSBERG, Grigoriy Samuilovich, akademik; FABELINSKIY, I.A., doktor fiziko-
matematicheskikh nauk, red.; VEGER, A.L., red, izd-va; SHEVCHENKO,
G.N., tekhn.red.

[Selected works] Izbrannye trudy. Pod red. Fabilinskogo. [Moskva]
Izd-vo Akad. nauk SSSR, 1958. 476 p. (MIRA 11:4)
(Spectrum analysis)

FABELINSKIY, I. A.
FESIN, M. S. and FABELINSKIY, I. A.

"Investigation of Hypersonic Propagation in Liquids."

paper presented at 4th All-Union Acoustics Conf. Moscow, 26 May - 6 Jun 58.

SOV-26-58-3-51/51

AUTHOR: Fabelinskiy, I.L., Doctor of Physico-Mathematical Sciences

TITLE: On the Nature of Visible Sound Waves (O prirode vidimyykh zvukovykh voln)

PERIODICAL: Priroda, 1958, Nr 3, pp 127-128 (USSR)

ABSTRACT: The phenomenon of visible sound waves, or better still of an expanding sound impulse, is explained by the author. The waves or impulses of sound cause compression and rarefaction in the medium where they expand. This compression and rarefaction depends on the power of the sound and consequently causes a more or less great change in the density of the medium at the points of compression and rarefaction. The change of density entails a change of the refractive index, causing an optical heterogeneity which may become visible under certain favorable conditions. In the laboratory practice, this phenomenon is often utilized in the investigation of sound fields and, as a method proposed by Tepler dates back to 1866.

Card 1/2

There is 1 diagram, 1 photo and 7 Soviet references.

On the Nature of Visible Sound Waves

SOV-26-58-3-51/51

ASSOCIATION: Fizicheskiy institut imeni P.N. Lebedeva AN SSSR (Institute
of Physics imeni P.N. Lebedev AS USSR)

1. Sound--Visibility 2. Sound--Analysis

Card 2/2

USCOMM-DC-55849

547 46-4-2-5/20
AUTHORS: Zaytsev, V.P., Motulevich, G.P. and Fabelinskiy, I.L.
TITLE: Construction and Absolute Calibration of a Magneto-Electric Acoustic Generator (Konstruktsiya i absolyutnaya graduirovka magnito-elektricheskogo akusticheskogo izluchatelya)
PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol IV, Nr 2, pp 137-142 (USSR)
ABSTRACT: The present paper describes a generator which works inside a closed space whose dimensions are small compared with the acoustic wavelength and the method of absolute calibration of this generator is given. Errors in this calibration do not exceed 1-2%. The generator is shown in Fig 1. Change of pressure in the vessel 4 filled with liquid is produced by a piston 1 which is rigidly connected with an induction coil 2 which is placed in the radial field of a permanent magnet 3. The vessel 4 has two plane-parallel windows 7. To observe motion of the piston and to measure its displacement, an aperture was made through the centre of the magnet. Through this aperture, without touching the magnet, an aluminium rod passes, the rod is rigidly fixed to

Card 1/3

46-4-2-5/20

Construction and Absolute Calibration of a Magneto-Electric Acoustic Generator

the piston. A small mirror 5 is attached to the top of the aluminium rod. Particular attention was paid to effective sealing between the piston and the walls (see Fig 2). The natural frequency of the generator was 185 c/s but the receiver was used at 50 c/s. The construction used was found to produce a sinusoidal change of pressure in the vessel 4 when a sinusoidal current was passed through the coil. The piston **displacement** was found to be proportional to the current in the coil. This makes it possible, after suitable calibration, to find the pressure amplitude in the vessel from the value of the current in the coil. A short theory of the generator is given. Its calibration was carried out as follows. The piston displacement was measured very accurately by using the mirror 5 of Fig 1 as one of the mirrors of a Michelson interferometer (Fig 3). The piston displacement was varied by passing a known d.c. or a.c. current through the energizing coil 2. From the proportionality of the current and piston displacement the

Card 2/3

Construction and Absolute Calibration of a Magneto-Electric Acoustic Generator ^{46-4-2-5/20}

calibration curves were obtained (Fig 5). The authors thank G.S. Landsberg for valuable advice. There are 5 figures and 4 Soviet references.

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

SUBMITTED: March 20, 1957

Card 3/3

1. Generators—Calibration
2. Calibration—Test methods
3. Calibration—Test results

FABELINSKIY, I. I.

~~Molecular light scattering~~ in liquids. Trudy Fiz. inst. 9:181-312
'58. (MIRA 11:11)

(Light--Scattering)

5(4), 10(4)
AUTHORS:

Pesin, M. S., Fabelinskiy, I. L.

BOY/20-122-4-9/57

TITLE: The Dispersion of the Velocity of Sound and the Propagation of Ultrasound in Liquids (Dispersiya skorosti zvuka i rasprostraneniye giperzvuka v zhidkost'yakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 4, pp 575-577 (USSR)

ABSTRACT: It is interesting to determine the velocity of hypersound (frequency 10^{10} cycles) by investigation of the fine structure of the Raleigh (Reley) line and to compare it with the ultrasound velocity in the same liquids under the same conditions. In this manner, quantitative conclusions on the dispersion of the sound velocity can be drawn. The exactness of the determination of the ultrasound velocity by measuring the distance between the components of the fine structure of the line of the scattered light in liquids is hitherto not higher than 2 - 5 %, which is by far lower than the accuracy attained by the modern methods for the determination of sound velocity. These experiments, therefore, permit only the measurement of rather high values of the dispersion of the

Card 1/3

SOV/20-122-4-9/57

The Dispersion of the Velocity of Sound and the Propagation of Ultrasound
in Liquids

velocity of sound. The authors discuss the considerations which may facilitate selecting the substances in which a noticeable dispersion of the sound velocity can be detected. A formula for the dispersion of the sound velocity is given. This paper deals with the investigation of methylene bromide, methylene chloride, and chloroform. The absorption of ultrasound in chloroform and methylene bromide was carried out for the frequencies of ~ 30 megacycles. A noticeable dispersion of the sound velocity may be expected also in benzene and carbon tetrachloride. The apparatus used for the measurements was discussed in a previous paper (Ref 14). A Fabry (Fabri)-Perot (Pero) spectrometer (in connection with a spectrograph ISP -51) was used. The formula for the calculation of ultrasound is given and calculated. The results of the measurement of the ultrasonic velocity are given in 2 tables. The Mandel'shtam-Brillouin (Brillouin) components in chloroform are not so sharp as in the 2 other investigated liquids. The experimental values of $\Delta v/v$ (v denotes the velocity of the ultrasound) permit the determination of all the parameters of ultrasonic propagation. The results of this determination are given in a table. There are 3 tables and 14 references, 7 of which are Soviet.

Card 2/3

SOV/2c-122-4-9/57
The Dispersion of the Velocity of Sound and the Propagation of Ultrasound
in Liquids

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute ineni P. N. Lebedev, Academy of Sciences,
USSR) Voronezhskiy sel'skokhozyaystvennyy institut
(Voronezh Agricultural Institute)

PRESENTED: May 24, 1958, by M. A. Leontovich, Academician

SUBMITTED: May 24, 1958

Card 3/3

FABELINSKIY, I. L.

21(0), 24(0) p. 2

PHASE I BOOK EXPLOITATION

SOV/3250

Akademiya nauk SSSR. Fizicheskiy institut

Issledovaniya po eksperimental'noy i teoreticheskoy fizike; [sbornik]
(Studies on Experimental and Theoretical Physics; Collection of
Articles) Moscow, Izd-vo AN SSSR, 1959. 304 p. Errata slip
inserted. 2,300 copies printed.

Ed.: I. L. Fabelinskiy, Doctor of Physical and Mathematical Sci-
ences; Eds. of Publishing House: A. L. Chernyak and V. G. Berkgaut;
Tech. Ed.: Yu. V. Rylyna; Commission for Publishing the Collection
in Memory of Grigoriya Samuilovich Landsberg: I. Ye. Tamm
(Chairman), Academician; M. A. Leontovich, Academician;
P. A. Bazhulin, Doctor of Physical and Mathematical Sciences;
S. L. Mandel'shtam, Doctor of Physical and Mathematical Sciences;
I. L. Fabelinskiy, Doctor of Physical and Mathematical Sciences;
F. S. Landsberg-Baryshanskaya, Candidate of Physical and Math-
ematical Sciences; and G. P. Motulevich (Secretary), Candidate of
Physical and Mathematical Sciences.

PURPOSE: This book is intended for physicists and researchers
engaged in the study of electromagnetic radiations and their role
in investigating the structure and composition of materials.
Card 1/6

Studies on Experimental (Cont.)

SOV/3250

COVERAGE: The collection contains 30 articles which review investigations in spectroscopy, sonics, molecular optics, semiconductor physics, nuclear physics, and other branches of physics. The introductory chapter gives a biographical profile of G. S. Landsberg, Professor and Head of the Department of Optics of the Division of Physical Technology at Moscow University, and reviews his work in Rayleigh scattering, combat gases, spectral analysis of metals, etc. No personalities are mentioned. References accompany each article.

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24(7)

SOV/20-125-2-14/64

AUTHORS: Ablekov, V. K., Fabelinskiy, I. L.

TITLE: The Spectral Investigation of Light Scattered by Viscous Liquids and Solid Amorphous Bodies (Spektral'noye issledovaniye sveta, rasseyannogo vyazkimi zhidkostyami i tverdymi amorfnyimi telami)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 2, pp 297-299 (USSR)

ABSTRACT: Measurements of the total intensity of light dispersed on very viscous liquids and solid amorphous bodies (glass) showed that the course of temperature and the absolute value of intensity are in sharp contradiction to the calculations and predictions of the known scattering theories in liquids and solids. The experimental data differ by from 5 to 10 times their amount from theoretically calculated values. In order to understand the causes of the "too high" intensity of scattering in an amorphous body and for the purpose of verifying the future theory of the phenomenon, it is necessary to carry out a detailed experimental investigation of the spectral composition of the scattered light, of the dis-

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SOV/20-125-2-14/64

The Spectral Investigation of Light Scattered by Viscous Liquids and Solid Amorphous Bodies

tribution of depolarization over the spectrum, and of the kinetics of these quantities in the transition from the liquid to the solid amorphous phase. The present paper describes such an experimental investigation for which previously (Ref 1) the total intensity and the depolarization of the scattered light had been measured. The spectral line of scattering is known to be sufficiently narrow in a vitriform body. In the present investigation, this line and the narrow spectrum range adjacent to it are therefore investigated by means of a device with interference spectroscopy. A low-pressure mercury lamp was used as excitation source, and the scattered light was excited with the line 4358 Å of the mercury spectrum. In some of the substances investigated (e.g. in triacetin) the Mandel'shtam-Brillouin-components showed total polarization, and therefore they occur only in the I_z -component on the recordings of the scattered light. With increasing viscosity, the Mandel'shtam-Brillouin-components become more distinctly marked. They increase in width, and the maximum of their intensity moves towards the central line. A diagram

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The Spectral Investigation of Light Scattered by Viscous Liquids and Solid Amorphous Bodies

shows the distribution of the true intensity of the I_x -component of the scattered light in triacetin for three temperatures. The second diagram shows the half-width of the line in the I_x -component as a function of temperature. The third diagram contains data concerning the temperature dependence of the depolarization coefficient of the scattered light in the maximum of the scattered line and in a distance of 1.25 cm^{-1} from this maximum. These and other experimental data discussed here lead to the conclusion that the theory of light scattering in a liquid is by far better suited for the purpose of describing scattering in glass than the theory of scattering in a solid. Quantitative agreement may be considerably improved by using the correlation theory developed by S. M. Rytov. There are 3 figures and 12 references, 9 of which are Soviet.

Card 3/4

SOV/20-125-2-14/64

The Spectral Investigation of Light Scattered by Viscous Liquids and Solid Amorphous Bodies

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

PRESENTED: December 3, 1958, by M. A. Leontovich, Academician

SUBMITTED: December 3, 1958

Card 4/4

~~24(1)~~ 24.1200

AUTHORS: Pesin, M. S., Fabelinskiy, I. L.

66732

SOV/20-129-2-17/66

TITLE: The Fine Structure of the Rayleigh Line and the Propagation of Supersonics in Highly Viscous Liquids

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 2, pp 299-302 (USSR)

ABSTRACT: At the beginning a report is given on previous work dealing with this subject. The fine structure of the Rayleigh line may be observed only in the case of $\alpha \Lambda \ll 1$, where α denotes the absorption coefficient and Λ the wave length of supersonics. In the present paper the authors try to determine the fine structure of the Rayleigh line at high static viscosities and to draw a conclusion on the change in velocity in the transition from low to high viscosities from the position of the components of this fine structure. Dried glycerin distilled for several times in vacuum served as experimental object. The method of investigating the fine structure was described already in a previous paper by the authors (Refs 4, 18). The spectral line 4358 Å of a low-pressure mercury lamp with liquid electrodes served as exciting light. The fine structure was investigated at the temperatures

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The Fine Structure of the Rayleigh Line and the Propagation of Supersonics in Highly Viscous Liquids

66732

SOV/20-129-2-17/66

+150; +50; +22; -27; -45°. Between +150° and -45° the viscosity of glycerin changed from $5 \cdot 10^{-2}$ to $2 \cdot 10^5$ poise. At all 5 temperatures a marked fine structure of the Rayleigh line was observed. At 150° and 50° intensive and wide fine-structure lines were observed, at the other temperatures the lines were sharper, although much less intense. The measuring error of the supersonic velocity varies at different temperatures by 5 to 8%. A table and 2 diagrams illustrate the results of the measurement of the supersonic velocity in glycerin. At 150° and 50° the supersonic velocity is somewhat lower than the corresponding values of the ultrasonic velocity. According to the authors this difference is due to the errors in measuring the supersonic velocity. Two diagrams illustrate the supersonic velocities determined by the authors from the fine structure of the scattering lines. The velocity changes the most in the case of a temperature change from 50 to 22° and in the case of a change in viscosity from 1 to 9 poise respectively. The supersonic velocity attains values of

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SOV/20-129-2-17/66

The Fine Structure of the Rayleigh Line and the Propagation of Superwaves in Highly Viscous Liquids

3520 m/sec glycerin therefore behaves like a solid at temperatures of less than 220 at hypersonic frequencies. All the phenomena observed are in qualitative agreement with the concepts of the relaxation theory. There are 2 figures, 1 table, and 21 references, 9 of which are Soviet.

ASSOCIATION: Piskunskiy Institute of P. N. Lebedev Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR) Voroneshkiy sel'skokhozyaystvennyy institut (Voronesh Agricultural Institute)

PRESENTED: July 6, 1959, by M. A. Leontovich, Academician

SUBMITTED: June 1, 1959

20150-100-8-11/ee
00135

S/056/60/039/003/043/045
B004/B060

AUTHORS:

Ablekov, V. K., Pesin, M. S., Fabelinskiy, I. L.

TITLE:

Realization of a Medium With Negative Absorption Coefficient

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki. 1960, Vol. 39, No. 3 (9), pp. 892-893



TEXT: The authors report on the medium with negative absorption coefficient in the visible spectral range obtained by them by means of a gas discharge in a mercury- and zinc vapor mixture. The liquid electrodes of the tube had a temperature of 6 or 15°C, and the discharge current was varied between 8 and 15 a. The transparency of the mercury-zinc discharge was larger than unity for the 6362 Å zinc line ($4^1P_1 - 4^1D_2$), and changed between 1.5 and 10 under different experimental conditions. The transparency for the 4722 Å zinc line remained smaller than unity (about 0.9). The absolute value of the

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Realization of a Medium With Negative Absorption Coefficient

S/056/60/039/003/043/045
B004/B060

absorption coefficient k fluctuated between 0.2 and 1.15. The authors made use of equation $N_1 = 8\pi/k|\Delta\nu/\lambda^2 A_{ik}$ to estimate the concentration N_1 of the excited atoms situated on level 4^1D_2 ($\Delta\nu$ = half-width of the line, $\lambda = 6362 \text{ \AA}$, A = probability of spontaneous transition). The value $9 \cdot 10^9$ was obtained for N_1 in the case of $\Delta\nu = 10^{-2} \text{ cm}^{-1}$, $k = 0.2$, and the value $5 \cdot 10^{10}$ at $k = 1.15$, which fits experimental data as to the order of magnitude. The authors explain this effect by the 7^3S_1 excited level of mercury which is only 133 cm^{-1} below the 4^1D_2 excited level of zinc. Since this difference is in the range of thermal atomic motions at room temperature, the action of resonance impacts of the second type between excited Hg atoms and nonexcited Zn atoms is particularly intensive here. Reference is made of the possibility of a similar medium with Hg, Zn, and Cd atoms. The authors mention papers by N. G. Basov and A. M. Prokhorov (Ref. 3), and R. A. Butayeva and V. A. Fabrikant (Ref. 5). They thank the latter for his advice and discussions. There are 8 references: 5 Soviet, 4 US, 1 British, and 1 German.



Card 2/3

Realization of a Medium With Negative
Absorption Coefficient

S/056/60/039/003/043/045
B004/B060

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

SUBMITTED: June 30, 1960

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Card 3/3

86832

6.8000(3201, 1099, 1162)

S/020/60/135/005/021/043
B019/B067

AUTHORS: Pesin, M. S. and Fabelinskiy, I. L.

TITLE: Spectroscopic Study of the Propagation of Hypersonic Vibrations in Viscous Fluids

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5, pp. 1114-1116

TEXT. The authors present results of a spectroscopic study of the propagation velocity of hypersonics in triacetin on transition from fluid to gas, and some new data on glycerin at -70°C and at temperatures corresponding to the range of greatest changes of the propagation velocity. A Fabry-Pérot standard and the 4358 Å Hg line were used in the interference device described earlier (Ref. 4). Besides the values marked by asterisks which are given in Table 2, the authors give data obtained by other authors, e.g., T. S. Velichkina (Ref. 4). A comparison of theoretical and experimental data shows that in the case of hypersonics the agreement between the relations obtained by the relaxation theory and the experimental results is better than in the case of ultrasonics. There are 2

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Spectroscopic Study of the Propagation of
Hypersonic Vibrations in Viscous Fluids

86832

S/020/60/135/005/021/043
B019/B067

figures, 2 tables, and 6 references: 3 Soviet, 1 Indian, 1 German, and
1 US.

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

PRESENTED: July 1, 1960, by M. A. Leontovich, Academician

SUBMITTED: June 23, 1960

Legend to Table 1: 1) triacetin temperature, 2) viscosity in poiss^{es},
3) hypersonic velocity, 4) ultrasonic velocity.

Legend to Fig. 1: temperature dependence of the velocities of hypersonics
(Curve 1) and ultrasonics (Curve 2).

Legend to Fig. 2: dependence of $(v^2 - v_0^2) / (v_{\infty}^2 - v_0^2)$ on the logarithm of the
relaxation time for triacetin in the hypersonic (I) and ultrasonic (II)
range. Curves 1 and 2 correspond to a formula for different relaxation
times obtained by the relaxation theory.

Card 2/A

FABELINSKIY, I. L.

STRUCTURE AND PHYSICAL PROPERTIES OF MATTER IN A LIQUID STATE
reports read at the 14th Conference convened in KIYEV from 1 to 5 June
1959, published by the publisher House of KIYEV University, KIYEV,
USSR, 1962

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S/053/62/077/004/004/006
B102/B104

AUTHOR: Fabelinskiy, I. L.

TITLE: Some results of an experimental investigation of the fine structure of lines of the Rayleigh light scattering in liquids of varying viscosity

PERIODICAL: Uspekhi fizicheskikh nauk, v. 77, no. 4, 1962, 649 - 662

TEXT: A lecture in memory of G. S. Landsberg, given on February 12, 1962 at a meeting of the Uchenyy sovet FIAN SSSR (Scientific Council FIAN SSSR), is recapitulated. The first of the joint investigations by Landsberg and L. I. Mandel'shtam related to the fine structure of lines of scattered light. A historical outline is given of the most important works and results in this field, beginning with Smolukhovskiy (1908). There are 7 figures, 3 tables, and 43 references.

Card 1/1

FABELINSKIY, I.L.

New method for determining the relaxation time of the anisotropy
and modulation of light in Kerr's cell. Zhur. eksp. i teor. fiz.
45 no.3:822-824 S '63. (MIRA 16:10)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.
(Modulation theory) (Polarization (Light))

ACCESSION NR: AP4018400

S/0120/64/000/001/0221/0222

AUTHOR: Zaytsev, V. P.; Starunov, V. S.; Fabelinskiy, I. L.

TITLE: High-intensity cadmium gas-discharge lamp

SOURCE: Pribory* i tekhnika eksperimenta, no. 1, 1964, 221-222

TOPIC TAGS: high intensity lamp, cadmium vapor lamp, mercury vapor lamp, cadmium spectral line, mercury spectral line

ABSTRACT: As "isotopic light sources have been very expensive and lasers with a very narrow radiation line may become available only in the future," a low-pressure cadmium-vapor lamp has been designed whose luminous intensity is as high as that of a mercury-vapor lamp. The air between the double-walled central part 4 (see Enclosure 1) is exhausted down to 10^{-5} torr. About 6 torr of Ne and about 5% of Bi is added to the lamp atmosphere. With a discharge current of 5 amp in both the cadmium and mercury lamps, the 6435\AA

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ACCESSION NR: AP4018400

Cd line is twice as intense as the 4358Å Hg line; with a 10-amp current, both lines equalize in intensity. Orig. art. has: 2 figures.

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

SUBMITTED: 06Apr63

DATE ACQ: 18Mar64

ENCL: 01

SUB CODE: PH

NO REF SOV: 002

OTHER: 002

Card 2/3

ACCESSION NR: AP4043664

S/0056/64/047/002/0783/0784

AUTHORS: Mash, D. I.; Starunov, V. S.; Fabelinskiy, I. L.

TITLE: Investigation of the attenuation of hypersound in liquids by an optical method

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 2, 1964, 783-784

TOPIC TAGS: hypersonic radiation, absorption coefficient, line width, fine structure, light scattering, benzene, carbon tetrachloride

ABSTRACT: Direct measurement of the width of the shifted fine-structure components has been recently made possible by the availability of a very narrow exciting line, which has made possible the measurement of the half-width of the Mandel'shtam-Brilluoin components and consequently also the coefficient of absorption of hypersound. The results of the first measurements of this type are re-

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ACCESSION NR: AP4043664

ported briefly. The investigated liquid was illuminated with a light beam having a narrow spectral width at $\lambda = 6328 \text{ \AA}$. The light scattered by the liquid in a direction perpendicular to the direction of the exciting light was passed through a Fabry-Perot interferometer to a camera which photographed the fine structure. The intensity distribution in the fine structure component and the half-widths were determined by photographic photometry. The half-width was found to be 0.01 cm^{-1} for benzene and 0.02 cm^{-1} for carbon tetrachloride. This yields a hypersound absorption coefficient of $7 \times 10^3 \text{ cm}^{-1}$ and $2 \times 10^4 \text{ cm}^{-1}$ for benzene and carbon tetrachloride, at frequencies 4.8 and 3.2 Gc, respectively. The use of very narrow spectral lines makes it possible to study quantitatively the attenuation of hypersound, the temperature conductivity, and also the diffusion and dimensions of molecules in solutions. "The authors thank V. P. Zaytsev who made possible the use of mirrors with multi-layer dielectric coatings, and Ye. V. Tiganov for participating in the measurements."

Card 2/3

ACCESSION NR: AP4043664

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

SUBMITTED: 23May64

ENCL: 00

SUB CODE: GP

NR REF SOV: 003

OTHER: 003

Card 3/3

08514-67 EWP(e)/EWT(m) WH
ACC NR: AM6007925

Monograph

UR/

Fabelinskiy, Immanuel Lazarevich

30
28
B+1

Molecular scattering of light (Molekulyarnoye rasseyaniye sveta)
Moscow, Izd-vo "Nauka," 1965. 511 p. illus., biblio., index.
4700 copies printed

TOPIC TAGS: Rayleigh scattering, light scattering

PRUPOSE AND COVERAGE: This book is intended for scientific workers, physics teachers, physical chemists, aspirants, and students of advanced courses specializing in optics, acoustics, molecular physics, and physical chemistry. This book is the first on the molecular (Rayleigh) scattering of light to be published in the Soviet Union. Theoretical and experimental studies on the Rayleigh scattering of light in gases, liquids, and solids are summarized, with special emphasis given to Soviet research, particularly that conducted in the laboratories of G. S. Landsberg until his death in 1957 and research performed by the author at the Lebedev Institute.

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L 08514-67

ACC NR: AM6007925

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SUB CODE: 20/ SUBM DATE: 15Oct65/ ORIG REF: 213/ OTH REF: 420

Card 2/2 afs

L 64117-65 EWP(e)/EWT(m)/EPF(c)/EWP(i)/EWP(j)/EWA(c) RPL WW/JW/RM/WH

ACCESSION NR: AP5021149

UR/0386/65/002/001/0041/0045

AUTHOR: Mash, D. I.⁴⁴; Morozov, V. V.⁴⁴; Starunov, V. S.⁴⁴; Fabelinskiy, I. L.

44
39
B

TITLE: Stimulated scattering of the Rayleigh line wing

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 1, 1965, 41-45, and insert B at rear of journal

TOPIC TAGS: nonlinear optics, stimulated scattering, Rayleigh line wing, line wing scattering, ruby laser, laser induced scattering, carbon disulfide, benzene, toluene, nitrobenzene, acetic acid, salol, triacetin

ABSTRACT: The discovery of a new effect, the stimulated scattering of the Rayleigh line wing, is reported. The new phenomenon was investigated in carbon disulfide, benzene, nitrobenzene, toluene, acetic acid, salol, and triacetin, which were excited by a pulsed (~100 Mw), Q-modulated ruby laser (see Fig. 1 of the Enclosure). The Q-switch consisted of two containers C₁ and C₂, each 1 cm thick

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ACCESSION NR: AP5021149

2

and filled with a 1.8×10^{-6} M solution of cryptocyanine in methyl alcohol. The effect was observed in carbon disulfide and nitrobenzene at room temperature and in salol at 170C. Under identical conditions, the same effect was not observed in the remaining liquids, although stimulated Brilluin scattering was observed in all of the liquids, with the exception of tracetin. In nitrobenzene, salol, and carbon disulfide the stimulated Rayleigh line wing exhibited a distinct threshold. The existence of this threshold, a scattering intensity comparable to the excitation intensity, the presence of the intensity maximum in a wing, and the absence of the anti-Stokes wing, all point to the occurrence of the new effect. Orig. art. has: [YK]
2 formulas and 3 figures.

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

SUBMITTED: 22May65

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44
SUB CODE: EC, NP

NO REF SOV: 003

OTHER: 002

ATD PRESS: 4070

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L 64117-65

ACCESSION NR: AP5021149

ENCLOSURE: 01

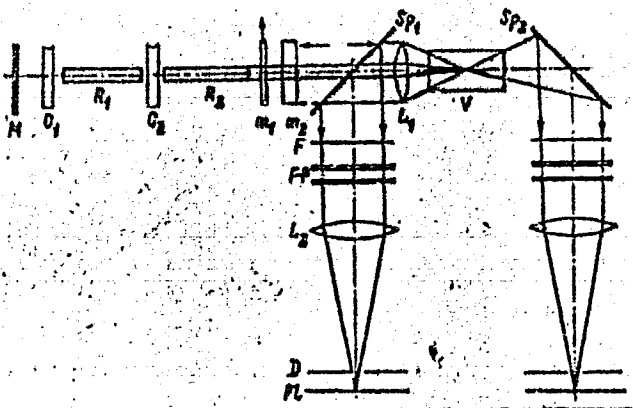


Fig. 1. Experimental apparatus

M - mirror ($R = 100\%$); R_1 , R_2 - ruby rods each 12 cm long and 1.2 cm in diameter; m_1 , m_2 - plane-parallel plates; SP_1 , SP_2 - glass plate separators; L_1 - lens ($f = 3$ cm); L_2 - lens ($f = 120$ cm).

Card *dm*
3/3

L 6342-66 EWT(1)/EWT(m)/EWP(1)/EWP(b)/T/EWP(0) IJP(0) WH

ACC NR: AP5026105 SOURCE CODE: UR/0386/65/002/005/0246/0250

AUTHOR: Mash, D. I.; Morozov, V. V.; Starunov, V. S.; Tiganov, Ye. V.; Fabelinskiy, I. L.

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

TITLE: Stimulated Brillouin scattering in solid amorphous bodies and liquids

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 5, 1965, 246-250

TOPIC TAGS: Brillouin scattering, stimulated scattering, stimulated Brillouin scattering, laser, laser effect, nonlinear effect, nonlinear optics

ABSTRACT: Stimulated Brillouin scattering was observed in three kinds of optical glasses, fused quartz, and seven different liquids excited by a giant pulse from a 100 Mw ruby laser using a setup described previously (Mash, D. I., et al. Pisma ZhETF, 2, 41, 1965). Table 1 lists some of the experimental data on the Brillouin shifts Δv , the hypersonic acoustic velocity v calculated from the present experimental data on Δv , v determined from ordinary (spontaneous) Brillouin shifts, and v obtained from direct hypersonic measurements. The systematic differences between the hypersonic acoustic velocities calculated from the spontaneous Brillouin shifts and those obtained from stimulated Brillouin scattering were within the limits of

Card 1/3