APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

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CH

Specific volumes, indexes of refraction, and vapor tensions of the ternary system KCl-$MgCl_2$-H_2O. A. I. Mun and V. E. Tertakovskaya. *Izvest. Akad. Nauk Kazakh. S.S.R., Ser. Khim.* 1953, No. 5, 35-43 (in Russian). The sp. vol. and the ns were meas. [illegible] which are formed in the [illegible] tensions were [illegible] [illegible] and $MgCl_2$ in the presence of H_2O [illegible] between KCl not additive. This is in full contrast to the behavior of the anhydrous binary system KCl-$MgCl_2$ [illegible] tensions are additive.

(1)

N 47

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, A.I.

Treatment of various forms of deafness with aloe extract according to V. P. Filatov. Vest. otorinolar. no.5:47-51 Sept-Oct 1950. (CIML 20:1)

1. Of the Clinic for Diseases of the Ear, Throat, and Nose (Director -- Prof. A. I. Geshelin), Odessa Medical Institute.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, A. YA

33526

Sostoyaniye Verkhnikh Dykhatel'nykh Putey U Bol'nykh Brutsellezom Vestnik Otorinolaringologii, 1949, No 5, c. 51-57. -Bibliogr: c. 56-57

SO: Letopis' Zhurnal'nykh Statey, Vol, 45, Maskva, 1949

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, A. Ya.

[redacted]

On the cochleovestibular disorders in early syphilis and effects of modern methods of specific therapy. Vest. otorinolar., Moskva 13 no.4:22-25 July-Aug 1951. (CLML 21:1)

1. Candidate Medical Sciences. 2. Of the Clinic for Diseases of the Ear, Throat, and Nose (Director -- Prof. A. I. Geshelin), Odessa Medical Institute.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, A. Ye.

Upper respiratory tract in hypertension. Vest. otorinolar., Moskva 15-no.4:35-40 July-Aug 1953. (CIML 25:1)

1. Candidate Medical Sciences. 2. Of the Clinic for Diseases of the Ear, Throat, and Nose of Odessa Medical Institute (Acting Head of Clinic -- Docent M. I. Garshin).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, A.Ya., kandidat meditsinskikh nauk; GARSHIN, M.I., dotsent, ispolnyayushchiy obyazannost' zaveduyushchego klinikoy.

Upper respiratory tract in hypertension. Vest. oto-rin. 15 no.4:35-40 Jl-Ag '53.
(MLRA 6:9)

1. Klinika bolezney ukha, gorla i nosa Odesskogo meditsinskogo instituta.
(Hypertension) (Otorhinolaryngology)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKII, B.D.

A-1

Photo-electric conduction in rock-salt crystals under ultra-violet illumination. P. Tartakovski and V. Ponomarev (Physikal. Z. Sovietunion, 1936, 9, 407—412; cf. A., 1936, 137).—The depolarisation current has been investigated of an NaCl crystal containing U-centres and polarised by illumination by an Al spark. After the depolarisation current in ultra-violet light has fallen to a small val. a large current is again observed on illumination with visible light. The depolarisation current with visible light shows max. at 4550 and 4750 A. It is deduced that the electrons forming the space charge are bound in two levels, the higher of which coincides with the U level. O. D. S.

A-1

Photo-electric elasticity limit of photochemically coloured rock-salt crystals. M. N. Pod...

Acoustics & Audio Frequencies

WE

1011 A SCATTERED SYSTEM OF RADIATORS IN SOUND REPRODUCTION FOR MOTION PICTURES (Results of Comparison of System (1077 of 1941) with Ordinary Concentrated Reproduction). — L. D. Rosenberg & B. D. Tartakovsky. (*Comptes Rendus* (*Doklady*) *de l'Ac. des Sci. de l'URSS*, 20th Nov. 1943, Vol. 41, No. 5, pp. 206–207: in English.)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B. D., ROZENBERG, L. D. and KAVIACHEVA, A. A.

"An Experimental Investigation of Diffraction in the Focus of a Zone Plate", Dokl. AN Sci. URSS 54, p 395, 1947.

1ST AND 2ND CODERS

PROCESSES AND PROPERTIES INDEX

SA

A53

5466. Distributed sound source systems. 534.84
B. D. TARTAKOVSKII AND R. E. GAJKO. *Izv. Akad. Nauk, SSSR, Ser. Fiz.*, 13 (No. 6) 654-61 (1949) *In Russian*.

Discussion of advantages of the distributed over the centralized loudspeaker systems. W. W. OLSEN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B. D.

USSR/Physics - Acoustics Mar 49

"Architectural Acoustics in the USSR," N. N. Andreyvev, V. S. Grigor'yev, I. G. Leyzer, L. D. Rozenberg, B. D. Tartakovskiy

"Uspekhi Fiz Nauk" Vol XXXVII, No 3, pp 269-315

Lengthy, general, historical, and nonmathematical discussion of acoustics of chambers; sound absorption; sound intensification; sound insulation; sound measurements. Gives extensive bibliography of 421 references covering all Russian works on architectural acoustics from 1861 to 1948

P A 170T98

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

USSR/Physics - Sound
Acoustics

Aug 49

FA 67/49T108

"Representative Conference of the Acoustics Commission, Academy of Sciences USSR," B. D. Tartakovskiy, 17 pp

"Uspekh Fiz Nauk" Vol XXXVIII, No 4

Conference, attended by 138 persons representing 55 scientific institutes and various organizations, was held in Moscow 26 Feb - 1 Mar 49. In his report on the development of Soviet ultrasonic detectoscopy, S. Ya. Sokolov stated that the taking of sonic pictures in the same fashion as done in the usual sonic microscope is a fundamentally new detectoscopy method.

67/49T108

USSR/Physics - Sound (Contd)

Aug 49

In connection with this, the sound conductivity of metals and crystals at frequencies of $10^8 - 10^9$ cycles is being studied. A. A. Khrushchyov demonstrated a two-channel sound-reproducing unit with high fidelity indexes. The newly devised system employs separate reproduction of high and low frequencies. Authors of the work were awarded the Stalin Prize for creating a new system of sonic reproduction.

67/49T108

PA 156T86

TARTAKOVSKIY, B. D.

USSR/Physics - Sound Focusing Lenses, Ultrasonic 1 Nov 49

"Spherical Aberration of Sonic Lenses," B. D. Tartakovskiy, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXIX, No 1 - pp. 29-32.

Discusses dependence of spherical aberration of homogeneous lenses upon their forms and indexes of refraction, in connection with ultrasonic technology of focusing sound by sonic lenses. Graphs show curves of spherical aberration d^S versus lens height H for various refraction indexes n. Submitted by Acad S.I. Vavilov 6 Sep 49.

[redacted] 156T86

PA 165T91

TARTAKOVSKIY, B. D.

USSR/Physics - Wave Propagation 21 Mar 50

"Theory of Propagation of Plane Waves Through Homogeneous layer," B. D. Tartakovskiy, Phys Inst imeni Lebedev

"Dok Ak Nauk SSSR" Vol LXXI, No 3, pp 465-468

Calculates coefficients of reflection and refraction for passage of plane waves through n homogeneous plane layers with arbitrarily given wave resistances and thicknesses of bounded semi-infinite media, leading to solution of system of 2(n + 1) algebraic equations formed in substitution into boundary conditions of potentials of direct and inverse waves in boundary media and layers. Submitted 21 Jan 50 by Acad S.I. Vavilov.

165T91

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3

178T94

[redacted]

USSR/Physics - Sound, Ultrasonics
Acoustics 1 Nov 50

"Sonic Transitional Layers," B.D. Tartakovskiy, Phys Inst imeni Lebedev, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXV, No 1, pp 29-32

Presents actual problem of total transparency of boundaries between different media, in development of ultrasonic technol and acoustics. Considers complex coeff of reflection R with arbitrary characteristicsimpedances Z_i. Plots D vs f/f_0 and sine of phase angle occurring in complex R and Z. Submitted 9 Sep 50 by Acad S. I. Vavilov.

[redacted]

178T94

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TART..OVS..IY, B.D.

"Extensive Conference of the Committee on Acoustics, Academy of Sciences USSR" Uspekh Fiz Nauk No 4, Aug 1951 pp 636-644

TARTAKOVSKIY, B. D.

PA 193 T97

USSR/Physics - Sound, Refraction of Oct 51

"Transition of Sound Wave Through Boundaries of Solid and Liquid Media," B. D. Tartakovskiy, Phys Inst imeni Lebedev, Acad Sci USSR

"Zhur Tekh Fiz" Vol XXI, No 10, pp 1194-1201

Problem gained importance in study of elasticity modulus of materials by ultrasonic waves and in defectoscopy of metals. In his previous work (cf. "Dok Ak Nauk SSSR" Vol LXIX, 1949) author showed advantage of solid lenses over liquid ones. Previous computations of refraction coeff do not

193T97

USSR/Physics - Sound, Refraction of (Contd) Oct 51

clarify their connections with parameters of media and are difficult to use. Author attempts to improve this deficiency. Submitted 24 Jan 51.

193T97

TARTAKOVSKIY, B. D.

USSR/Physics - Sound, Sonic Lenses   21 Jun 51

"Experimental Investigation of Diffraction in the Focus of Sonic Lenses," B. D. Tartakovskiy

"Dok Ak Nauk SSSR" Vol LXXVIII, No 6, pp 1119-1122

Results obtained show possibility of employing sonic lenses as attachment to radiators for creation of planar sonic flds on great surface of wave front, and also for obtaining converging and diverging sonic flds. Expts also show excellent focusing properties of sonic lenses that are made of solid materials. Author was assisted

184T109

USSR/Physics - Sound, Sonic Lenses (Contd)   21 Jun 51

by Prof L. D. Rozenberg during the work and by M. G. Sirotyuk in the measurements. Submitted 8 May 51 by Acad G. S. Landsberg.

184T109

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B. D.

USSR/Engineering - Soundproof Material 21 Jan 52
Physics - Acoustics

"Measurement of Sound-Absorbing Materials in Reverberation Chamber," B. D. Tartakovskiy, M. M. Efrussi, Phys Inst imeni Lebedev, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXXII, No 3, pp 373-376

The importance of the reverberation method of measuring coeffs of sound-absorption has been noted frequently (N. N. Andreyev, "Trudy Akusticheskoy Kommissii, Sbornik" 3, 9, 1939); and the method has been long in practical application (N. K. Mikhiyeva, "Trudy Nauchno-Issledovatel'skiy

211T55

Institut Fizicheskikh i Khimicheskikh Issledovaniy" (Works of Sci Res Inst of Phys and Chem Res) 6, 173, 1937). It has been but little studied, however, and has been limited mainly to clarifying the role of boundary effects (G. A. Gol'dberg, "Trudy Akusticheskoy Kommissii, Sbornik" 3, 33, 1939). Gives the results of special investigations of the reverberation method at the acoustic laboratory of the Phys Inst. Submitted by Acad M. A. Leontovich 28 Feb 51. Thanks N. N. Andreyev.

211T55

TARTAKOVSKIY, B.D., kandidat tekhnicheskikh nauk.

[redacted]

Conference on the physics and measurement of acoustics. Vest.AN SSSR 23 no.10:115-123 O '53. (MLRA 6:11)
(Sound--Congresses)

Apr 53

TARTAKOVSKIY, B. D.

USSR/Physics - Ultrasonics, Conference

"Conference on Ultrasonic Defectoscopy and on General Problems of Ultrasonics," B. D. Tartakovskiy

Usp Fiz Nauk, Vol 49, No 4, pp 601-611

Conference, held in Moscow, was called by the Commission on Acoustics, Acad Sci USSR. 15 reports were presented, 9 devoted to ultrasonic defectoscopy and 6 to other problems. Various ultrasonic apparatus devised and produced in domestic labs were demonstrated.

267T91

TARTAKOVSKIY, B.D.

Conference on physical and mensurative acoustics. Usp.fiz.nauk 50 no. 1:123-133 My '53. (MLRA 6:7)

(Sound waves) (Sound--Measurements)

Acoustics conference, held in Moscow, was organized by Acoustics Committee of Phys-Math Dept, AS USSR, together with Committee of Measurements and Measuring Equipment of Council of Ministers USSR. Ten reports were presented on metrical acoustics and 4 on physical acoustics. It was decided to discuss these topics 2-3 times a year.

261T103

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B. D.

"Installation of Distributed Systems of Speakers in Open Spaces".

Acoustic Institute, Academy of Sciences USSR

A report delivered at a conference on Electro-acoustics held by the Acoustic Institute of the Academy of Sciences, USSR, anf the Kiev Order of Lenin Polytechnic Inst., from 1-5 July 1955 in Kiev.

SO: Sum 728, 28 Nov 1955

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

BREKHOVSKIKH, L.M., doktor fiziko-matematicheskikh nauk; BYALOVA, V.V.; IVANOV, I.D., kandidat fiziko-matematicheskikh nauk; ISAKOVICH, M.A., doktor fiziko-matematicheskikh nauk, redaktor; RABINOVICH, N.Ya., redaktor; ROZENBERG, L.D., doktor tekhnicheskikh nauk, redaktor; TARTAKOVSKIY, B.D., kandidat tekhnicheskikh nauk. GUROV, K.P., redaktor; GRAKOVA, Ye.D., tekhnicheskiy redaktor.

[Scientific literature on acoustics during the years 1945-1949] Nauchnaia literatura po akustike za 1945-1949 gg. Moskva, 1955. 276 p. (MLRA 8:12)

1. Akademiya nauk SSSR. Komissiya po akustike. 2. Chlen-korrespondent AN SSSR (for Brekhovskikh)
(Bibliography--Sound)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

USSR/Sciertific Organization - Conferences

Card 1/1 Pub. 124 - 23/30

Authors : Tartakovskiy, B. D., Cand. of Tech. Sc.

Title : Problems of physical acoustics and ultrasonics

Periodical : Vest. AN SSSR 25/7, 117-120, Jul 1955

Abstract : Minutes are presented of the meeting organized by the Commission on Acoustics at the Phys-Math. Sc. Section of the Acad. of Sc., USSR at which matters pertaining to physical acoustics and ultrasonics were discussed. Names of Soviet scientists present at the meeting are listed.

Institution : ....

Submitted : ....

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B.D.

Scientific Conference on Physical Acoustics and Ultrasonics. Usp. fiz.nauk 56 no.3:445-456 Jl'55. (MLRA 8:10)
(Sound--Congresses) (Ultrasonics--Congresses)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B. D.

"Filters and Matching Layers for Ultrasound," paper presented at the Second International Congress on Acoustics, Cambridge, Mass., 17-23 Jun 56.

Institute of Biological Physics, Moscow, USSR.
Acoustics Inst, AS USSR

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B. D.

USSR/Acoustics - Ultrasonics, J-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35571

Author: Kaminir, G. I., Tartakovskiy, B. D.

Institution: Acoustic Institute of Academy of Sciences USSR, Moscow

Title: Experimental Investigation of Ultrasonic Transition Layers

Original Periodical: Akust. zh., 1956, 2, No 2, 154-160

Abstract: To check their theoretical deductions, the authors have investigated experimentally a method of creating a total sound-permeating boundary between 2 acoustically different media with the aid of transition layers. Specimens of cylindrical, spherical, and flat forms with and without coverings of transition layers were placed alternately in water, in the field of a plane ultrasonic wave. The ratio of the voltages, picked up with a receiving gage located back of the specimens in the focal point of an acoustic lens, were used to determine the coefficient of sound permeance of the "transilluminated" specimen. The use of an acoustic lens made it possible to

Card 1/3

USSR/Acoustics - Ultrasonics, J-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35571

Abstract: average "automatically" the results and to suppress the noise due to the reflection of the sound waves from the incompletely deadened walls of the vessel. The measurements were carried out in a frequency range of 500 - 2,000 kc with an average random error of 0.1 db. A description is given of the methods of preparation of transition layers of metal, plastic, and lacquer, depending on the shape of the "transilluminated" specimen and on the computed illumination frequency. The results of experimental investigations in 2 series of measurements are given: with trihedral prisms or plane-spherical lenses and with solid plane-parallel plates. The experimental points fell on the theoretical frequency characteristic of the sound permeance coefficient, within the limits of experimental error. The sound-permeance of the aluminum-water boundary rose upon "transillumination" to 98-99%, and for the other plate it rose to 90-92%. The frequency band of the sound permeance of the specimens was extended substantially by more than 10 times by using double transition layers. It is noted that the "transillumination" makes it possible to employ metallic lenses and prisms, having low losses, the use of which was

Card 2/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

USSR/Acoustics - Ultrasonics, J-4

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35571

Abstract: formerly made difficult by high reflections at the boundaries. On the other hand, the use of noncontact transition layers may turn out to be useful when sounding metal articles, located in a liquid.

Card 3/3

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B.D.

Scientific meeting on electroacoustics. Usp.fiz.nauk 58 no.2: 347-358 F '56. (MLRA 9:6)
(Kiev--Electroacoustics--Congresses)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B.D.

Experimental study of an open-air public address system with evenly distributed sound sources. Dokl.AN SSSR 108 no.4:636-639 Je '56. (MIRA 9:9)

1.Akusticheskiy institut Akademii nauk SSSR. Predstavlene akademikom N.N.Andreyevym.
(Architectural acoustics) (Microphone)

TARTAKOVSKIY, B.D.

46-2-12/23

AUTHOR: Tartakovskiy, B.D.

TITLE: Ultrasonic filters with controlled frequency bandwidth. (Ul'trazvukovyye interferentsionnyye filtry s izmenyayemymi chastotami propuskaniya)

PERIODICAL: "Akusticheskiy Zhurnal" (Journal of Acoustics), 1957, Vol.3, No.2, pp. 183-191 (U.S.S.R.)

ABSTRACT: The sonic field of normal plane piezoelectric sound sources is not homogeneous and has, apart from a cylindrical main sound beam, oblique side beams. By suitable arrangement of flat composite surfaces placed in the front of the source, compensating filters may be obtained (1), (2). Practical application, however, of such filters could be found only if their pass-band was made to vary continuously and smoothly. In the present article the author proves analytically that such filters can be realised. The theory of propagation of plane sound waves through an arbitrary combination of flat homogeneous liquid layers gives the expressions for determining the permeability coefficient of the medium for the sound energy D_W (eq.(1) and for the reflection coefficient R_W as functions of the material parameters and of the thickness of the layers (3). In eq.(1): f = sound waves frequency; Z_i = wave impedance; φ_i = wave thickness of the layer,

Card 1/4

Ultrasonic filters with controlled frequency bandwidth. (Cont.)

c_i = sound propagation velocity, ρ_i = density, θ_1 = angle of incidence. For the sound reflection to be absent, (the amount of reflection determining the "transparency" of the asymmetrical interference filter), eq.(8) is to be satisfied, which for the case of a homogeneous single layer filter reduces to eq.(9). For the three layers combination, eq.(8) becomes (11) which has four solutions, i.e. I, II, II and IV (eqs. 12, 12a, 12б and 12B), where Z_1 and Z_2 in eq. (12B) are arbitrary constants. The solution IV is of most interest. Since in the lefthand side of the equation one has a product of tangents of φ_1 and φ_2, it becomes possible to compensate for their relative changes, e.g. by varying l_1 or l_2 (thickness). It follows that, in principle, it would be possible to realise equalising filters with a smoothly varying pass-band. In practice, it would mean varying the thickness of the inner liquid layer. Since further analysis shows that it is possible to obtain a continuously regulated filter using three layers only, a 3-layer filter only is considered in detail. The condition for full sound "transparency" is derived, eqs.(29)(30).

Ultrasonic filters with controlled frequency bandwidth. (Cont.)

Since, for highly selective filters, a small deviation from the centre frequency and that of the incidence angle leads to an appreciable decrease in D_w, the pass-band of a 3-layer filter is determined by expanding eq.(30a) into the Taylor's series with respect to φ_1 and φ_2 in the vicinity of φ_1^0 and φ_2^0 and eq. (34) is obtained, permitting the calculation of the pass-band with respect to frequency and the incidence angle. The influence of losses on the pass-band is given in approximation by eq. (40), which shows the broadening of the pass-band with increasing losses. The theoretical analysis has been applied to an experimental 3-layer ultrasonic filter. It consisted of two plane parallel aluminium plates with a regulated width of the water layer between them. The thickness of the plates was accurate to 0.005 mm and the arrangement and regulation of the system followed the procedure set in (5). Fig.4, which gives the frequency characteristics of the filter, confirms very well the theoretical calculations. There are 3 graphs illustrating the theoretical analysis and 1 graph of the frequency characteristics of the experimental filter against layer thicknesses. There are 5 references

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46-2-12/23

Ultrasonic filters with controlled frequency bandwidth. (Cont'.)

4 of which are Slavic.

ASSOCIATION: Institute of Acoustics, Ac.Sc. USSR. (Akusticheskiy Institut AN SSSR)

SUBMITTED: August 1, 1956.

AVAILABLE: Library of Congress

Card 4/4

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B.D., kandidat tekhnicheskikh nauk.

"Noise control in industry" by I.I. Slavin. Reviewed by B.D. Tartakovskii. Vest.mash. 37 no.2:91-92 F '57. (MLRA 10:2)

(Noise) (Slavin, I.I.)

TARTAKOVSKIY, B. D.

NAUMKINA, N. I., TARTAKOVSKIY, B. D., and EFRUSSI, M. M.

"Experimental Study of Some- Vibration-Absorbing Materials."

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

SOV-46-4-3-17/18

AUTHOR: Tartakovskiy, B. D.

TITLE: The 4th All-Union Acoustic Conference (IV Vsesoyuznaya akusticheskaya konferentsiya)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, Nr 3, pp 292-294 (USSR)

ABSTRACT: The 4th All-Union Acoustic Conference took place in Moscow between May 26 and June 4, 1958. 728 delegates took part in the conference, among them delegates from the German People's Republic, China, Poland, USA, Czechoslovakia and others. The Soviet contingent consisted of 677 persons. 173 papers were read to the conference; 34 of them were from the foreign delegates and the remainder were given by Soviet scientists.

1. Ultrasonic radiation--Metallurgical effects 2. Metals--Ultrasonic factors 3. Metals--Phase studies

Card 1/1

SOV/46-4-4-9/20

AUTHOR: Tartakovskiy, B.D.

TITLE: Diffraction of Sound Waves in Converging Beams (O difraktsii zvukovykh voln v skhodyashchikhsya puchkakh)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, Nr 4, pp 355-360 (USSR)

ABSTRACT: It is not always possible to apply the results of calculations on optical focusing systems to acoustical focusing systems. This is because in acoustics the dimensions of the focusing system are not always very large compared with the wavelength, because there may be a non-uniform distribution of amplitude along the wave-front or because the converging wave-front is not spherical or the angle of aperture may be large. The paper considers diffraction of sound waves at the focus of a system with a non-uniform amplitude distribution along the wave-front, with wave aberration and a large angle of aperture. The acoustical system considered may also have dimensions which are not much greater than the acoustic wavelength. It is found that the amplitude may differ considerably at distances greater than one wavelength without affecting the diffraction image too much. Certain special cases are considered, in particular the field on the axis of the acoustic beam (or very close to the axis) at an arbitrary distance from the focus.

Card 1/2

SOV/46-4-4-9/20

Diffraction of Sound Waves in Converging Beams

The results obtained earlier by other workers (Refs 1, 4, 5) are discussed critically. There are 7 references, 3 of which are Soviet, 2 German and 2 American.

ASSOCIATION: Akusticheskiy institut, AN SSSR, Moskva (Acoustical Institute, Academy of Science of the U.S.S.R., Moscow)

SUBMITTED: September 15, 1957

Card 2/2

SOV/46-4-4-15/20

AUTHORS: Poloshevnikov, B.F. and Tartakovskiy, B.D.

TITLE: Attenuation of Plane Acoustic Waves of Finite Amplitude in Gases (O zatukhanii ploskikh zvukovykh voln konechnoy amplitudy v gazakh)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, Nr 4, pp 369-371 (USSR)

ABSTRACT: Attenuation of plane acoustic waves of finite amplitude in viscous heat-conducting media was dealt with theoretically in Refs 1, 2. Experimental measurements in gases, made at 140 kc/s, were reported in Ref 3. The present authors studied dependence of the attenuation of 13 kc/s acoustic waves in gases on their intensity. An electrodynamic resonance generator of the type described in Ref 4 was attached to a cylindrical tube of 125 cm length and 12.4 cm diameter (the generator diameter was 12 cm). A sinusoidal voltage was applied to the generator from a 3 kW source. The radiating element was a solid aluminium cylinder with 13 kc/s resonance frequency. The radiated wave was not fully planar. The variation of sound pressure p_1 along the tube axis was measured by means of a barium titanate probe. Fig 1 shows

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

the sound pressure p_1 as a function of the distance along the tube r. Circles denote experimental results plotted directly, while crosses represent statistically averaged out results. Fig 2 shows dependence of the attenuation coefficient α_1 as a function of p_2, where p_1 is the mean value of p at r = 75 cm. Fig 2 shows that α_1 is a linear function of p_1. This linear dependence can be used in the choice of acoustic parameters in apparatus used for coagulation of aerosols. There are 2 figures and 6 references, 2 of which are Soviet and 4 American.

ASSOCIATION: Gosudarstvennyy n.-i. institut po promyshlennoy i sanitarnoy ochistke gazov, Moskva (State Research Institute for Industrial and Sanitary Purification of Gases, Moscow)

SUBMITTED: May 15, 1958

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

SOV/46-5-2-11/34

AUTHORS: Naumkina, N.I., Tartakovskiy, B.D., and Efrussi, M.M.

TITLE: Experimental Study of Certain Vibration-Absorbing Materials (Eksperimental'noye issledovaniye nekotorykh vibropogloshchayushchikh materialov)

PERIODICAL: Akusticheskiy zhurnal, 1959, Vol 5, Nr 2, pp 196-201 (USSR)

ABSTRACT: Vibration noise can be reduced by covering appropriate members of machines and structures with layers of vibration-absorbing (v.a.) materials which are characterized by high internal mechanical losses. If a metal rod is covered by a thick layer of a v.a. material, then the mechanical losses and consequent noise reduction are determined primarily by the losses in the v.a. material itself. If the layer of the v.a. material is thin, the loss coefficient η of the composite rod is a function of the product $\eta_2 E_2$ where η_2 and E_2 are the loss coefficient and Young's

modulus of the v.a. material. The present paper reports measurements of η_2 and E_2 of v.a. materials at acoustic frequencies. Measurements were made either on rods or strips of v.a. materials, or, if these were not strong enough, a metal rod was covered by a layer of a v.a. material and the system was measured as one unit (Ref.2). In either case vibrations were produced by means of an electromagnet. Since v.a. materials are normally non-magnetic, a piece of Permalloy foil was wrapped round the free end of the tested v.a. rod or strip. The apparatus used to test strips or rods of v.a. materials by themselves is shown in Fig.1. Vibrations were recorded by means of a microphone placed at a certain distance from the sample. The voltage across the microphone output was proportional to the vibrational velocity of the rod or strip, and from the maximum of this velocity the resonance frequency and Young's modulus were deduced. The loss coefficient η_2 was deduced from a record of decay of the resonance vibrations of the sample:

$$\eta_2 = (1/\pi)\ln(A_n/A_{n+1})$$

where A_n and A_{n+1} are successive vibration amplitudes. When the internal losses of the material were small ($\eta_2 < 0.01$) the decaying vibrations were recorded by means of Neyman-type apparatus and the rate of decay L(db/sec) was determined. The rate of decay is related to the loss coefficient by

$$L = 27.29 f\eta_2$$

where f is the frequency. The errors in measurements of E_2 were of the order of 3%, and of η_2 of the order of 5%. When a v.a. material was tested in the form of a layer on a metal rod the composite system was suspended horizontally, as shown in Fig.2. To determine E_2 and η_2, the resonance frequency f and the mass per unit length m were determined both for the metal rod and for the metal rod with the v.a. layer on it (the appropriate formulae are given by Eqs.(8) and (3)). The error in measurement of Young's modulus E_2 by the composite rod method was of the order of 10%, and the loss coefficient η_2 was measured with an accuracy of 12%.

Experimental Study of Certain Vibration-Absorbing Materials

The values of E_2 and η_2 given in the present paper are averages of values obtained at 10-200 c/s and vibration amplitudes ranging from 0.001 to 0.1 mm. Among v.a. materials tested was "izol" which consists of rubber powder treated with softeners of bitumen and coumarone resin type until the stage of partial de-vulcanization was reached. This treatment was carried out at 160-170°C at atmospheric pressure. After cooling to 60-70°C the material was rolled to produce an elastic rubber-like sheet. The authors tested pure "izol" and "izol" filled with asbestos, cellulose, cord fabric, slag (mineral) wool and with other materials. The results of these tests are shown in Fig.3. This figure shows that if the v.a. layer can be made of any thickness, then the best materials are "izols" filled with asbestos or with textile fibres. If the thickness of the v.a. layer has to be kept within certain limits the noise-absorbing quality of the material is given by the product $E_2\eta_2$; in this case the best material of those shown in Fig.3 is the cellulose-filled "izol". A second group of materials tested consisted of felts impregnated with bitumen, or "izol"

Experimental Study of Certain Vibration-Absorbing Materials

mastic filled with asbestos or cellulose. The results are given in Fig.4. This figure shows that the felt materials have a low Young's modulus and can reduce noise effectively only when used in the form of thick layers. Nevertheless the best of these materials (a felt impregnated with bitumen and covered by asbestos-based "izol" mastic) can be regarded as a useful v.a. material because its $E_2\eta_2$ product is of the order of 2×10^9. The best properties were exhibited by laminar materials in which the "izol" mastic was combined with elastic layers such as cable paper and aluminium foil (Fig.5). Acknowledgment is made to D.D. Surmeli and Ch.D. Marr for preparation and supply of the majority of materials described in the present paper. There are 5 figures and 3 references, of which 1 is Soviet, 1 German and 1 translation of English into Russian.

SOV/46-5-2-11/34

Experimental Study of Certain Vibration-Absorbing Materials

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva (Acoustics Institute, Ac. Sc. USSR, Moscow)

SUBMITTED: May 20, 1958

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SOV/46-5-2-22/34

AUTHORS: Gudemchuk, V.A., Podoshevnikov, V.F. and Tartakovskiy, B.D.

TITLE: On the Role of Turbulence in the Phenomenon of Acoustic Coagulation of Aerosols (K voprosu o roli turbulentnosti v yavlenii akusticheskoy koagulyatsii aerozoley)

PERIODICAL: Akusticheskiy zhurnal, 1959, Vol 5, Nr 2, p 246 (USSR)

ABSTRACT: The physical nature of the process of acoustic coagulation of aerosols is still not clear. In particular the role of turbulence has not yet been elucidated, although Matula has suggested that it may be important. The authors studied the effect of turbulence on coagulation of dioctylphthalate, using 13 kc/s acoustic waves. The aerosol was passed from below through a vertical cylindrical column of 125 cm height and 12.4 cm diameter. The mean radius of the aerosol particles was 0.28 μ. The coagulation effect was judged from the ratio of intensities of light scattered by the aerosol before and after coagulation. Turbulence was found to increase on increase of the sound pressure produced by the acoustic generator (placed at the top of the column). Eddies were

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On the Role of Turbulence in the Phenomenon of Acoustic Coagulation of Aerosols

seen to form at the point where the aerosol entered the column. In order to limit the motion of eddies in the horizontal direction the authors placed a grid consisting of plates 90 cm long and 1-2 cm apart. When this grid was placed in the column coagulation fell by a factor of 1.8. In other words turbulence plays an important role in coagulation of aerosols by means of sound. The effect of turbulence probably lies in mixing of the aerosol particles by the eddies. There is 1 figure, and 1 reference (translation).

ASSOCIATION: Gosudarstvennyy n.-i. institut po promyshlennoy i sanitarnoy ochistke gazov (State Scientific-Research Institute for Industrial and Sanitary Purification of Gases)

SUBMITTED: September 19, 1958

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

SOV/46-5-2-34/34

AUTHOR: Tartakovskiy, B. D.

TITLE: Handbook of Noise Control. Ed. by Cyril M. Harris, Ph.D. McGraw-Hill Book Company, Inc., New York, 1957 (Spravochnik po bor'be s shumom pod redaktsiey M. Garrisa. N'yu-Iork, 1957)

PERIODICAL: Akusticheskiy zhurnal, 1959, Vol 5, Nr 2, pp 259-260 (USSR)

ABSTRACT: This review deals briefly with the forty chapters of this book which were written by different specialists. Minor criticisms were made of the resulting non-uniformity of style and presentation, as well as omission of some topics and repetition of others in several chapters. The general conclusion is that the book is very useful and should be translated into Russian as soon as possible.

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USCOMM-DC-61,387

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

TARTAKOVSKIY, B.D.

Method of calculating the gain in convex sound-wave bunches. Akust. zhur. 5 no.4:450-458 '59. (MIRA 14:6)

1. Akusticheskiy institut AN SSSR, Moskva.
(Sound waves)

NAUMKINA, N.I.; TARTAKOVSKIY, B.D.; EFRUSSI, M.M.

Two-layer vibration-absorbing structure. Akust.zhur. 5 no.4: 498-501 '59. (MIRA 14:6)

1. Akusticheskiy institut AN SSSR, Moskva.
(Damping (Mechanics))

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

06226
SOV/64-59-6-18/28

5(1)

AUTHORS: Podoshevnikov, B. F., Tartakovskiy, B. D.

TITLE: On the Method of Calculating Columns for the Coagulation of Aerosols With a Liquid Disperse Phase Due to the Action of Sound

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 6, pp 527 - 528 (USSR)

ABSTRACT: Experiments (Ref 1) showed that in a sound field of high intensity a considerable muffling of sound waves can be observed which exhibits a linear dependence upon the intensity of the sound pressure. Since the muffling of sound waves in the columns has so far not been taken into consideration in the calculations concerning agglomeration columns, an essential change must be made in these calculations. The equations for calculating an agglomeration column possessing in its upper part a sound producer, e.g. a siren, are derived, and the following final equation is obtained:

$$p_o = \frac{\alpha_o\left[e^{(PT)kV} - 1\right]}{k\,(1 - e^{-\alpha_o H})} \quad (8)$$

(α_o = muffling coefficient of

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of sound waves with an infinitely small amplitude, P = sound

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pressure, T = duration of exposure to sound, k = muffling constant, H = height of column corresponding to the path of the aerosol , p_0 = sound pressure in the upper part of the column). With the aid of this equation it is possible to calculate the capacity of the sound producer and height of column required in order to reach the necessary coagulation of the aerosol at a definite value PT and a capacity of the column (determined by V) in the case of known values for α_0 and k. By way of example curves in the coordinates H - p_0 are given for several values (PT).V at α_0 = 0.1 m^{-1} and k = 0.008 $(kilobarmeter)^{-1}$ (Fig). The values of k, α_0, and PT necessary for the calculation can be determined experimentally according to the method given in references 1 and 2. There are 1 figure and 2 Soviet references.

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

24(1)

AUTHOR: Tartakovskiy, B. D. SOV/53-68-4-12/12

TITLE: Letters to the Editor (Pis'ma v redaktsiyu)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 68, Nr 4, p 747 (USSR)

ABSTRACT: In the survey "The 4th All-Union Acoustic Conference" (Uspekhi fizicheskikh nauk, 1958, Vol 66, Nr 4) it was said that the lecturers Kh. Nize and S. Steinbach were from the West-German Federal Republic, whereas they actually are from East Germany. This is the contents of the letter published here.

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USCOMM-DC-61,532

TARTAKOVSKIY, B.D.

Sound field in the focal plane of convergent spherical beams. Akust. zhur. 6 no.1:96-100 '60. (MIRA 14:5)

1. Akusticheskiy institut AN SSSR, Moskva.
(Sound waves)

S/046/60/006/01/27/033
B008/B011

AUTHOR: Tartakovskiy, B. D.

[redacted]

TITLE: Third International Congress on Acoustics

PERIODICAL: Akusticheskiy zhurnal, 1960, Vol. 6, No. 1, pp. 134-136

TEXT: This is a report on the Third International Congress on Acoustics held in Stuttgart (German Federal Republic) from September 1 to 8, 1959. Plenary meetings and sectional sessions were attended by about 1100 experts from 32 countries. The USSR was represented by Academician N. N. Andreyev, Corresponding Member AS USSR L. M. Brekhovskikh, N. S. Ageyeva, A. A. Anan'yeva, S. G. Gershman, I. P. Golyamina, I. I. Klyukin, Yu. P. Lysanov, G. D. Malyuzhinets, K. A. Naugol'nykh, V. F. Nozdrev, S. N. Rzhevkin, L. D. Rozenberg, I. K. Samoylova, et al; altogether, 25 persons. The Soviet delegates delivered 30 lectures. The author of the present paper delivered a report on research work in the field of building acoustics and vibration, Rzhevkin likewise dealt with problems of building acoustics, Rozenberg spoke on the application of ultrasonics, Merkulova devoted her lecture to problems of the propagation of ultrasonic waves in crystalline structures.

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Third International Congress on Acoustics S/046/60/006/01/27/033
B008/B011

Roy and Frolov reported on new methods of converting strong sound vibrations, and especially on spark discharges in water. Andreyev, Naugol'nykh, and Romanenko, Polyakova, Krasil'nikov, and Zarembo took part in the work of the section on nonlinear acoustics. Anan'yeva reported on new designs of sound and ultrasound generators. Golyamina, among others, spoke on the application of ceramics and ferrites as piezoelectric and magnetostriction materials. Statistical properties of radio signals were the subjects of the lecture by Rimskiy-Korsakov. The lecture by Malyuzhinets was devoted to problems of sound radiation and diffraction of sound waves. Nozdrev and co-workers dealt with problems in the field of molecular acoustics. Auditory problems were discussed in lectures by Samoylova and Chistovich. Brekhovskikh spoke on the subject "Propagation of Sound Waves Over Long Distances in Natural Wave Guides". In some of the plenary and sectional sessions the chair was held by members of the Soviet delegation: Academician Andreyev, Professor Rzhevkin, and Professor Rozenberg.

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S/046/61/007/001/007/015
B104/B204

AUTHORS: Maslov, V. P., Tartakovskiy, B. D.

TITLE: The passage of bending waves through an intermediate rod

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 1, 1961, 67-72

TEXT: The passage of pure bending waves from a unilaterally unbounded rod into another via an arbitrary intermediate rod, which is firmly connected with the two afore-mentioned parts is studied. Two types of bending waves are known to exist: the traveling waves and the inhomogeneous waves. During passage through one of the two above-mentioned connections between the three rods, both types of waves are partly reflected, and partly they pass through. For calculating the reflection and transition coefficients of the intermediate rod, it is necessary that the system consisting of eight linear equations be solved. This system reads

$$1 + \mathfrak{R}_0 + R_0 = D_1 + \mathfrak{D}_1 + \mathfrak{R}_1 e^{-k_1 l} + R_1 e^{ik_1 l}$$

$$k_0 (i + \mathfrak{R}_0 - iR_0) = k_1 (iD_1 - \mathfrak{D}_1 + \mathfrak{R}_1 e^{-k_1 l} - iR_1 e^{ik_1 l})$$

$$B_0 k_0^2 (-1 + \mathfrak{R}_0 - R_0) = B_1 k_1^2 (-D_1 + \mathfrak{D}_1 + \mathfrak{R}_1 e^{-k_1 l} - R_1 e^{ik_1 l})$$

$$B_0 k_0^3 (-i + \mathfrak{R}_0 + iR_0) = B_1 k_1^3 (-iD_1 - \mathfrak{D}_1 + \mathfrak{R}_1 e^{-k_1 l} + iR_1 e^{ik_1 l}) \quad (3)$$

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$$D_1 e^{ik_1 l} + \mathfrak{D}_1 e^{-k_1 l} + \mathfrak{R}_1 + R_1 = D_2 + \mathfrak{D}_2$$
$$k_1 (i D_1 e^{ik_1 l} - \mathfrak{D}_1 e^{-k_1 l} + \mathfrak{R}_1 - i R_1) = k_2 (i D_2 - \mathfrak{D}_2)$$
$$B_1 k_1^2 (-D_1 e^{ik_1 l} + \mathfrak{D}_1 e^{-k_1 l} + \mathfrak{R}_1 - R_1) = B_2 k_2^2 (-D_2 + \mathfrak{D}_2)$$
$$B_1 k_1^3 (-i D_1 e^{ik_1 l} - \mathfrak{D}_1 e^{-k_1 l} + \mathfrak{R}_1 + i R_1) = B_2 k_2^3 (-i D_2 - \mathfrak{D}_2).$$

Here, D and $\mathfrak{D}$ are the amplitudes of the direct, of the reflected traveling and inhomogeneous waves, R and $\mathfrak{R}$ are the amplitudes, the indices 0, 1, and 2 denote the corresponding rods; l is the length of the intermediate rod; B_i is the bending strength of the i-th rod; and k_i is the wave number. The determinant of this system is written down, and by means of the rule established by Sarrus, expressions are obtained, which become much too difficult for purposes of calculation. By introduction of the operators

$$R_{12} = \frac{i\mathcal{P}_{iq,b}}{\mathcal{P}_{q,b}}; \quad \mathfrak{R}_{12} = (1+i)\frac{M^{(-)}_{q,b}}{\mathcal{P}_{q,b}}; \qquad (11)$$
$$D_{12} = \frac{2q^2 b Q_{q,b}}{\mathcal{P}_{q,b}}; \quad \mathfrak{D}_{12} = -i\frac{2q^2 b Q_{iq,b}}{\mathcal{P}_{q,b}}.$$

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in which x may assume the values $i^n p$, $i^n q$ ($n = 0, 1, 2, 3$), and y the values a and b, the expressions for the four coefficients may be considerably simplified. In this way, the relations

$$R_{02} = i \frac{\sum_{n=0}^{3} \mathcal{P}_{i^{n-1}p,a} P_{i^n} - 4M^{(-)}_{p,a} M^{(-)}_{q,b}}{\sum_{n=0}^{3} \mathcal{P}_{i^n p,a} P_{i^n} - 4M^{(-)}_{p,a} M^{(-)}_{q,b}}; \qquad (6)$$

$$\mathfrak{R}_{02} = -(1+i) \frac{M^{(-)}_{p,a} \sum_{n=0}^{3} P_{i^n} - 4M^{(+)}_{p,a} M^{(-)}_{q,b}}{\sum_{n=0}^{3} \mathcal{P}_{i^n p,a} P_{i^n} - 4M^{(-)}_{p,a} M^{(-)}_{q,b}}; \qquad (7)$$

$$D_{02} = \frac{\frac{4q^2 b}{p} \sum_{n=0}^{3} i^n Q_{i^n p,a} Q_{i^n q,b} e^{i^n \varphi}}{\sum_{n=0}^{3} \mathcal{P}_{i^n p,a} P_{i^n} - 4M^{(-)}_{p,a} M^{(-)}_{q,b}}; \qquad (8)$$

$$\mathfrak{D}_{02} = -\frac{\frac{4q^2 b}{p} \sum_{n=0}^{3} i^{n+1} Q_{i^n p,a} Q_{i^{n+1} q,b} e^{i^n_\varphi}}{\Sigma \mathcal{P}_{i^n p,a} P_{i^n} - 4M^{(-)}_{p,a} M^{(-)}_{q,b}}. \qquad (9)$$

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The passage of ... S/046/61/007/001/007/015
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are obtained, which, in the case of a suitable selection of the parameters permit calculation of the corresponding coefficients. Equation (6) may further be used for determining the conditions at which bending waves are not reflected from the intermediate rod. It is shown that with a certain material of the intermediate rod, by suitable selection of its thickness, a total reflection-free passage of the bending waves may be attained. In the same way, the condition for the lack of a reflection of the inhomogeneous waves on the intermediate rod is formulated. There are 6 references: 1 Soviet-bloc.

ASSOCIATION: Akusticheskiy institut AN SSSR Moskva (Institute of Acoustics of the AS USSR, Moscow)

SUBMITTED: May 29, 1960

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S/046/61/007/001/014/015
B104/B204

6,8000 (and 1043, 1155)

AUTHOR: Tartakovskiy, B. D.

TITLE: Symposium on the diffraction of waves

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 1, 1961, 114-116

TEXT: From September 26 to October 1, 1960 an Ob"yedinennyy vsesoyuznyy simpozium (Joint All-Union Symposium) was held in Odessa, which dealt with the diffraction theory in acoustics, optics, radio engineering, seismology, in the dynamic elasticity theory, and some other special fields of physics. There were more than 75 Doctors of Sciences among the more than 400 persons attending the symposium. Chairman of the organizing committee was M. D. Khaskind (Odessa), while L. D. Malyuzhinets (Moscow), G. I. Makarov (Leningrad), L. A. Vaynshteyn (Moscow) were deputies of the chairman. The principal initiators of this symposium were the Akusticheskiy institut AN SSSR (Institute of Acoustics of the AS USSR) and the Komissiya po akustiki AS USSR (Commission for Acoustics of the AS USSR). V. A. Fok opened the symposium with a lecture on the fundamental value of the diffraction theory for science and technology, and discussed approximation methods. G. A.

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Grinberg reported on works concerning mathematical methods carried out at the Fiziko-tekhnicheskiy institut AN SSSR (Institute of Physics and Technology of the AS USSR), which are of importance in the diffraction theory. L. A. Vaynshteyn reported on works on electromagnetic diffraction carried out from 1957-1960. G. D. Malyuzhinets reported on asymptotic representations of diffraction effects. A. S. Alekseyev, V. M. Rabich, and B. Ya. Gel'chinskiy investigated methods of calculating the intensity of wave fields. The lecture held by M. D. Khaskind was entitled: "Some Diffraction Problems and Problems of Wave Production on Impedance Surfaces". Ye. L. Feynberg described properties of wave fields in which particles of various kinds participate. L. D. Bakhrakh and A. A. Pistol'kors dealt with the application of the diffraction method in centimeter-wave aerials. Problems of the wave theory in heavy liquids were dealt with by N. N. Moiseyev. G. D. Malyuzhinets and A. A. Tuzhilin obtained an exact solution in closed form for an electromagnetic field, which is produced by an electric dipole in a range with perfectly conducting edges. V. Yu. Zavadskiy investigated the diffraction on thin plates, and I. A. Viktorov investigated the diffraction of harmonic plane-longitudinal waves. N. A. Bazhina reported on geometric solution methods. V. I. Dmitriyev, B. M. Neymark,

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and I. I. Chechel' reported on approximation solutions in the diffraction theory of electromagnetic and elastic waves in stratified media. G. V. Poddubnyy spoke about temperature waves. L. A. Vaynshteyn and A. A. Fedorov dealt with the scattering of plane and cylindrical waves on an elliptic cylinder. Yu. P. Lysanov investigated the separation of cylindric waves from a diffraction field. P. I. Tsoy obtained approximation solutions for the velocity potential. A. Ya. Povzner and I. V. Sukharevskiy, V. I. Ivanov and P. Ya. Ufimtsev in their lectures dealt with similar problems as those by Tsoy. B. Ye. Kinber solved a diffraction problem of cylindric waves in the interior of a circular cylinder. V. S. Buldyrev and I. A. Molozkov spoke about the wave propagation in inhomogeneous media. N. V. Zvolinskiy investigated diffraction phenomena on explosive waves in solid elastic bodies. V. A. Afanas'yev investigated the shifts on ellipsoidal cavities. V. Yu. Zavadskiy investigated surface waves of an elastic semispace. G. I. Petrashen', I. A. Molotkov, and P. V. Krauklis investigated the propagation of unsteady waves in stratified media. L. M. Brekhovskiy and V. A. Yeliseyevnin investigated exact solutions and approximations for the propagation of sound waves in wave guides. M. I. Gurevich dealt with the sound-transmissivity coefficients and the reflection coefficients in Rayleigh approximation for

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Symposium on the ...

the normal incidence of sinusoidal plane waves, G. D. Malyuzhinets suggested methods of solving diffraction problems on lattices. The lecture by I. A. Urusovskiy was entitled: "The Diffraction of Sound by Periodically Unequal and Inhomogeneous Media". B. F. Kur'yanov investigated the diffraction of sound on a non-uniform surface, composed of a fine and a rough inequality. V. N. Krasil'nikov dealt with the bending waves produced in a thin elastic layer which bounds a liquid semispace, if in the liquid space low-frequency wave processes occur. M. G. Kreyn and G. Ya. Lyubarskiy investigated wave processes of different kinds as well as general rules, such as transmissivity frequencies, group velocities etc. A. D. Lapin delivered a lecture on "Sound Propagation in a Wave Guide Having Rectangular Recesses in the Walls". L. A. Vasil'yev and his collaborators dealt with the usefulness of the phase contrast method and the shadow method in diffraction investigations. In 1962, it is intended to organize a further symposium of this kind in Gor'kiy.

Card 4/4

MASLOV, V.P.; TARTAKOVSKIY, B.D.

Transit of flexural waves across an intermediate rod, involving losses.
Akust.zhur. 7 no.2:224-227 '61. (MIRA 14:7)

1. Akusticheskiy institut AN SSSR, Moskva.
(Sound--Transmission)

TARTAKOVSKIY, B.D.

"Phase jump" in the focus of spherical sound beams. Akust.zhur. 7 no.2:228-235 '61. (MIRA 14:7)

1. Akusticheskiy institut AN SSSR, Moskva.
(Sound)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

RYBAK, S.A.; TARTAKOVSKIY, B.D.

"Noise reduction" edited by L.L.Beranek. Reviewed by S.A.Rybak and B.D.Tartakovskii. Akust.zhur. 7 no.2:271-272 '61. (MIRA 14:7)
(Acoustics) (Beranek, L.L.)

TARTAKOVSKIY, B.D.

Spherical aberration of solid sound-focusing lenses. (MIRA 14:9)
Akust. zhur. 7 no.3:349-357 '61.

1. Akusticheskiy institut AN SSSR, Moskva.
(Sound lenses) (Aberration)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R001755020008-3"

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S/046/61/007/004/010/014
B104/B102

AUTHORS: Rybak, S. A., Tartakovskiy, B. D.

TITLE: Impedances in case of symmetrical and antisymmetrical vibrations of stratified plates exhibiting losses

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 4, 1961, 475-481

TEXT: Vibrations of three-layer plates are investigated without the use of Kirchhoff's law. At first, the vibration of a single plate is studied. The deformation vector for antisymmetrical vibrations is represented by

$$U_a(x,z) = (U_{l0z}\cos(k_z z) + U_{l0z}'\cos(q_z z))\,e^{ikx},$$
$$V_a(x,z) = \left(-U_{l0z}\frac{ik_z}{k}\sin(k_z z) + \tilde{U}_{l0z}\frac{ik}{q_z}\sin(q_z z)\right)e^{ikx}. \quad (1),$$

that for symmetrical vibrations by

$$U_s(x,z) = \left(-U_{l0x}\frac{ik}{k_z}\sin(k_z z) + U_{l0x}\frac{iq_z}{k}\sin(q_z z)\right)e^{ikx},$$
$$V_s(x,z) = (U_{l0z}\cos(k_z z) + U_{l0x}\cos(q_z z))\,e^{ikx} \quad (4).$$

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U_{toz} and U_{loz} stand for the amplitudes of the transverse and longitudinal displacements in the z-direction, U_{tox} and U_{lox} denote those of the transverse and longitudinal displacements in the x-direction. The equations $k_z^2 + k^2 = \omega^2/c_t^2$ and $q_z^2 + k^2 = \omega^2/c_l^2$ are satisfied, where c_t and c_l are the transverse and longitudinal velocities. The conditions $U(z) = U(-z)$, $V(z) = -V(-z)$, $\sigma_{zz}(z) = -\sigma_{zz}(-z)$, $\sigma_{xz}(z) = \sigma_{xz}(-z)$ belong to (1), whereas the conditions $V(z) = V(-z)$, $U(z) = -U(-z)$; $\sigma(z) = \sigma(-z)$, $\tau(z) = -\tau(-z)$ belong to (4). It is shown that the four conditions given for the two cases investigated may be substituted by two conditions each: $= a_1 + a_2U$; $V = d_1 + d_2U$, and $= b_1 + b_2U$; $V = c_1 + c_2U$, respectively. The authors obtained

$$a_1 = \frac{1}{ikk_z}\frac{\omega^2}{c_t^2}\frac{1}{\gamma_2}, \quad a_2 = \frac{\mu}{ik}\frac{\Delta}{\gamma_2 k_z q_z},$$
$$d_1 = \frac{1}{ik}\frac{1}{\mu}\frac{\gamma_1}{\gamma_2}, \quad d_2 = \frac{1}{ikq_z}\frac{\omega^2}{c_t^2}\frac{\gamma_3}{\gamma_2}, \quad (7)$$

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and

$$c_1 = \frac{1}{ik}\frac{1}{\mu}\frac{\delta_1}{\delta_2}, \qquad c_2 = -\frac{1}{ikq_z}\frac{\omega^2}{c_t^2}\frac{1}{\delta_2}, \tag{8}$$

$$b_1 = -\frac{1}{ikk_z}\frac{\delta_3}{\delta_2}\frac{\omega^2}{c_t^2}, \quad b_2 = \frac{\Delta_1}{\delta_2}\frac{1}{k_z q_z}\frac{\mu}{ik}, \tag{9}$$

respectively, for the coefficients of these conditions, where and are the Lamé coefficients, as well as

$$\gamma_1 = \frac{k^2}{k_z q_z}\operatorname{tg}\left(q_z\frac{h}{2}\right) + \operatorname{tg}\left(k_z\frac{h}{2}\right) \; \gamma_2 = 2\operatorname{tg}\left(k_z\frac{h}{2}\right) - \frac{k_z^2 - k^2}{k_z q_z}\operatorname{tg}\left(q_z\frac{h}{2}\right); \quad \gamma_3 = \operatorname{tg}\left(k_z\frac{h}{2}\right)\cdot\operatorname{tg}\left(q_z\frac{h}{2}\right), \tag{A}$$

$$\Delta = 4k^2 k_z q_z \operatorname{tg}\left(k_z\frac{h}{2}\right) + (k_z^2 - k^2)^2\operatorname{tg}\left(q_z\frac{h}{2}\right).$$

and

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$$\delta_1 = \frac{k^2}{k_z q_z} \operatorname{tg}\left(k_z \frac{h}{2}\right) + \operatorname{tg}\left(q_z \frac{h}{2}\right), \quad \delta_2 = 2 \operatorname{tg}\left(q_z \frac{h}{2}\right) - \frac{k_z^2 - k^2}{k_z q_z} \operatorname{tg}\left(k_z \frac{h}{2}\right),$$
$$\delta_3 = \operatorname{tg}\left(k_z \frac{h}{2}\right) \operatorname{tg}\left(q_z \frac{h}{2}\right), \quad \Delta_1 = 4k^2 k_z q_z \operatorname{tg}\left(q_z \frac{h}{2}\right) + (k_z^2 - k^2)^2 \operatorname{tg}\left(k_z \frac{h}{2}\right). \qquad (B).$$

These results are used for the computation of antisymmetrical vibrations occurring in a three-layer plate, the outer layers being of identical composition. In this case, the vibrations of the central layer is antisymmetrical, whereas those of the two outer layers are symmetrical and antisymmetrical. The expression

$$\frac{\sigma_1}{U_1} = z = -\frac{c_{21}(2a_{12}a_{21} + a_{11}a_{22}) + 2(d_{22} + d_{21})\, b_{21}(a_{12} + a_{11}) - 2d_{12}b_{21}(a_{22} - 2a_{21})}{(2d_{22} - c_{21})\, a_{11}(a_{12} + b_{11}) + 2(d_{12} - c_{11})\, a_{11}(-a_{22} + b_{21})}. \qquad (13)$$

is obtained for the impedance, where

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$$a_{11} = \frac{2}{ikh_1}, \quad a_{21} = -\frac{1}{ikh_1} L_1, \quad b_{11} = \frac{\lambda + 2\mu}{\lambda} \frac{1}{ik} \frac{h_1}{2} q_1^2,$$
$$b_{21} = \frac{1}{ikh_1} \frac{\lambda + 2\mu}{\lambda} M_1, \quad d_{11} = \frac{1}{ik\mu}, \quad d_{21} = \frac{1}{ik} \frac{h_1}{2} k_1^2, \quad c_{11} = -\frac{1}{ik\lambda},$$
$$c_{21} = \frac{\lambda + 2\mu}{\lambda} \frac{2}{ikh_1}, \quad L = -\rho h\omega^2 + \frac{4\mu(\lambda + \mu)}{\lambda + 2\mu} \frac{h^3}{12} k^4, \tag{12}$$
$$M = -\rho h\omega^2 + \frac{4\mu(\lambda + \mu)}{\lambda + 2\mu} hk^2$$

Furthermore, the absorption coefficient is derived for plane waves in a plate containing an absorbing layer. The absorption of antisymmetrical bending waves in a three-layer plate exhibiting losses is investigated. There are 4 references: 2 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: W. Thompson. Transmission of elastic waves through a stratified solid material. J. Appl. Phys., 1950, 21, 2; D. Ross, E. Ungar, E. Kerwin. Structural Damping. Pergamon Press. 1959, 49-87.

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30053
S/046/61/007/004/010/014
Impedances in case of symmetrical and ... B104/B102

ASSOCIATION: Akusticheskiy institut AN SSSR Moskva (Acoustics Institute AS USSR, Moscow)

SUBMITTED: August 5, 1961

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24.1200 (1144,1147,1327)
17.1350

30055
S/046/61/007/004/013/014
B104/B102

AUTHORS: Rybak, S. A., Tartakovskiy, B. D.

TITLE: Total sound isolation when sound is passing through a symmetrically laminated wall

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 4, 1961, 497-499

TEXT: The passage of a plane sound wave through a plane, elastic wall which is dipped in a gas or liquid has been studied. The elastic constants of the wall are even functions of the distance from the central layer of the wall. The problem is solved by introducing impedances of symmetrical waves z_s and antisymmetrical waves z_a. According to definition the following expressions hold: $z_s = (P_1 + P_t)/(V_1 - V_2)$ and $z_a = (P_1 - P_t)/(V_1 + V_2)$. For plane waves propagating in a homogeneous liquid, the following boundary conditions are obtained: $V_1 = (P_i - P_r)\cos\theta/\rho c$ and $V_2 = P_t \cos\theta/\rho c$, where θ is the angle of incidence, $P_1 = P_i + P_r$ the

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pressure on the front, and P_t that on the back side, while V_1 and V_2 are the normal components of velocity. These equations yield:

$$V = \frac{P_r}{P_i} = \frac{z_s z_a - z_0^2}{(z_s + z_0)(z_a + z_0)},$$

$$D = \frac{P_t}{P_i} = \frac{z_0 (z_s - z_a)}{(z_s + z_0)(z_a + z_0)} \left(z_0 = \frac{\rho c}{\cos\theta}\right). \qquad (3)$$

For $z_s = z_a = z$ (4), the expression $V = (z - z_0)/(z + z_0)$ holds, and the transmittance D vanishes. For real values of z_0 and imaginary values of z (no absorption in the medium) V will be equal to unity. This shows that for an angle of incidence, where z_s and z_a are equal, no sound will pass through a symmetrically laminated wall. The following example is investigated: A homogeneous plate having a thickness h is located in a liquid. The impedances are given by

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Total sound isolation when sound is ...

$$z_a = \mu\left[\mathrm{tg}\left(\frac{h}{2}k_z\right)4k^2k_zq_z + \mathrm{tg}\left(\frac{h}{2}q_z\right)(k_z^2-k^2)^2\right] \Big/ i\omega q_z\frac{\omega^2}{c_l^2};$$

$$z_s = \mu\left[\mathrm{tg}\left(\frac{h}{2}q_z\right)4k^2k_zq_z + \mathrm{tg}\left(\frac{h}{2}k_z\right)(k_z^2-k^2)^2\right] \Big/ -i\omega q_z\frac{\omega^2}{c_l^2}\mathrm{tg}\left(\frac{h}{2}k_z\right)\mathrm{tg}\left(\frac{h}{2}q_z\right); \quad (6)$$

$$k = \frac{\omega}{c_{\text{ж}}}\sin\theta; \quad k_z = \sqrt{\frac{\omega^2}{c_t^2}-k^2}; \quad q_z = \sqrt{\frac{\omega^2}{c_l^2}-k^2}.$$

Substituting this into (4) will yield the condition for total sound absorption

$$4k^2k_z\sin(hq_z) + (k_z^2-k^2)^2\sin(hk_z) = 0. \quad (7)$$

The sines are expanded in a series and the following expression is obtained:

$$\frac{4k^2q_z^2}{(k_z^2-k^2)^2} = -1 + \frac{h^2\omega^2}{6}\left(\frac{1}{c_l^2}-\frac{1}{c_t^2}\right). \quad (8)$$

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In second approximation,

$$k^2 = \frac{\omega^2}{c_{\text{n}}^2}\left[1 - \frac{h^2\omega^2}{12}\left(\frac{1}{c_t^2} - \frac{2}{c_l^2}\right)\right]. \quad \text{(A)}$$

is obtained as solution of (8). Substituting this expression into the condition $\sin\theta = kc_{liqu}/\omega$ yields the angle of incidence, where total reflection will occur. Eq. (4) is only fulfilled by Rayleigh waves. There is 1 Soviet reference.

ASSOCIATION: Akusticheskiy institut AN SSSR Moskva (Acoustics Institute AS USSR, Moscow)

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30203
S/080/61/034/011/018/020
D228/D301

24.1200 2220

AUTHORS: Podishevnikov, B.F., and Tartakovskiy, B.D.

TITLE: The absorption of sound of finite amplitude in a coagulating aerosol

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 11, 1961, 2573 - 2574

TEXT: When studying the absorption of non-linear sound in a dioctyl phthalate aerosol, obtained by B.F. Podoshevnikov's condensation process (Ref. 2: Dissert. kand., M., 1959), the authors made use of the same apparatus employed in their previous research on the phenomenon of supplementary sound absorption (Ref. 1: Akusticheskiy zh., IV, 4, 369, 1958). Its main features consist of a cylindrical coagulation tower (125 x 12.5 cm) and an electrodynamic resonance emitter of sinusoidal vibrations - to obviate the aerosol's rarefaction by air currents. The tests were conducted under varying conditions for the propagation of sound vibrations in the tower - particularly as regards the coefficient of the spatial ao-

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sorption of sound - in a sound field with a frequency of 13 c/s and intensity of 0.02 - 0.2 w/cm^2. The fact that the intensity of the emitted sound is not unduly influenced by aerosol particles suspended in the air was first experimentally verified. The mean coefficient of absorption was assumed to be governed by the absorption of sound of finite intensity in pure gas and by the supplementary absorption of sound (α_a) due to the presence of uncoagulated aerosol in the tower. The magnitude of α_a was evaluated by directly comparing at different emission intensities the values of the mean sound pressure, measured at 7 points situated 10 mm apart in the middle of the tower, in accordance with the expression

$$\alpha_a = 20 \log \left(\frac{P_g}{P_a}\right) \cdot \frac{1}{h},$$

where p_g and p_a are the sound pressures in pure gas and in the aerosol at a mean distance h from the emitter to their point of measurement. There appear to be little relationship between: (1) α_a and the aerosol concentration in the studied range 1.2 - 3.4 g/

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30203

m^3, and (2) α_a and the sound intensity. The mean value of α_a is 2.7 db/m. The authors conclude that the absorption of sound in an aerosol is of vital significance, and that it must accordingly be taken into account when calculating the intensity of the sound field in accoustic coagulation towers. There are 1 figure and 2 Soviet-bloc references.

SUBMITTED: February 9, 1961

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S/053/61/074/002/003/003
B125/B203

AUTHOR: Tartakovskiy, B. D.

TITLE: Symposium on diffraction of waves

PERIODICAL: Uspekhi fizicheskikh nauk, v. 74, no. 2, 1961, 369 - 379

TEXT: A symposium on the theory of wave diffraction was held in Odessa from September 26 to October 1, 1960; it had been convened by the Komissiya po akustike Akademii nauk SSSR (Commission on Acoustics of the Academy of Sciences USSR) together with the Akusticheskiy institut Akademii nauk SSSR (Acoustics Institute of the Academy of Sciences USSR) and the Odessa elektrotekhnicheskiy institut svyazi (Odessa Electrotechnical Institute of Communications), and was attended by more than 400 scientists (including more than 75 doctors). More than 100 reports were delivered on the following subjects: Exact and numerical solutions as well as asymptotic solutions of boundary problems of diffraction, nonsteady problems, Rayleigh--waves, waves in a heavy liquid, waves in stratified media, grates and undulating surfaces, propagation of waves, regular periodic waveguides,

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irregular waveguides. V. A. Fok, at the opening of the Symposium, stressed the basic importance of the theoretical problems of diffraction, and reported particularly on asymptotic methods. G. A. Grinberg reported on investigations of the theory of diffraction by the Otdel matematicheskoy fiziki Fiziko-tekhnicheskogo instituta AN SSSR (Department of Mathematical Physics of the Physicotechnical Institute of the AS USSR). V. A. Fok reported on two methods of solving an integral equation connecting the current density or charge density on the surface of a hollow cylinder with the vector potential or the scalar potential on the same surface. This result was then compared with the results found for very thin cylinders by asymptotic methods by Källén, Leontovich and Levin. L. A. Vaynshteyn gave a survey of studies made in 1957-60 on electromagnetic diffraction and boundary conditions. G. D. Malyuzhinets reported on an idea by T. Yung, and pointed to the unfoundedness of Frenel's objection to Yung's ideas of diffraction. A. S. Alekseyev, V. M. Babich and B. Ya. Gel'chinskiy studied a radiation method for calculating the intensity of wave fields. M. D. Khaskind, in his report "Some problems of diffraction and excitation of waves on the impedance surface", extended the class of two-dimensional problems of diffraction of hydrodynamic surface waves. Ye. L. Feynberg, in his surveying report

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"Diffraction problems of the physics of elementary particles", described the principal properties of wave fields describing particles of different types. L. D. Bakhrakh and A. A. Pistol'kors gave a surveying report "On problems of the diffraction theory of actual importance to antennas for centimeter waves". N. N. Moiseyev discussed problems of the theory of waves propagating in a heavy liquid, Most reports were delivered in the section for exact and numerical solutions of diffraction boundary problems. G. D. Malyuzhinets and A. A. Tuzhilin found a closed solution for an electromagnetic field excited by an electric dipole in a wedge-shaped region V. Yu. Zavadskiy studied diffraction on a thin, elastic plate limited by a free straight edge by the method developed by G. D. Malyuzhinets . I. A. Viktorov exactly solved the problem of diffraction of a sine-shaped, plane wave in a rectangular elastic wedge with free edges in the form of a Sommerfeld integral. A. M. Rogov and Ye. A. Ivanov reduced some problems of the mathematical theory of diffraction to infinite systems of linear algebraic equations. V. I. Dmitriyev found the exact solution (in the form of a Fredholm integral equation of the first type) of the scalar wave equation in a stratified medium. G. V. Poddubnyy reported on the approximate solution for temperature waves in the floor under the insulation of a

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cooling apparatus. I. N. Kanevskiy experimentally confirmed the approximate formulas for the diffraction structure of the field of a convergent cylindrical front. N. A. Bazhina reported on the experimental verification of the limits of applicability of geometrical methods to acoustics. A report by V. A. Borovikov was entitled "The three-dimensional problem of diffraction of a plane wave on a plane screen with a wedge-sharped sector", and one by N. N. Govorun "The integral equations of the theory of antennas". A cycle of studies of the Symposium dealt with asymptotic methods in diffraction boundary problems: L. A. Vaynshteyn and A. A. Fedorov "On the scattering of plane and cylindrical waves by an elliptic cylinder and the concepts of diffraction rays", A. Ya. Povzner and I. V. Sukharevskiy delivered the report "Asymptotic expansions in some problems of shortwave diffraction", Yu. P. Lysanov studied the diffraction of a plane wave on an inhomogeneous surface with a reflection coefficient continuously variable between -1 and +1. V. I. Ivanov studied the asymptotic behavior of a two-dimensional Green function of the external problem for a parabolic cylinder. P. Ya. Ufimtsev supplied formulas for calculating the diagrams of scattering of plane waves of any polarization by thin cylindrical surfaces.

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Ye. N. Maysel's and P. Ya. Ufimtsev studied "The reflection of electromagnetic waves of circular polarization by metallic bodies", B. Ye. Kinber reported on "The diffraction of a cylindrical wave on the inner side of a circular cylinder", P. I. Tsoy found, by Poincaré's method, an asymptotic formula for the velocity potential of short sound waves inside and autside a cone. Among the "nonsteady problems" studied at the Symposium, the exact solutions of problems connected with the propagation of waves in inhomogeneous media of different types were most interesting. V. S. Boldyrev and I. A. Molotkov studied the accurate solutions of nonsteady problems of diffraction in the regions of the geometrical shadow. I. A. Molotkov studied the nonsteady propagation of waves in an inhomogeneous space at a rate of propagation dependent on z only. V. S. Boldyrev and Z. Ya. Yanson studied, by the method of boundary integrals and spherical vectors developed by G. I. Petrashen', the accurate solution of the problem of nonsteady propagation of waves in a spherical layer. N. V. Zvolinsiy expressed the point of discontinuity of differently high orders at the fronts of longitudinal and transverse waves by the differential characteristics of the applied load. V. A. Afanas'yev studied, by the radiation method, the shifts near the fronts while voltages are applied to the sur-

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face of an ellipsoidal semispace. L. M. Flitman solved, by Wiener-Khoper's method, the mixed boundary problem of the elasticity theory. Ye. B. Khanabev solved in quasisteady approximation the problem of "propagation of electromagnetic pulses in a conducting medium". According to O. G. Kozina, the field near the wave fronts is described by singular functions if the membrane in the screen plane has an axis of symmetry, and if its edge is described by an analytic function. A. A. Kaspar'yants studied a similar problem for a piston (without a screen). As early as in 1945, I. G. Petrovskiy had shown that any curve on the surface of an elastic body of any shape shifts along the surface if the shift vector has a discontinuity along this curve. The shift vector near the curve of discontinuity in first approximation must behave like the non-steady waves studied by S. L. Sobolev. V. Yu. Zavadskiy studied the properties of surface waves for an inhomogeneous elastic semispace in which the Lamé parameters represent piecewise smooth, differentiable functions of only one coordinate. G. I. Petrashen', I. A. Molotkov and P. V. Krauklis found the solution for the propagation of non-steady waves in media with plane-parallel, liquid, thin layers.

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Symposium on diffraction ...

G. S. Pod'yapol'skiy reported "On the behavior of a wave of the Rayleigh type at the separating line of two elastic media". A report by I. M. Khaykovich was entitled "On the scattering of waves on a curved, gently sloping separating line of two media". Yu. A. Ukhanov pointed out that the propagation of bending vibrations in a thin elastic plate approximately simulates the diffusion of the amplitude at the wave front on penetration of the sound through a hole in a screen. Two meetings of the Symposium dealt with the propagation of waves in a heavy liquid. Ya. I. Sekerzh-Zen'kovich studied two-dimensional free terminal vibrations of the interface between two layers of an ideal incompressible heavy liquid of different densities. N. N. Moiseyev reported on a general method of reducing the problem of steady waves in a stratified liquid with vortices to integrodifferential equations. A report by K. A. Bezhanov was entitled "On the interaction of a shock wave with a free surface of the liquid"; a report by S. S. Boyt, "On the diffraction of waves on a semiplane, the waves being formed on the surface of an infinitely deep ideal liquid by a periodically acting source". V. V. Musatov gave a surveying report on papers by Kriz concerning the propagation of waves in a rotating basin in the presence of solid walls.

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G. D. Malyuzhinets and V. P. Grizhukhin delivered a report on the "Solution of the linearized diffraction problem of gravitational waves on the water surface at an inclined bank by the method of the Sommerfeld-integral". B. N. Rumyantsev finds asymptotic formulas for the case where the initial momentum or the initial elevation of a surface are given in the form of a delta function. V. A. Magarik developed a numerical method for solving the nonlinear, plane, non-steady problem of destruction and diffraction of long waves on an inclined obstacle. A. S. Sal'kayev calculated the hydrodynamic forces acting on a cylinder floating on the surface of an undulating liquid. D. M. Anan'yev studied the longitudinal and transverse forces acting on a ship in the motion of the sea with the use of A. N. Krylov's and M. D. Khaskind's ideas. Acousticians and experts for the propagation of radio waves were interested in the section of reports on "Waves in stratified media". L. M. Brekhovskikh and V. A. Yeliseyevnin studied the propagation of sound waves in a waveguide accurately and in the approximation of geometric optics. G. I. Makarov described the propagation of radio waves in an ionized layer. E. M. Gyunnikin and G. I. Makarov reported on new asymptotic representations of Whittaker's functions in the propagation of radio waves. A report by

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L.M. Ponomarenko was entitled "The role of coherent scattering in the long--distance propagation of ultrashort waves". At the meeting on "Grates and undulating surfaces", M. I. Gurevich reported on a simple derivation of formulas for the sound conductivity and the reflection coefficient in Rayleigh's approximation for normal incidence of a sine-shaped, plane wave. G. D. Malyuzhinets developed a method for solving various problems of diffraction by transparent and nontransparent gratings under the action of any fields. A report by A. N. Sinov was entitled "Oblique incidence of a plane wave on a plane grate of parallel conductors". A. M. Model' and N. V. Talyzin reported on results of analysis of the diffraction of a plane wave on an infinite plane grate consisting of individual vibrators. I. A. Urusovskiy reported on "Diffraction of sound on a periodically uneven and inhomogeneous surface with given normal conductivity". R. G. Barantsev solved the steady problem of scattering of a plane wave by a surface of any periodicity. B. F. Kur'yanov studied the scattering of sound on an uneven surface representing a superposition of large and small irregularities. V. I. Aksenov calculated, on the basis of Kirchhoff's approximation. the scattering of electromagnetic waves by two-dimensionally sine-shaped or

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Symposium on diffraction ... S/053/61/074/002/003/003
B125/B203

serrated,conductive surfaces. The problems of the "Propagation of waves" took an important place within the Symposium. M. D. Khaskind studied the excitation of electromagnetic waves emitted by elementary electric and magnetic radiators, and the emission of electromagnetic waves by a thin gyrotropic layer. According to Yu. K. Kalinin and A. D. Petrovskiy, it is possible to analyze, by transition to certain approximate boundary conditions, the contradiction in the representation of the field above the separating line of two media in the form of a creeping plane wave, and to solve some diffraction problems at a slight difference of properties of the adjacent media. Yu. K. Kalinin analyzed the experimental data published during the last twenty years for from centimeter to kilometer waves,and showed that some inconsistencies between theory and experiment can be explained by considering the spherical shape of the earth. V. V. Novikov reported on the calculation of the propagation of pulsed signals emitted by a vertical electric dipole, considering the displacement currents in the earth. A report by E. M. Gyunniken, G. I. Makarov and A. V. Manankova studied the change in shape of an electromagnetic pulse in the propagation over the surface of the terrestrial globe. G. N. Krylov found a formula for the Hertzian vector

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and for the components of the electromagnetic field of a vertical dipole and a vertical antenna with sinusoidal current distribution. G. D. Malyuzhinets, N. D. Vvedenskaya and E. E. Shpol' reported on the numerical solution they had found with an electronic computer for the Cauchy problem of a Schrödinger equation. According to V. N. Krasil'nikov, a nearly bending-like deformation occurs on low-frequency wave processes in a liquid semispace limited by a thin elastic layer. Another meeting of the section for waveguides was concerned with "regular waveguides". M. G. Kreyn and G. Ya. Lyubarskiy delivered a report "On the theory of pass-bands of periodic waveguides". A report by N. A. Kuz'min was entitled "The potentials and the variations principle of the equations of electrodynamics in a curved, non-orthogonalcoordinate system", and A. Ya. Yashkin explained a new method of calculating the propagation constant and the critical frequency of electromagnetic waves in straight and curved waveguides. A report by A. F. Osadenko was entitled "On an analysis of the propagation of waves". Another conference of this section was concerned with "irregular waveguides". A. G. Sveshnikov and I. P. Kotik reported on efficient methods, with the use of fast computers, for calculating the propagation of waves in any waveguides. B. Z. Katsenelenbaum analyzed, by the method of cross sections, fields in

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irregular acoustic waveguides. A. D. Lapin's report was entitled "On the propagation of sound in a waveguide with rectangular channels on the walls". A. A. Kovtun and G. I. Makarov studied non-steady processes in the propagation of pulsed signals in a circular waveguide". M. S. Lifshits and M. Sh. Flerov delivered a report on "The synthesis of a transmission line for the propagation of waves". S. S. Kalmykova and V. P. Shestopalov studied the excitation of an E wave in a semi-infinite plasma waveguide. Yu. N. Dnestrovskiy and D. P. Kostomarov studied electromagnetic radiation produced by a modulated electron beam passing a plane waveguide with infinite flange. Another group of reports dealt with diffraction in optical instruments. According to L. A. Vasil'yev, it is possible to measure the angle of deflection of a wave front near the boundary of a transparent body and the decrease in density of a gas flow in plane shock waves after determining the intensity and arrangement of the diffraction maxima in the image plane of a shadow instrument. A further report by L. A. Vasil'yev was entitled "Limitation of sensitivity of shadow and interference instruments due to diffraction". L. A. Vasil'yev and O. M. Sineglasov determined the "Limitations of the method of the phase contrast due to diffraction, and limits of the applicability of the vector theory", and delivered a report on a "Comparison

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of characteristic features of the shadow method and the method of the phase contrast from the standpoint of the diffraction theory". The usefulness of methods suggested by the school of Mandel'shtam-Papaleksi is pointed out. The foundation of a periodical on problems of diffraction was urged. The next symposium on diffraction is to be held in Gor'kiy in 1962.