LYAMPERT, I. M.; YARESHKO, N. T.; AGABABOVA, E. R. (Moskva)

Streptococcal antigens in patients with chronic nephritis. Klin. med. no.2:81-88 '62. (MIRA 15:4)

1. Iz fakul'tetskoy terapevticheskoy kliniki (dir. - deystvitel'nyy chlen AMN SSSR prof. V. N. Vinogradov) I Moskovskogo meditsinskogo instituta imeni I. M. Sechenova i laboratorii streptokokkovykh infektsiy Instituta eksperimental'noy meditsiny imeni N. F. Gamalei (dir. - prof. S. N. Muromtsev) AMN SSSR.

(KIDNEYS—DISEASES) (ANTIGENS AND ANTIBODIES)
(STREPTOCOCCUS)

LYAMPERT, I.M.; VVEDENSKAYA, O.I.

On the question of obtaining the M-substance possessing antigenic properties from group A streptococci. J. hyg. epidem. 6 no.4:442-449 '62.

1. Gamaleya Institute of Epidemiology and Microbiology, Academy of Medical Sciences of USSR, Moscow.

(STREPTOCOCCUS) (ANTIGENS)

LYAMPERT, I.M.; BELETSKAYA, L.V.; BORODIYUK, N.A.; SMIRNOVA, M.N.

Antibodies reacting with human heart tissue in antistreptococcic rabbit serum. Zhur. mikrobiol., epid. i immun. 33 no.2:62-68 F '62. (MIRA 15:3)

1. Iz Instituta epidemiologii i mikrobiologii imeni N.F. Gamalei AMN SSSR.

(RHEUMATIC HEART DISEASE)
(SERUM) (STREPTOCOCCUS)
(ANTIGENS AND ANTIBODIES)

LYAMPERT, I.M.; GALACH'YANTS, O.P.; BELETSKAYA, L.V.; SMIRNOVA, M.N.

Antibodies against homologous heart tissue in the serums of animals immunized by streptococcus. Vop.revm. 3 no.1:3-10 Ja-Mr '63. (MIRA 16:4)

1. Iz Instituta imeni N.F.Gamalei (dir. - prof. P.A.Vershilova) AMN SSSR.

(STREPTOCOCCUS) (ANTIGENS AND ANTIBODIES) (HEART--MUSCLE)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001031020014-9"

LYAMPERT, I.M.; SMIRNOVA, M.N.; SEMINA, N.A.

Hypersensitivity of the delayed type in laboratory animals sensitized with streptococcal allergen. Zhur.mikrobiol., epid. i immun. 42 no.12:101-107 D '65. (MIRA 19:1)

1. Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

LYAMSHEV, L.M.

USSR.

534.24-8 1230

Reflection of Sound by Thin Plates in Water.— L. M. Lyamshev. (*C. R. Acad. Sci. U.R.S.S.*, 11th Dec. 1952, Vol. 87, No. 5, pp. 719-721. In Russian.) The nonspecular reflection of sound from brass and aluminium plates immersed in water was investigated experimentally using waves of frequency 1 Mc/s in pulses of duration 30 μs and repetition rate 50/sec. Reflection at angles related to the velocity of propagation of longitudinal waves in the plates was observed, in addition to that related to flexural waves [611 of 1949 (Finney)]. In a 0·8-mm-thick Al plate the respective angles were 16° and 43°, in a 0·58-mm brass plate the reflection maxima due to longitudinal waves occurred at 23°, those due to flexural waves at 66° and 74°; in a 0·38-mm brass plate, where the velocity of flexural waves is lower than the velocity of sound in water, only the maximum due to longitudinal waves was observed, at 23°. Experimental results are presented graphically.

Acoustics Inst, AS USSR

LYAMSHEV, L.M.; SUKHAREVSKIY, Yu.M., doktor tekhnicheskikh nauk, redaktor; TELESNIN, N.L., redaktor; MAKUNI, Ye.V., tekhnicheskiy redaktor

[Reflection of sound by thin plates and shells in liquids] Otrazhenie zvuka tonkimi plastinkami i obolochkami v zhidkosti. Moskva, Izd-vo Akademii nauk SSSR, 1955. 70 p. (MLRA 9:2)
(Sound waves)

LYAMSHEV, L.M.

534.26

4940. DIFFRACTION OF SOUND AT A THIN FINITE PLATE IN A LIQUID. L.M.Lyamshev.
Akust. Zh., Vol. 1, No. 2, 138-43 (1955). In Russian.

Discusses the problem of diffraction of sound at a thin plate in a liquid, taking into account longitudinal and flexural oscillations of the plate. It is shown that for certain angles of incidence of the sound wave, passage of sound through the plate is observed, also strong scattering in direction with reverse direction of the incident wave, the so-called non-specular reflection. The paper is entirely theoretical. C.R.S.Manders

Acoustics Inst. AS USSR

LYAMSHEV, LEONID M.

"Non-specular Reflection of Sound by Finite Plates and Shells in Liquids," paper presented at the Second International Congress on Acoustics, Cambridge, Mass., 17-23 Jun 56.

Acoustical Institute of the AS USSR, Moscow, USSR.

LYAMSHEV, L.M.

Studies on the field of scattering ultrasonic lenses in liquids. Akust. zhur. 2 no.1:103-104 Ja-Mr '56. (MIRA 9:6)

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

J-2

LYAMSHEV, L.M.

Category : USSR/Acoustics - Sound vibrations and waves

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2102

Author : Lyamshev, L.M.
Inst : Acoustics Institute, Academy of Sciences USSR
Title : Non-Mirrorlike Reflection of Sound From a Thin Cylindrical Shell

Orig Pub : Akust. Zh., 1956, 2, No 2, 188-193

Abstract : When a plane sound wave is incident on a thin bounded cylindrical shell at a certain angle to its axis, one observes a considerable scattering of the sound in a direction opposed to that of the incident waves, the so-called non-mirrorlike reflection. An analogous phenomenon was observed earlier in the scattering of sound by a bounded thin plate (cf. for example, Ref. Zhur. Fiz., 1956, 26537).

Using as an example the axially-symmetrical vibrations of a thin cylindrical shell, it is shown that the non-mirrorlike reflections are due to the vibrations of the shell induced by the external sound field. The theoretical propagation of axially-symmetrical oscillations in a thin infinite cylindrical shell are investigated for this purpose. It is established that in the high-frequency region, when the dimensions (radius) of the shell are large compared with the wavelength in the surrounding medium, the dispersion curve has two branches. One branch coincides asymptotically with the dispersion curve for

Card : 1/2

Category : USSR/Acoustics - Sound vibrations and waves

J-2

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2102

the longitudinal waves in the thin plate, and the other coincides with the curve for the flexural waves in the thin shell.

The reflection of sound from brass cylindrical shells in water was investigated with the aid of pulsed ultrasonic setup operating at 1 Mc. It was established that the directions of the non-mirrorlike sound reflections, in the case of shells that are large compared with the wavelength, almost coincide with the directions of the non-mirrorlike reflections from a plate, which are known to be due to the propagation of flexural and longitudinal waves along the plates.

Card : 2/2

Category : USSR/Acoustics - Sound vibrations and waves J-2

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2103

Author : Lyamshev. L.M., Rudakov, S.N.
Inst : Acoustics Inst., Acad of Sciences USSR
Title : Reflection of Sound by Thick Bounded Plates in Liquid

Orig Pub : Akust. Zh., 1956, 2, No 2, 228-230

Abstract : Report on an investigation of the reflection of sound from thick bounded brass, steel and aluminum plates in water, in a direction opposite to that of the incident wave. Non-mirrorlike reflections were observed in directions that do not agree with those of previously-known reflections. By "non-mirrorlike reflections" are meant strong anomalous sound scattering in a direction opposite that of the incident waves (cf, for example, Ref. Zhur. Fiz. 1956, 26537, for details).

It was established that the non-mirrorlike reflection of sound is observed every time that the phase velocity of the incident sound wave in the liquid along the plate becomes equal to the velocity of one of the normal waves in the plate (in the elastic layer).

Card : 1/1

LYAMSHEV, L. M.

"On the Theory of the Dispersion of Sound Produced by a Fine Rod", by L. M. Lyamshev, Acoustics Institute of the Academy of Sciences, USSR, Moscow, Akusticheskiy Zhurnal, Vol 2, No 4, Oct/Dec 56, pp 358-365

The expressions for the sound pressure of a dispersion field of a fine, infinite, elastic rod of circular cross section are found, taking into consideration its longitudinal and curvilinear vibrations. It was found that the vibrations of the rod may cause variation in the angular characteristics of dispersion.

It was determined that during the dispersion of sound by an elastic rod the phenomenon of space resonance may be observed when the phase velocity of the sound wave traveling lengthwise to the rod coincides with the velocity of the curvilinear or longitudinal waves in the rod and when the system is submerged in a liquid. It was found that in the case of space resonance the dispersion substantially increases. As in the partial case, the solution obtained is the Rayleigh formula for the dispersion of a plane sound wave by the rod with finite compressibility and density during the perpendicular incidence of the wave with the axis of the rod. It is noted that the internal losses in the rod material, in the case of a sufficiently fine rod, play the principal role during the dispersion of sound.

Sum 1219

LYAMSHEV, L. M.

Hungary/Acoustics - Sound Vibrations and Waves, J-2

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35548

Author: Lyamshev, L. M.

Institution: Acoustic Institute, Academy of Sciences USSR, Moscow

Title: Indirect Reflection of Sound by Thin Bounded Plates in Liquid

Original Periodical: Acta Phys. Acad. Sci. hung., 1956, 6, No 1, 33-65; English resumé

Abstract: A treatment of theory and experimental results of research on indirect (nonmirrorlike) reflection of sound by thin plates, including an observed new type of indirect reflection, due to transverse compression vibrations of the plate. An examination is made of the diffraction of a plane monochromatic sound wave by a thin bounded plate (strip). The flexural vibrations of the plate are described by a differential equation of the fourth order, and the longitudinal oscillations by an inhomogeneous wave equation for transverse symmetrical compression vibrations. The field of the scattered and the transmitted waves is sought in the form of an

Card 1/3

Hungary/Acoustics - Sound Vibrations and Waves, J-2

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35548

Abstract: integral with the aid of Green's theorem. The forces acting on the plate from the side of the wave fields are substituted in the right halves of the equations of plate vibrations, and the problem produces to the solution of 2 integro-differential equations with respect to the velocities of the normal displacement of the surface plate. The integro-differential equations are solved approximately by expanding the velocities of the displacement and of the pressures in series of the Eigenfunctions of the oscillations of the plate in vacuum. It is established that as a result of the flexural and longitudinal vibrations occurring when the sound strikes the plate at certain angles one can observe a strong scattering in a direction opposite to the direction of the incident wave, i.e., the so-called indirect reflection. It is explained that the indirect-reflection effect is due to the phenomenon of the spatial-frequency resonance. The concept of the length of the spatial settling of the oscillations is introduced. At a frequency of one mc, an experimental investigation is made with the aid of a pulse procedure of the reflection of sound from thin brass, steel, or aluminum plates in water. It was found that

Card 2/3

Hungary/Acoustics - Sound Vibrations and Waves, J-2

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35548

Abstract: the theory describes the phenomenon satisfactorily. Bibliography, 4 titles.

Card 3/3

LYAMSEV, L.M.

CARD 1 / 2 PA - 1477

SUBJECT USSR / PHYSICS
AUTHOR LJAMSEV, L.M., RUDAKOV, S.N.
TITLE The Reflection of Sound by a Thin Rod in Water.
PERIODICAL Dokl.Akad.Nauk, 110, fasc. 1, 48-51 (1956)
Issued: 11 / 1956 reviewed: 11 / 1956

In the case of some angles of incidence a strong reflection in the opposite direction of incidence of the wave is observed ("non-mirrorlike reflection"). The assumption that this reflection is caused by diffraction- and longitudinal waves in the rod was confirmed by experiments.
The device used for the examination of this reflection consisted of a trough with sound-absorbing walls which was filled with water, a generator for ultrasonic impulses, a quartz vibrator, a reception amplifier, and an impulse oscilloscope. The duration of impulse amounted to 30 μ sec and the repetition frequency of the impulses was 50 c. The rods had a thickness of less than 1 mm and were 30 mm long, the distance between them and the vibrator was ~ 150 cm. The angle of rotation was measured with an accuracy of 0,2° and the relative error when measuring the amplitude of the reflected wave does not exceed 10%.

The polar diagrams of the reflection of some copper-, aluminium-, and steel rods are shown in diagrams. The angles of non-mirrorlike reflection corresponding to rods of different materials are given. In the case of brass rods of 0,39 mm thickness such a reflection does not occur.
Next, the problem of the scattering of a plane sound wave by a thin rod sub-

Dokl.Akad.Nauk, 110. fasc.1, 48-51 (1956) CARD 2 / 2 PA - 1477

merged in a liquid is investigated in consideration of the shearing oscillations and longitudinal oscillations of the rod. The corresponding differential equation is given. Non-mirrorlike reflection occurs at the critical angle of $\sin \vartheta = c/c_x$. Non-mirrorlike reflection by infinitely long rods is due to the effect produced by free longitudinal waves (or shearing waves) which are reflected by the boundaries of the rod. If the above mentioned condition is satisfied, spatial resonance occurs if the amplitude of the longitudinal or shearing oscillations excited by the exterior field of sound increases considerably. In the case of an infinitely long rod and spatial resonance the amplitude of the scattered field can be considerably higher than the scattering amplitude in the case of a vertical incidence of a plane sound wave.

Losses in the interior of the material of the rod exercise an important influence on the scattering of sound in the case of sufficiently thin rods. The sharp decrease of the amplitude of non-mirrorlike reflection due to longitudinal waves is, in the case of steel rods, connected with the nonstationarity of the oscillations of the rod.

INSTITUTION: Institute for Acoustics of the Academy of Science in the USSR.

20-2-20/62

LYAMSHEV, L. N.

AUTHOR: Lyamshev, L.M.

TITLE: The Diffraction of Sound on a Thin Bounded Elastic Cylindrical Shell (Diffraktsiya zvuka na tonkoy ogranichennoy uprugoy tsilindricheskoy obolochke)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 2, pp. 271 - 273 (USSR)

ABSTRACT: The present paper examines the diffraction of the plane sound waves p_i = exp (ik cos Θ cos φ r + ik sin Θ z), (Θ signifies the angle of incidence) on a thin bounded cylindrical shell with a circular cross section by the method of the integrodifferential equation. The author uses more general assumptions than M. Junger, JASA, 1953, Vol. 24, p. 366; JASA, 1953, Vol. 25, Nr 899, who investigated only the special case of the vertical incidence of a plane wave on an unlimited shell. This shell whose axis is identical with the z-axis of the cylindrical coordinate system r, φ, z be fasten ed in the points z = 0, d in a cylindrical absolutely stiff and immovable screen.

Green's (Grin's) theorem and the condition of the equality of the

Card 1/3

20-2-20/62

The Diffraction of Sound on a Thin Bounded Elastic Cylindrical Shell

normal velocities are used here. The solution of the wave equation $(\Delta + k^2)p = 0$ can be represented in the form $p(r, \varphi, z) = p_i(r, \varphi, z) + p_r(r, \varphi, z) - i\omega\rho\int_s G(r, a, \varphi - \varphi', z - z')$ $w(\varphi', z')ds'$. In this connection s signifies the surface of the shell and $p_r(r, \varphi, z)$ signifies the known part of the solution which describes the field of the dispersion of an absolutely stiff unlimited cylinder. $G(r, a, \varphi - \varphi', z - z')$ with $r > r' - a$ means Green's (Grin's) function. This problem is reduced to the solution of a rather comprehensive system of integrodifferential equations with regard to $\omega(\varphi, z)$, which is given here. The solution of this system can be reduced to the solution of linear algebraic equations by developing the displacement speeds $u(\varphi, z)$, $v(\varphi, z)$, $w(\varphi, z)$ and pressures $p_i(a, \varphi, z) + p_r(a, \varphi, z)$ according to the eigenfunctions in series, e.g. $w(\varphi, z) = \sum_{m=0}^{\infty}\sum_{n=0}^{\infty} a_{mn} \cos m\varphi \sin(\pi nz/d)$. The coefficients a_{mn} can approximately be determined from algebraic equations and the final solutions are given. There are 11 references, 7 of which are Slavic.

Card 2/3

20-2-20/62

The Diffraction of Sound on a Thin Bounded Elastic Cylindrical Shell

ASSOCIATION: Accoustic Institute AN USSR (Akusticheskiy institut Akademii nauk SSSR)

PRESENTED: February 28, 1957, by N.N. Andreyev, Academician

SUBMITTED: February 27, 1957

AVAILABLE: Library of Congress

Card 3/3

LYAMSHEV, L. M.

"Radiation and Scattering of Statistical Sound Fields by Thin Elastic Shells and Plates."

paper presented at the 4th All-Union Conf. on Acoustics, Moscow, 26 May - 2 Jun 58.

46-4-1-8/23

AUTHOR: Lyamshev, L. M.

TITLE: Scattering of Sound by a Finite Thin Rod
(Rasseyaniye zvuka tonkim ogranichennym sterzhnem.)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol.IV, Nr.1,
pp.51-58. (USSR)

ABSTRACT: The author discusses scattering of a plane monochromatic acoustic wave on a thin elastic rod of finite length and circular cross-section, with longitudinal and flexural vibrations of the rod taken into account. It is found that vibrations of the rod may alter the angular characteristics of scattered waves. For certain angles of incidence of the acoustic wave strong scattering is observed in the direction opposite to the direction of the incident wave. This is described as non-specular reflection. In general, not only transverse flexural vibrations, but also transverse compressional vibrations (longitudinal vibrations) have to be taken into account. A non-homogeneous wave equation for longitudinal vibrations of the rod is deduced which allows for the action of external transverse forces on the rod. A similar equation for the transverse compressional vibrations of the rod is also obtained. Two Appendices deal with equations of

Card 1/2

Scattering of Sound by a Finite Thin Rod. 46-4 -1-8/23

motion for the rod allowing for the finite thickness of the rod, and with the wave equation for transverse compressional vibrations of a thin rod. The paper is entirely theoretical. There are 2 figures and 9 references, 5 of which are Soviet, 1 American, 1 English and 2 translations of Western work into Russian.

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

SUBMITTED: February 20, 1957.

1. Sound—Scattering 2. Rods—Applications

Card 2/2

46-4-2-8/20

AUTHOR: Lyamshev, L.M.

TITLE: Diffraction of Sound on an Infinite Thin Elastic Cylindrical Shell (Difraktsiya zvuka na bezgranichnoy tonkoy uprugoy tsilindricheskoy obolochke)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol IV, Nr 2, pp 161-167 (USSR)

ABSTRACT: Diffraction of a plane acoustic wave on a thin elastic infinite cylindrical shell was dealt with in Ref 2 by Junger. That treatment, however, was limited to the special case of normal incidence of the plane wave on the shell. The present paper deals with diffraction of sound on a similar shell in the case of oblique incidence of a plane acoustic wave, using the method of integro-differential equation (Ref 3) and assuming that the shell vibrations are described by equations given in Ref 4 by Kennard. Using Kennard's equations it is possible to take into account the effect of transverse deformations of the shell which are related to the longitudinal deformations, and which were not included in Junger's treatment (Ref 2). The author finds that the shell vibrations can alter to a great extent the polar scattering characteristic and the scattering power as compared with scattering by an absolutely rigid immobile cylinder of the same dimensions as the

Card1/2

46-4-2-8/20

Diffraction of Sound on an Infinite Thin Elastic Cylindrical Shell

shell. There are 2 figures and 11 references, 4 of which are Soviet, 3 American, 1 English and 3 translations of Western work into Russian.

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

SUBMITTED: March 26, 1957

Card 2/2

1. Cylindrical shells--Application 2. Sound--Diffraction 3. Cylindrical shells--Vibration

SOV-46-4-3-11/18

AUTHORS: Lyamshev, L. M. and Rudakov, S. N.

TITLE: An Experimental Study of Non-Specular Reflection of Sound by Finite Thin Rods in Water (Eksperimental'noye issledovaniye nezerkal'nogo otrazheniya zvuka tonkimi ogranichennymi sterzhnyami v vode)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, Nr 3, pp 283-285 (USSR)

ABSTRACT: Results of an experimental study of non-specular reflection of sound by thin finite rods in water are reported. The rods were made of aluminium steel and brass. A comparison is made between the experimental data and the theoretical predictions given in Ref.1. It is shown that non-specular reflection of sound by such rods is due to longitudinal and bending vibrations of rods, and the experimentally observed intensity distributions are satisfactorily described by the theory of Ref.1. There are 4

Card 1/2

SOV-46-4-3-11/18

An Experimental Study of Non-Specular Reflection of Sound by Finite Thin Rods in Water

graphs and 1 Soviet reference.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva (Acoustics Institute of the Soviet Academy of Sciences, Moscow)

SUBMITTED: March 26, 1958.

1. Sound--Reflection 2. Water--Acoustic properties 3. Rods--Acoustic properties

Card 2/2

SOV/30-59-2-18/60

7(1)

AUTHORS: Andreyev, N. N., Academician
Lyamshev, L. M., Candidate of Physical and Mathematical Sciences

TITLE: News in Brief (Kratkiye soobshcheniya)
Extension of Scientific Relations With the Hungarian Experts in the Field of Acoustics (Rasshireniye nauchnykh svyazey s vengerskimi spetsialistami v oblasti akustiki)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 2, p 76 (USSR)

ABSTRACT: From October 22 until November 3, 1958 the authors travelled to the (Hungarian People's Republic in order to carry out investigations. They visited institutions in Budapest,

Biophysics at the Medical State University at Pecs) and the radioworks at Szekesfehervar... They made studies of the development in the field of applied acoustics, acoustics of large rooms (Professor T. Tarnotczy of the State University in Budapest), of the acoustic characteristics of the Hungarian language and of ultrasonics. The Hungarian scientists expressed the wish to send young scientists to the USSR for the

Card 1/2

SOV/30-59-2-18/60

News in Brief. Extension of Scientific Relations With the Hungarian Experts in the Field of Acoustics

purpose of receiving further training.

Card 2/2

SOV/46-5-1-9/24

AUTHOR: Lyamshev, L.M.

TITLE: Scattering of Sound by Elastic Cylinders (Rasseyaniye zvuka uprugimi tsilindrami)

PERIODICAL: Akusticheskiy Zhurnal, 1959, Vol 5, Nr 1, pp 58-63 (USSR)

ABSTRACT: Figs 1, 2 and 3 show polar characteristics of reflection of acoustic waves at elastic cylinders of circular cross-section made of brass, aluminium and steel. Measurements were made in water in directions opposite to the direction of the incident wave. The ordinates of Figs 1-3 show the amplitudes of the reflected signal in decibels referred to a certain standard signal. The abscissae show the value of the angle of incidence θ in degrees. The value $\theta = 0^o$ represents the conditions when the acoustic wave is incident at right-angles to the cylinder axis. Measurements were made under pulse conditions using an apparatus described by the author in Ref 2. The pulses were of 30 msec duration, 50 c/s repetition frequency and the cylinders were of 10 mm diameter and 60 mm length. The cylinders were fixed in a rotating frame fitted with a pointer for reading the angles. The polar reflection characteristics given in Figs 1-3 show maxima of strong scattering (non-specular reflection). These maxima occur at θ = 12, 18, 22, 26, 28, 30, 34, 36, 40, 42, 44, 48^o on brass cylinders (Fig 1).

SOV/46-5-1-9/24

Scattering of Sound by Elastic Cylinders

The maxima of reflection at aluminium cylinders (Fig 2) occurred at 8, 12, 15, 17, 20, 24, 26, 30°. Non-specular reflection on steel cylinders (Fig 3) took place at 8, 11, 14, 18, 23, 25, 27, 30°. A theoretical analysis of scattering of plane acoustic waves by infinite elastic cylinders of circular cross-section was used to explain the experimental results. It was found that strong non-specular reflection of sound may be expected whenever free waves are excited in an elastic cylinder and propagated along it. Acknowledgments are made to S.N. Rudakov for his help in experiments. There are 4 figures and 6 references, 2 of which are Soviet, 2 English, 1 German and 1 translation from English into Russian.

ASSOCIATION: Akusticheskiy institut AN SSSR, Moskva (Acoustics Institute, Academy of Sciences, Moscow)

SUBMITTED: April 1, 1958

Card 2/2

SOV/46-5-1-21/24

AUTHOR: Lyamshev, L.M.

TITLE: On a Method of Solving the Problem of Radiation of Sound by Thin Elastic Shells and Plates (Ob odnom sposobe resheniya zadachi izlucheniya zvuka tonkimi uprugimi obolochkami i plastinkami)

PERIODICAL: Akusticheskiy Zhurnal, 1959, Vol 5, Nr 1, pp 122-124 (USSR)

ABSTRACT: The problem of radiation of sound by a thin elastic shell (plate) is formulated as follows. It is required to find the solution of the wave equation in the space surrounding the elastic shell or plate which executes harmonic vibrations under the action of a mechanical force distributed along the shell or plate surface. The solution must satisfy the condition of radiation to infinity and equality of normal displacements at the boundary between the shell or plate and the surrounding medium. The required solution may be obtained without discussing the edge conditions, if one uses the known solution of the diffraction field of a point source. The latter solution applies in the space outside the shell or plate. At distances from the source large compared with the wavelength of radiation and with the dimensions of the shell or plate, the diffraction field in the region occupied by the source may be regarded as the result of diffraction of a plane

Card 1/2

SOV/46-5-1-21/24

On a Method of Solving the Problem of Radiation of Sound by Thin Elastic Shells and Plates

wave. By way of example the author discusses radiation of sound by a closed spherical shell acted upon by a harmonic force given by Eq (11). There is 1 Soviet reference.

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

SUBMITTED: May 24, 1958

Card 2/2

LYAMSHEV, L.M.

Theory of the study of sound radiation by thin elastic shells and plates. Akust.zhur. 5 no.4:420-427 '59. (MIRA 14:6)

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

24(1)

SOV/20-125-6-15/61

AUTHOR: Lyamshev, L. M.

TITLE: On the Problem of the Principle of Reciprocity in Acoustics (K voprosu o printsipe vzaimnosti v akustike)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6, pp 1231-1234 (USSR)

ABSTRACT: Short reference is first made to several previous papers dealing with this subject. As far as the author knows, no mathematical formulation of the reciprocity principle has hitherto been presented, by means of which the connection between extensive sources in an acoustic medium, certain external forces acting upon shells, membranes, etc. and the radiation fields generated by these sources and bodies is expressed. The present paper deduces such a relation. An arbitrary volume Ω is assumed to exist, which is filled with an arbitrary combination of acoustic media and elastic shells (rods, membranes, etc.). These elastic shells are closed or bounded and are fastened to immobile screens. The surface of the shell is denoted by S_i, the contour of the fastening with Γ_i. The author investigates the field $p^{(1)}(\vec{r})$, which is generated by a system of spatial harmonic

Card 1/3

sources $Q^{(1)}(\vec{r})$ which is continuously distributed over Ω. In that case $p^{(1)}(\vec{r})$ is a solution of the equation $\Delta p^{(1)}(\vec{r}) + k^2 p^{(1)}(\vec{r}) = -Q^{(1)}(\vec{r})$ and satisfies certain boundary conditions, which are written down here. Another system of continuously distributed sources $Q^{(2)}(\vec{r})$ is further assumed to exist. The field $p^{(2)}(\vec{r})$ generated by these sources satisfies the equation $\Delta p^{(2)}(\vec{r}) + kp^{(2)}(\vec{r}) = - Q^{(2)}(\vec{r})$ and the already mentioned boundary conditions. After several steps a rather voluminous equation is obtained, which may be considered to be a mathematical formulation of the acoustic principle of reciprocity. The author then investigates several special cases and mentions several possibilities of applying the principle of reciprocity in form of the integral relations deduced in the present paper. Thus, it is necessary to find a solution of the problem of sound scattering by an elastic shell if the incident field is generated by a system of spatially distributed sources. The required solution is then reduced (if the problem of the field of the punctiform source in the presence of a shell is already solved) immediately to quadratures. An expression is then deduced for the spectral intensity of the static field of scattering. In the same way it is also possible to solve also the problem of the passage of the sound field through a shell (if this field is generated by regular or statistically produced sources). By means of the general relation derived in this case, it is possible to solve also the problem of radiation if the shell oscillates under the influence of forces, moments, shifts, etc (which are given on its boundary). The integral relation deduced in this paper holds also if quite generally elastic bodies (not only shells and membranes) exist in the acoustic medium. There are 7 references, 5 of which are Soviet.

ASSOCIATION: Akusticheskiy institut Akademii nauk SSSR (Acoustics Institute of the Academy of Sciences, USSR)

PRESENTED: January 20, 1959, by N. N. Andreyev, Academician

SUBMITTED: January 18, 1959

86357
S/046/60/006/004/006/022
B019/B056

10.6300
26.4260

AUTHOR: Lyemshev, L. M.

TITLE: The Calculation of the Acoustic Radiation of an Aerodynamic Turbulent Flow

PERIODICAL: Akusticheskiy zhurnal 1960, Vol. 6, No. 4, pp. 472 - 477

TEXT: On the basis of the equation by Lighthill (Ref. 1), a method of calculating the acoustic radiation of an aerodynamic turbulent flow into free space and in the presence of an elastic surface located outside the flow is here suggested. Lighthill's equation runs:

$$\frac{\partial^2 \varrho^{(1)}}{\partial t^2} - c_0^2 \Delta \varrho^{(1)} = \varrho_0 \frac{\partial^2}{\partial x_i \partial x_j} v_i v_j \qquad (1) .$$

The author obtains the following expression for the mean square pressure fluctuations:

$$\overline{|p^{(1)}(\vec{r}_1)|^2} = k^4 \int_{\Omega}\int_{\Omega} p_\alpha^{(2)}(\vec{r}\,') p_\beta^{*(2)}(\vec{r}\,'') K_{\alpha\beta}(\vec{r}\,' - \vec{r}\,'') d\vec{r}\,' d\vec{r}\,'' \qquad (11) .$$

Card 1/3

86357

The Calculation of the Acoustic Radiation of an Aerodynamic Turbulent Flow

S/046/60/006/004/006/022
B019/B056

It follows from this formula that for determining the spectral intensity of the acoustic radiation at any arbitrary point, the solution of the non-steady diffraction problem at this point must be known. With a given correlation function, the calculation of the spectral intensity is then a quadrature. In the equations hitherto dealt with, $\varrho^{(1)} = \varrho - \varrho_0$, ϱ denotes the density of the gas in the flow, ϱ_0 and c_0 the density of the gas and the velocity of sound in the resting gas, and $\vec{v}$ the pulsation rate in the turbulent flow. Furthermore, $K_{\alpha\beta}(\vec{r}' - \vec{r}'')$ is the spatial correlation function of the pressure-pulsations. An approximation of the spectral intensity is given with (12):

$$I_\omega(\vec{r}_1) \simeq \frac{k^4}{\varrho_0 c_0 16\pi^2 |\vec{r}_1|^2} \int_\Omega \int_\Omega p_{1\alpha}^{(2)}(\vec{r}') p_{1\beta}^{*(2)}(\vec{r}'') K(\vec{r}' - \vec{r}'') d\vec{r}' d\vec{r}'' \quad (12).$$

Calculation with (11) and (12) is considerably simplified within the range of high frequencies, because for calculating the spectral intensity of the radiation, the solution of the diffraction problem may be used, which is obtained by means of approximation methods of the diffraction theory.

Card 2/3

86357

The Calculation of the Acoustic Radiation of an Aerodynamic Turbulent Flow

S/046/60/006/004/006/022
B019/B056

A. N. Kolmogorov and A. M. Obukhov are mentioned. There are 10 references: 6 Soviet and 2 British.

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

SUBMITTED: March 4, 1960

Card 3/3

86367
S/046/60/006/004/017/022
B019/B056

6.8000 (3201,1099,1162)

AUTHOR: Lyamshev, L. M.

TITLE: The Sound Reflection From a Thin Moving Plate

PERIODICAL: Akusticheskiy zhurnal, 1960, Vol. 6, No. 4, pp. 505 - 507

TEXT: The author places a system of coordinates into a plate moving with the velocity V, the plate being in the XZ plane and moving in the positive X-direction. He gives the formulas for the sound field, which are solutions of a differential equation describing the sound propagation in a moving medium. The reflection coefficients A and B are obtained from suitable boundary conditions and the equation of motion of the plate:

$$A = \frac{ZZ_1\cos^2\theta(1+M\sin\theta)^2-2\varrho^2c^2}{\{Z_1\cos\theta(1+M\sin\theta)+\varrho c\}\{Z\cos\theta(1+M\sin\theta)+2\varrho c\}} \quad (7)$$

$$B = \frac{2\varrho cZ_1\cos\theta(1+M\sin\theta)-\varrho cZ\cos\theta(1+M\sin\theta)}{\{Z_1\cos\theta(1+M\sin\theta)+\varrho c\}\{Z\cos\theta(1+M\sin\theta)+2\varrho c\}} \quad (8)$$

Card 1/2

86367

The Sound Reflection From a Thin Moving Plate

S/046/60/006/004/017/022
B019/B056

Here $M = v/c$ is the Mach number, c is the velocity of sound in the medium, θ is the angle of incidence of the sound waves, and Z and Z_1 are the impedances of the plate for elastic vibrations and compression vibrations. If only the elastic vibrations are taken into account, the following holds:

$$A = \frac{Z\cos\theta(1+M\sin\theta)}{Z\cos\theta(1+M\sin\theta)+2\varrho c} \quad (11)$$

$$B = \frac{2\varrho c}{Z\cos\theta(1+M\sin\theta)+2\varrho c} \quad (12)$$

With M = 0 these formulas go over into the known formulas for immobile plates. There are 1 figure and 2 references: 1 Soviet and 1 US.

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

SUBMITTED: May 29, 1960

Card 2/2

LYAMSHEV, Leonid Mikhaylovich, kand. fiziko-matem. nauk; NEKHLYUDOVA, A.S., red.; RAKITIN, I.T., tekhn. red.

[Sound] Zvuk. Moskva, Izd-vo "Znanie" Vses. ob-va po rasprostraneniiu polit. i nauch. znanii, 1961. 39 p. (Narodnyi universitet kul'tury. Estestvennonauchnyi fakul'tet, no.8) (MIRA 14:9)
(Sound)

20235

10.6110

S/046/61/007/001/006/015
B104/B204

AUTHOR: Lyamshev, L. M.

TITLE: Sound emission of elastic shells produced by a turbulent aerodynamic flow

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 1, 1961, 59-66

TEXT: An approximate calculation of the sound field inside and outside a thin elastic shell is carried out which is produced by a subsonic turbulent flow. Proceeding from the differential equation for sound propagation in a turbulent medium, the author, by means of a voluminous calculation, obtains an integral for pressure, from which it may be seen that the sound field of a turbulent flow, if a shell is located under the flow, may be represented as a superposition of those sound fields, which are produced by the pressure pulsations, the viscous tensions in the flow, and the sound sources on the shell surface. Moreover, it was found by means of a dimension analysis that in the subsonic range and with elastic, but acoustically "soft" surfaces, the acoustic emission is caused mainly by the velocity pulsations. Here, it

Card 1/4

20235

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B104/B204

Sound emission of ...

is, however, assumed that the velocity pulsations are greater than those of pressure pulsations and those of viscous tensions. If, however, the shell surface is acoustically "hard", the velocity pulsations are of no importance. In this case, the sound field is essentially produced by the pressure pulsations and the pulsations of the viscous tensions of the shell surface. By closely studying the problem raised here, the author arrives at the conclusion that for calculating the sound emission of an elastic shell in a turbulent flow, a corresponding diffraction problem must be solved, and that the correlation tensor of the pulsations of velocity or pressure and of the pulsations on the shell surface must be determined. If the auxiliary solution and the correlation function are known, determination of the sound emission of an elastic shell located in a turbulent flow leads to a simple quadrature. As an example, the author calculates the sound emission of a thin moving plate, which performs oscillations by pressure pulsations. Shell diffraction on the edges of the plate and the reflection of the bending waves from the edges are neglected. Calculation is carried out for the Fraunhofer zone. For the mean square of pressure fluctuations an expression is obtained from the study of which an asymmetry in the direction

Card 2/4

20235

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B104/B204

Sound emission of ...

characteristic of sound emission is determined. This asymmetry increases with increasing velocity of the plate. In Fig. 1 various radiation characteristics are shown corresponding to different Mach numbers, which have been calculated according to the results obtained here. All these results hold also for the sound field in the interior of shells. As an example, the turbulent flow of a medium in a tube is dealt with in detail, where a velocity that is uniformly distributed over the cross section, is assumed. The author thanks L. M. Brekhovskikh, V. S. Grigor'yev, S. N. Rzhevkin, and V. A. Krasil'nikov for valuable discussions. There are 1 figure and 10 references: 5 Soviet-bloc and 5 non-Soviet-bloc.

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

SUBMITTED: November 16, 1960

Card 3/4

20235

S/046/61/007/001/006/015
B104/B204

Sound emission of ...

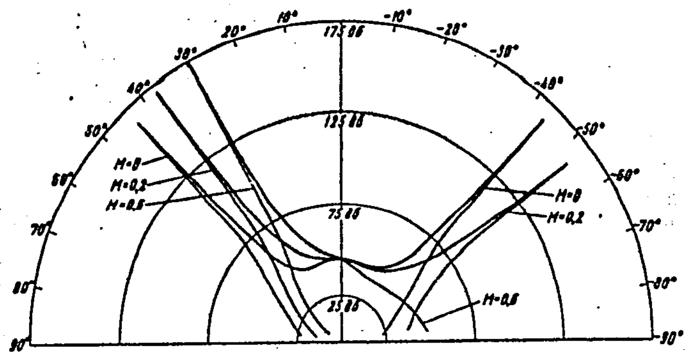

Fig. 1

Card 4/4

LYAMSHEV, L.M.; RUDAKOV, S.N.

Sound emission from plates and shells in water. Akust. zhur. 7 no.3:380-383 '61. (MIRA 14:9)

1. Akusticheskiy institut AN SSSR, Moskva.
(Elastic plates and shells) (Underwater acoustics)

23849
S/020/61/137/006/008/020
B104/B201

24.1200 1327, 1063, 1533

AUTHOR: Lyamshev, L. M.

TITLE: Acoustic emission from a turbulent flow in the presence of elastic boundaries

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 6, 1961, 1343-1346

TEXT: The author has made an approximative calculation of the acoustic emission from a flow containing aerodynamically thin, elastic bodies. The calculations are based on the equation of sound propagation in a turbulent flow, assuming the statistical processes to be steady. The equations can be used for calculating the spectral amplitude densities. The formulism developed here can be also extended to the case of characteristics slowly changing spatially and in time, i.e., to locally steady and homogeneous random fields. In a given zone Ω of the turbulent flow, the equation for the sound propagation in coordinates moving along with the mean flow velocity reads:

$$\Delta p - \frac{1}{c_0^2}\frac{\partial^2}{\partial t^2} p = -\frac{1}{c_0^2}\frac{\partial^2}{\partial x_i \partial x_j} T_{ij}, \quad (1).$$

Card 1/6

23849

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B104/B201

$T_{ij} = \varrho v_i v_j + s_{ij} + (p - c_0^2 \varrho)\delta_{ij}$; ϱ is the density; v_i are the components of the velocity pulsation; s_{ij} is the tensor of viscous stresses; p is the pressure of the flow; c_0 is the sound velocity in the unmoving medium. With $M = V/c_0 < 1$, one can put, by approximation, $T_{ij} \approx \varrho_0 v_i v_j + s_{ij}$, where ϱ_0 is the density of the incompressible gas. If one passes over to a coordinate system at rest using the relation between the pressure pulsations and the velocity pulsations, then

$$\Delta p^{(1)}(\mathbf{r}_0) - \frac{1}{c_0^2}\left(-i\omega + V\frac{\partial}{\partial x_1}\right)^2 p^{(1)}(\mathbf{r}_0) = -\frac{1}{c_0^2}\frac{\partial^2}{\partial x_i \partial x_j} P_{ij}(\mathbf{r}_0), \qquad (2)$$

will hold, where $P_{ij}(\vec{r}_0) \approx s_{ij}(\vec{r}_0) = p^0(\vec{r}_0)\delta_{ij}$. A thin, elastic body, stretching out markedly in the flow direction, is assumed to be inside on the coordinate system at rest, and the sound propagation is assumed to be described by (2). Moreover, the boundary conditions

$$\left.\frac{\partial p^{(1)}(\mathbf{r}_0)}{\partial \nu}\right|_s = -\frac{\rho_0}{c_0^2}\left(-i\omega + V\frac{\partial}{\partial x_1}\right)^2 w_{(\nu)}^{(1)}(\mathbf{r}_0), \qquad (3)-(6)$$

$$t(w^{(1)})_{(v)} = -c_0^2 \rho^{(1)}(r_0)|_s,$$
$$t(w^{(1)})_{(s)} = 0,$$
$$Aw^{(1)}(r_0) = -\frac{\partial}{\partial x_l}(c_{iklm}\varepsilon_{lm}(w^{(1)}))x_k^{(0)} = \beta w^{(1)}(r_0)|_{\Omega_1}.$$

are presupposed. Here, Ω_1 and s denote the volume and the surface of the elastic body; $\vec{w}$ is the elastic displacement vector; $\vec{t}(\vec{w}) = \tau_{ik} l_i \vec{x}_k^{(o)}$ denotes the stress vector of the stress acting upon a unit area of the surface of the elastic body; $\tau_{ik} = c_{iklm}\varepsilon_{lm}$ is the stress tensor. The auxiliary solution of a conjugate problem is introduced, which describes the regular non-statistical acoustic problem, and satisfies equation

$$\Delta\tilde{\rho}^{(2)}(r/r_0) - \frac{1}{c_0^2}\left(-i\omega - V\frac{\partial}{\partial x_1}\right)^2 \tilde{\rho}^{(2)}(r/r_0) = -\frac{1}{c_0^2}\delta(r - r_0), \quad (7).$$

(7) is conjugate to (2); by multiplication of (2) by $\tilde{Q}^{(2)}(\vec{r}/\vec{r}_0)$ and of (7) by $Q^{(1)}(\vec{r}_0)$, and by integration, the following integral equation is obtained:

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Acoustic emission from ...

$$-\int_{s+s_0}\left[\frac{\partial\rho^{(1)}(r_0)}{\partial\nu}\tilde{\rho}^{(2)}(r/r_0)-\frac{\partial\tilde{\rho}^{(2)}(r/r_0)}{\partial\nu}\rho^{(1)}(r_0)\right]ds(r_0)-$$
$$-\frac{2i\omega}{c_0}M\int_{s_0}\rho^{(1)}(r_0)\tilde{\rho}^{(2)}(r/r_0)ds(r_0)\,l_1+ \quad (A).$$
$$+M^2\int_{s_0}\left[\frac{\partial\rho^{(1)}(r_0)}{\partial\nu}\tilde{\rho}^{(2)}(r/r_0)-\frac{\partial\tilde{\rho}^{(2)}(r/r_0)}{\partial\nu}\rho^{(1)}(r_0)\right]ds(r_0)\,l_1=$$
$$=\frac{1}{c_0^2}\rho^{(1)}(r)-\frac{1}{c_0^2}\int_\Omega\frac{\partial^2}{\partial x_i\,\partial x_j}P_{ij}(r_0)\tilde{\rho}^{(2)}(r/r_0)\,d\Omega(r_0);$$
$$l_1\equiv\cos(\widehat{\nu x_1}),\quad M=V/c_0.$$

Basing on the abovementioned boundary conditions and with the aid of Green's theorem presupposing $\frac{\partial}{\partial x_j}P_{ij}(\vec{r}_0) = i\omega\varrho_0 v_i(\vec{r}_0)\Big|_s$ one obtains for the sound pressure the integral

$$p^{(1)}(r)=\int_\Omega P_{ij}(r_0)\frac{\partial^2}{\partial x_i\,\partial x_j}\tilde{p}^{(2)}(r/r_0)\,d\Omega(r_0)+ \quad (B).$$
$$i\omega\rho_0\int_s l_i v_i(r_0)\tilde{p}^{(2)}(r/r_0)\,ds(r_0)-\int_s l_j\frac{\partial}{\partial x_i}\tilde{p}^{(2)}(r/r_0)P_{ij}(r_0)\,ds(r_0)$$

Card 4/6

23849

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B104/B201

If there is an elastic body in the flow it follows that the acoustic field of a turbulent flow constitutes a superposition of the pressure pulsations and of the viscous stress pulsations over the pulsations of the surface sources. An analysis of dimensions shows that the total emissive power of the volume sources is proportional to the eighth power of the sound velocity (M^8). The power of the surface sources is proportional to M^6, and that of the velocity pulsations is proportional to M^4. Thus the body in the flow, if acoustically "soft", has an acoustic emission due to the velocity pulsations of a subsonic flow. If acoustically "hard", its acoustic emission is caused less by the velocity pulsations than by pressure pulsations and by pulsations of viscous stresses. In the further process, relation

$$\overline{|p^{(1)}(r)|^2} \approx \int_s\int_s \frac{\partial}{\partial v}\tilde{p}^{(2)}(r/r_0') \frac{\partial}{\partial v}\tilde{p}^{(2)*}(r/r_0'') F(r_0', r_0'')\, ds(r_0')\, ds(r_0''), \quad (9)$$

is obtained from (8) for the sound pressure. It follows that with $M \ll 1$ an acoustic wind need not be taken into account. In cases where an auxiliary solution and a correlation function are known, it is shown that the problem of the sound emission caused by a flow can be solved by quadrature. There

23849
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Acoustic emission from ...

are 9 references: 4 Soviet-bloc and 5 non-Soviet-bloc.

ASSOCIATION: Akusticheskiy institut Akademii nauk SSSR (Institute of Acoustics, Academy of Sciences USSR)

PRESENTED: October 26, 1960, by N. N. Andreyev, Academician

SUBMITTED: October 19, 1960

Card 6/6

LYAMSHEV, L.M.

Some integral relations in the acoustics of a moving medium. Dokl.AN SSSR 138 no.3:575-578 My '61. (MIRA 14:5)

1. Akusticheskiy institut AN SSSR. Predstavleno akademikom N.N. Andreyevym.
(Acoustics) (Integrals, Generalized)

LYAMSHEV, L.M.

Aeolian tones. Akust.zhur. 8 no.1:91-98 '62. (MIRA 15:4)

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

ANDREYEV, N.N., akademik, otv. red.; LYAMSHEV, L.M., kand. fiz.-matem. nauk, otv. red.; GUROV, K.P., red.izd-va; POLYAKOVA, T.V., tekhn. red.

[Problems of modern acoustics] Problemy sovremennoi akustiki. Moskva, Izd-vo AN SSSR, 1963. 174 p. (MIRA 16:9)

1. Moscow. Vsesoyuznyy institut nauchnoy i i tekhnicheskoy informatsii. (Sound)

LYAMSHEV, L.M.

Sound reflection from a cylindrical shell in a moving medium. Akust. zhur. 9 no.3:329-335 '63. (MIRA 16:8)

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

LYAMSHEV, L.M.

Sound diffusion by a cylindrical shell in a moving medium.
Dokl. AN SSSR 152 no.6:1339-1341 0 '63. (MIRA 16:11)

1. Akusticheskiy institut AN SSSR. Predstavleno akademikom
N.N. Andreyevym.

LYAMSHEV, L.M.

Sound reflection from a moving elastic rod. Akust. zhur. 9 no.4: 488-490 '63. (MIRA 17:3)

1. Akusticheskiy institut AN SSSR, Moskva.

LYAMSHEV, L.M.

Theory of vibrations of inhomogeneous elastic plates. Akust. zhur. 10 no.1:81-87 '64. (MIRA 17:5)

1. Akusticheskiy institut AN SSSR, Moskva.

LYAMSHEV, L.M.

Integral representation of the field of a point source in a moving medium. Akust. zhur. 10 no.1:124-126 '64. (MIRA 17:5)

1. Akusticheskiy institut AN SSSR, Moskva.

LYAMSHEV, L.M.

Reflection of sound at the interface of two moving media. Akust. zhur. 10 no.2:247-249 '64. (MIRA 17:6)

1. Akusticheskiy institut AN SSSR, Moskva.

L 36548-66

ACC NR: AP6016838 (N) SOURCE CODE: UR/0046/66/012/002/0261/0263

AUTHOR: Lyamshev, L. M.; Slosina, S. A.

ORG: Acoustics Institute, AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE: Influence of receiver dimensions on the results of measurements of the wall-pressure pulsation spectrum in the boundary layer

SOURCE: Akusticheskiy zhurnal, v. 12, no. 2, 1966, 261-263

TOPIC TAGS: boundary layer, vibration spectrum, pressure effect, pressure measurement, ~~spectrum analysis~~

ABSTRACT: In view of the lack of experimental data on the influence of the size and shape of the receiver membrane on the pressure-pulsation spectrum, and effect predicted theoretically in several papers, the authors have experimented on pressure receivers of the piston type with round membranes of 5, 10, 20, and 40 mm in diameter. The pressure receivers were mounted flush with the surface of a body of revolution, the walls of which were sufficiently massive and constituted in practice a solid stationary boundary with respect to a stream of water moving relative to the body with a speed of approximately 8 m/sec. The signal from the output of each receiver was recorded on a magnetic tape in the frequency range from 50 cps to 8 kcs.

Card 1/2 UDC: 534.6

L 36548-66

ACC NR: AP6016838

An annular spectral analysis of the obtained records in a 10% frequency band was then carried out. The results were compared with the theory and show that the data obtained with a receiver having a 10 mm membrane agreed more or less with the theoretical results. Better agreement for all membrane diameters is obtained if the data are plotted against a modified dimensionless parameter. The relation between the deviations of the experimental data and the closeness of the test frequency to the critical frequency is briefly discussed. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 08May65/ ORIG REF: 004

Card 2/2 MLP

ACC NR: AP6029532 (N) SOURCE CODE: UR/0046/66/012/003/0340/0345

AUTHOR: Lyamshev, L. M.

ORG: Acoustics Institute AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE: Diffraction of sound by a semi-infinite elastic plate in a moving medium

SOURCE: Akusticheskiy zhurnal, v. 12, no. 3, 1966, 340-345

TOPIC TAGS: acoustic diffraction, sound wave, elastic plate, elastic scattering, acoustic scattering

ABSTRACT: The author obtains an exact solution of the problem of diffraction of a plane monochromatic sound wave in a moving medium by a semi-infinite elastic plate. It is assumed that the plate can execute flexural oscillations and that the flow of the medium is homogeneous. A standard complex-variable integration technique using contour integrals, is used to obtain the solution. The role played by the vibrations of the plate and by the motion of the stream in the formation of the field of the scattered sound wave is discussed. It is also shown that the author's result agree with those obtained by others. Orig. art. has: 17 formulas.

SUB CODE: 20/ SUBM DATE: 07Jan65/ ORIG REF: 002/ OTH REF: 002

Card 1/1 UDC: 534.26

S/081/62/000/021/058/069
B160/B186

AUTHORS: Smirnov, V. K., Lyamshina, Ye. N., Bogatyrev, P. M.

TITLE: New chemically stable coating systems

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1962, 480 abstract 21P300 (Lakokrasochn. materialy i ikh primeneniye, no. 6, 1961, 23-25)

TEXT: New chemically stable paints and varnishes have been developed on the basis of resol phenol formaldehyde resin produced in the presence of an ammonia catalyst; glycerine dichlorhydrine and n-toluene sulfo-acid are introduced into the composition of the coatings as hardening accelerators. The coatings dry more quickly and at a lower temperature than films of bakelite varnish and varnish No. 86. Recipes are given for primers and top-coat varnishes recommended for the protection of chemical apparatus exposed to various aggressive media. 7 references. [Abstracter's note: Complete translation.]

Card 1/1

SMIRNOV, V.K.; LYAMSHINA, Ye.N.; BOGATYREV, P.M.

New chemically resistant systems of coatings. Lakokras. mat. i ike prim. no.6:23-25 '61. (MIRA 15:3)
(Protective coatings)

L 24769-65 EWT(d)/EPA/EWT(1)/EWP(m)/EWT(m)/EPF(c)/EWP(f)/EWO(v)/EPR/T-2/T/
EPA(bb)-2 Pe-5/Paa-4/Pr-4/Ps-4/Pw-4 WW/DJ

ACCESSION NR: AP5001135 S/0113/64/000/004/0005/0007

AUTHOR: Zaychenko, Ye. N., Lyamtsev, B.F., Chernyshev, G.D.

TITLE: The mechanical efficiency of an automobile turbocompressor

SOURCE: Avtomobil'naya promyshlennost', no. 4, 1964, 5-7

TOPIC TAGS: internal combustion engine, engine supercharger, engine turbocompressor, turbocompressor efficiency, turbocompressor friction, plain bearing

ABSTRACT: Improvement of engine design leads to an increase in shaft speed, lowering of dimensions and weight, and improvement of reliability. Plain bearings are currently used for turbocompressor rotors revolving at 40,000-60,000 rpm. Improved plain bearing assemblies now ensure lack of natural oscillations of the rotor. In these assemblies, the sleeve is placed in the bearing with a clearance and the sleeve revolves. The features of bearings with revolving sleeves have not been investigated sufficiently, however. On the basis of tests and theoretical analysis, a simple method has been worked out for the determination of mechanical losses in such bearings. The equation for mechanical efficiency of the turbocompressor shows that it depends on the friction losses in the bearings and on the power of the supercharger. The evolved equations assume that the center line of the shaft,

L 24769-65

ACCESSION NR: AP5001135

sleeve and bearings coincides with the axis of rotation, while the velocities of the boundary layers of the lubricant equal the velocities of the boundary surfaces. The velocity variation in the lubricant layer is considered linear. Using the calorimetric method it was possible to find the friction losses. The tests and theoretical analysis showed that friction in the thrust bearing was constant for all changes in axial load. The friction loss in the bearings varied depending on the peripheral velocity. Orig. art. has: 6 figures and 22 equations.

ASSOCIATION: NAMI, Yaroslavskiy motornyy zavod (Yaroslavl Motor Factory)

SUBMITTED: 00 ENCL: 00 SUB CODE: PR

NO REF SOV: 003 OTHER: 000

Card 2/2

MALEVSKAYA, S.S.; LYAMTSEVA, Yu.F.; LYAMTSEV, D.T.

Distribution of wood tar in the course of the sulfite cooking of woodpulp. Zhur.prikl.khim. 34 no.11:2533-2537 N '61. (MIRA 15:1)

1. Kafedra organicheskoy khimii Lesotekhnicheskoy akademii imeni S.M.Kirova.

(Woodpulp) (Wood tar)

KALMYKOV, A., rabochiy-obrubshchik (Stalingrad); NURULLAYEV, S. (Baku); MAVLYUTOVA, R.; SHCHEBLANOV, N.; SAVENKOV, F.; TERESHKOVA, R.; CHICHIKINA, N.; LYAMTSEV, V.; ROMANENKO, N. (Krasnoyarskiy kray); SUKHORUKOV, Ya.; GAYDRIK, P. (g.Gor'kiy); KALMYKOV, A. (Kostroma).

Letters to the editors. Sov. profsoiuzy 17 no. 3:42-47 F '61. (MIRA 14:2)

1. Direktor sredney shkoly No. 17, Chelyabinsk (for Mavlyutova). 2. Predsedatel' Belgorodskogo obkoma profsoyuza rabochikh pishchevoy promyshlennosti (for Shcheblanov). 3. Predsedatel' prezidiuma postoyanno deystvuyushchego proizvodstvennogo soveshchaniya tsekha kholodnoy shtampovki zavoda "Rostsel'mash" (for Savenkov). 4. Sekretar' Oymyakonskogo raykoma profsoyuza rabochikh.
(Trade unions)

LYAMTSEV, V.G. (Leningrad)

Atherosclerotic aneurysm of a coronary artery in conjunction with atherosclerotic aortic aneurysm. Arkh. pat. 26 no.12:73-74 '64. (MIRA 18:5)

1. Kafedra patologicheskoy anatomii I Leningradskogo meditsinskogo instituta imeni Pavlova (zav. - prof. M.A.Zakhar'yevskaya).

EXCERPTA MEDICA Sec.18 Vol.2/3 Cardiovascular Dis.Mar58

LYAMTSEV, V.T.

804. *The importance of hypertension in the pathogenesis of atherosclerosis (Russian text)* LYAMTSEV V. T. *Arkh. Patol.* 1957, 19/3 (29—32) Graphs 3 Tables 2

A survey is presented of autopsy reports with (1,597) and without (4,376) hypertension. Atherosclerosis was recorded in 97.8% of group I, and in 56.7% of group II; there was an increase with increasing age. In age group 20-40 atherosclerosis in group I was 4 times as frequent as that in group II, and it was also considerably more marked. Hypertension, therefore, must be regarded as a factor promoting atherosclerosis.

Brandt – Berlin (V, 18)

LYAMTSEV, V.T.

LYAMTSEV, V.T. (Leningrad)

Interamural hemorrhages in atherosclerosis of the aorta [with summary in English]. Arkh.pat. 19 no.12:40-46 '57. (MIRA 11:2)

1. Iz kafedry patologicheskoy anatomii (zav. - prof. M.A.Zakhar'yevskaya) I Leningradskogo meditsinskogo instituta imeni akad. I.P. Pavlova (dir. A.I.Ivanov)
(ARTERIOSCLEROSIS, compl.
intramural hemorrh. of aorta)
(AORTA, hemorrh.
intramural, in arteriosclerosis)

LYAMTSEV, V.T. (Leningrad)

Healing of atheromatous ulcers of the aorta. Arkh.pat. 21 no.3: 43-50 '59.
(MIRA 12:12)

1. Iz kafedry patologicheskoy anatomii (zav. - prof. M.A. Zakhar'-yevskaya) I Leningradskogo meditsinskogo instituta im. akad. I.P. Pavlova (dir. A.I. Ivanov).

(AORTA, ulcers
atheromatous, morphogenesis of healing (Rus))
(ARTERIOSCLEROSIS, compl.
aortic ulcers, morphogenesis of healing (Rus))

LYAMTSEV, V.T.

Fate of intramural hemorrhages in atherosclerotic plaques of the aorta. Arkh.pat. 21 no.11:57-62 '59. (MIRA 13:12)
(ARTERIOSCLEROSIS)

LYAMTSEV, V.T.

Thrombosis and embolism according to autopsy data. Sov.med. 24 no.12:48-56 D '60. (MIRA 14:3)

1. Iz kafedra patologicheskoy anatomii (zav. - prof. M.A.Zakhar'-yevskaya) I Leningradskogo meditsinskogo instituta imeni akademika I.P.Pavlova.

(THROMBOSIS) (EMBOLISM)

YERSHOVA, M.V.; LYAMTSEV, V.T.

Effect of phenyllin on the course of experimental myocardial infarct in rabbits. Kardiologiia 4 no.4:81-82 Jl-Ag '64 (MIRA 19:1)

1. Kafedra gospital'noy terapii (zav. - prof. P.K. Bulatov) i kafedra patologicheskoy anatomii (za. - prof. M.A. Zakhar'yevskaya) I Leningradskogo meditsinskogo instituta imeni I.P. Pavlova.

LYAMTSEV, V.T. (Leningrad)

Morphological characteristics of aortic atherosclerosis in syphiliti(aortitis. Arkh. pat. 26 no.4:53-59 '64. (MIRA 18:7)

1. Kafedra patologicheskoy anatomii (zav. - prof. M.A.Zakhar'yevskaya) I Leningradskogo meditsinskogo instituta imeni Pavlova.

LYAMTSEV, V.T.

Generalized retothelial sarcoma of the appendix. Vop. onk. 11 no.6:110-111 '65. (MIRA 18:8)

1. Iz kafedry patologicheskoy anatomii (zav. - zasluzhennyy deyatel' nauki prof. M.A.Zakhar'yevskaya) 1-go Leningradskogo meditsinskogo instituta imeni akademika Pavlova.

L 25990-66 EWT(1)/T JK

ACC NR: AP6016101 (N) SOURCE CODE: UR/0402/65/000/006/0680/0685

AUTHOR: Yablonskaya, V. A.; Boyko, V. I.; Lyamshev, V. V.; Rytik, P. G.

ORG: Rickettsiosis Department, Institute of Epidemiology and Mikrobiology im. N. F. Gamaleya, Moscow (Otdel rikketsiozov Instituta epidemiologii i mikrobiologii); Rickettsiosis Department, Belorussian IEMG (Otdel rikketsiozov Belorusskogo IEMG)

TITLE: Experience in the mass vaccination of humans with combined live typhus fever vaccine from the E strain of Rickettsia prowazeki

SOURCE: Voprosy virusologii, no. 6, 1965, 680-685

TOPIC TAGS: vaccine, man, human ailment, antigen, immunization

ABSTRACT: Recent studies (Golinevich, Ye. M., Yablonskaya, V. A., Voprosy Infektsionnoy Patologii i Immunologii [Problems of Infection Pathology and Immunology], Moscow 1963, pp 199 and 212) of the reaction produced by live typhus fever vaccine E (ZhSV-E) showed that 5.14 to 12.2% of the persons inoculated experience late reactions. Hence, the authors present the results of an investigation of the possibilities for maximally reducing the reaction to this vaccine. Since 84% of the late reactions appeared on the 11th to 17th day following vaccination, it was thought advisable to organize the immune readjustment of the organism within the first 10 days of the incubation period so that the vaccinal infection with late fever reaction would occur against a definite immune background. In this connection, the authors

Card 1/2

UDC: 616.981.711-084.47:[615.371:576.851.71

L 25990-66

ACC NR: AP6016101

thought it promising, in order to reduce the percentage and extent of the late reactions produced by the typhoid fever vaccine E, to simultaneously administer a dissolved antigen of Rickettsia prowazeki as the most immunogenic in a combination with live typhus fever vaccine of the E strain of Rickettsia prowazeki. This combined live typhus fever vaccine was administered to 1,610 persons aged 16 to 60, with encouraging results; late reactions following inoculation were observed in 2.6% of cases, and their intensity and duration were much smaller compared with the late reactions following vaccination with non-combined typhus fever vaccine. Early general reactions were observed in 6%, and local reactions, in 11% of cases. The immunological efficacy of the combined typhus vaccine, as indicated by the complement fixation test, is twice as high as that of the non-combined vaccine. The live combined typhus fever vaccine E is recommended for the mass immunization of humans. Orig. art. has: 3 tables. [JPRS]

SUB CODE: 06 / SUBM DATE: 05May64 / ORIG REF: 008

Card 2/2

MALEVSKAYA, S.S.; LYAMTSEVA, Yu.F.; LYAMTSEV, D.T.

Distribution of wood tar in the course of the sulfite cooking of woodpulp. Zhur.prikl.khim. 34 no.11:2533-2537 N '61. (MIRA 15:1)

1. Kafedra organicheskoy khimii Lesotekhnicheskoy akademii imeni S.M.Kirova.

(Woodpulp) (Wood tar)

LYAMZIN, I.T.

Ways to eliminate complaints. Bum.prom. 38 no.9:9 S '63. (MIRA 16:11)

1. Glavnyy tekhnolog Ryazanskogo kombinata iskusstvennogo volokna.

LYAMZIN, I.T.; CHEREPANOV, V.N.; MATVEYEVA, S.P.; YEGOROVA, A.S.; BUYLENKO, V.I.

Destruction of alkali in the presence of sodium chlorate contained in the caustic soda solution. Khim. volok. no.3:57 '65. (MIRA 18:7)

1. Ryazanskiy kombinat iskusstvennogo volokna.

LYAMZIN, I.T.

Protection of viscose pipelines from corrosion. Khim. volok. no.4:62 '63. (MIRA 16:8)

1. Ryazanskiy zavod iskusstvennogo volokna.

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RZHONSNITSKIY, V.B.; LYAMZIN, O.M.

Calculation and mapping of the magnitudes of tide-forming forces. Vest. LGU 19 no.12:81-94 '64 (MIRA 17:8)

MEDVEDEV, S.V.; LYAMZINA, G.A.

Seismic effect of blasting in mines. Trudy Inst. fiz. Zem. no.21. Vop. inzh. seism. no.6:73-102 '62. (MIRA 15:9)
(Blasting)

LYAMZINA, G. A.

Study of the seismic properties of soils for purposes of seismic microzoning. Trudy Inst. fiz. Zem. no.22. Vop. inzh. seism. no.7:66-75 '62. (MIRA 15:10)

(Seismology)

MEDVEDEV, S. V.; BUNE, V. I.; GZELISHVILI, I. A.; KARAPETYAN, B. K.; KATS, A. Z.; LYAMZINA, G. A.; PIRUZYAN, S. A.; POPOV, V. V.; SAMKOV, B. N.; SHAGINYAN, S. A.

Instructions on conducting seismic microzoning. Trudy Inst. fiz. Zem. no.22. Vop. inzh. seism. no.7:112-122 '62. (MIRA 15:10)

(Seismology)

LYAMZINA, G.A.
p. 3, 4

PHASE I BOOK EXPLOITATION SOV/5334

Akademiya nauk SSSR. Institut fiziki Zemli

Voprosy inzhenernoy seysmologii, vyp. 3 (Problems in Engineering Seismology, No. 3) Moscow, 1960. 191 p. 1,700 copies printed. (Series: Its: Trudy, no. 10 (177)

Resp. Eds.: S.V. Medvedev, Doctor of Technical Sciences, and A.Z. Kats, Candidate of Physics and Mathematics; Ed. of Publishing House: L.K. Nikolayeva; Tech. Ed.: P.S. Kashina.

PURPOSE: This book is intended for seismologists, and engineers concerned with the construction of earthquake-resistant buildings.

COVERAGE: This is a collection of 15 articles by different authors on problems of engineering seismology. Individual articles discuss the effects of quakes on various structures; seismic activity in the Sochi-Khosta, Krasnaya Polyana, and Pokrovsk-Ural'skiy regions; and ground vibrations during strong earthquakes. One article discusses the effect of the detonation of 3100 tons of explosives on buildings located 1000 m away. No personalities are mentioned. Each article is accompanied by references.

Card 1/4

Problems in Engineering Seismology, No. 3 SOV/5334

TABLE OF CONTENTS:

Card 2/4

Problems in Engineering Seismology, No. 3

SOV/5334

Korf, M.G. Applying Seismometric Data to Computations for Seismic-Resistant Structures 182

Yershov, I.A., and G.A. Lyamzina. On the Seismic Effect of an Explosion in the Pokrovsk-Ural'skiy Region 189

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Card 4/4

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LYAMZINA, G. A.

[illegible] SOV/[illegible]

Akademiya nauk SSSR. Sovet po seysmologii

Byulleten', No. 8: Voprosy seysmicheskogo rayonirovaniya (Bulletin of the Council on Seismology, Academy of Sciences USSR, No. 8: [illegible] of Division Into Seismological Districts) Moscow, [illegible]. [illegible] p. [illegible] copies printed.

Resp. Ed.: S. V. Medvedev, Doctor of Technical Sciences; [illegible] House: I. A. [illegible], and L. K. [illegible]; Tech. Ed.: [illegible]

PURPOSE: This publication is intended for seismologists.

COVERAGE: The publication contains articles based on [illegible] meeting of the Council on Seismology held in [illegible] articles reflect the present state of [illegible] ization" and discuss the following problems: [illegible] ization and microregionalization, methods of [illegible] seismic [illegible], instrument and descriptive data on [illegible] seismic regions of the USSR, and the relationship between [illegible] geological structure. The articles are accompanied by diagrams, [illegible]

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Card 6/6

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3,9300

AUTHOR: Lyamzina, G. A.

TITLE: Determining the velocity of elastic short wave propagation for the purpose of studying seismic ground properties

SOURCE: Akademiya nauk SSSR. Sovet po seysmologii. Byulleten', no. 8, Moscow, 1960. Voprosy seysmicheskogo rayonirovaniya, 217-225

TEXT: A simple device, permitting the propagation velocity of short waves (0.5-2 m) through concrete, brickwork, ordinary ground, etc., to be determined, is described. It is mainly intended for signalling regional earthquakes during field studies and is based on the use of two contact seismoscopes, first proposed by V. S. Voyutskiy. The operating principle, the design and calculation of the mechanical system of the seismoscopes, and experimental results are discussed and illustrated. The electrical system is essentially a compensating bridge with a diagonally placed ballistic galvanometer and two seismoscopes mounted on the arms. The voltage is fed from a battery to the opposite arm, with the aid of resistances, the bridge

Card 1/3

31761
S/519/60/000/008/030/031
D051/D113

compensates so that the current through the galvanometer is equal to zero, when the seismoscopes are closed and the battery is switched on. The current starts flowing when the contact of the first seismoscope is broken and stops flowing when that of the second seismoscope is broken. The flow duration is the time interval needed for the wave to pass from one seismoscope to the other. The tests were intended to determine the time of opening and similarities in the operation of the seismoscopes and to measure the velocity of elastic waves in different media. It was found that the mean spread of time differences in the contact opening was about $1 \cdot 10^{-5}$ sec.. It was also established that a 50% difference in the loads applied to the contacts practically does not affect the times of opening. The device gave the best results when measuring wave velocities in hard media, such as wood, concrete, etc. For measuring the propagation of waves passing through ordinary ground, contact seismoscopes with a higher moment of inertia of the pendulum and a short distance from the contact to the swinging axis of the pendulum are recommended. This small-sized device is highly sensitive and consumes little electric power. It permits immediate readings. A shortcoming is, that recording is limited to the first pulse of the elastic wave. There are 7

Determining the velocity of elastic ...

31764
S/519/60/000/008/030/031
D051/D113

figures and 4 Soviet references.

ASSOCIATION: Institut fiziki Zemli AN SSSR (Institute of the Physics of the Earth of the AS USSR)

Card 3/3