APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G. P.

USSR/Chemistry - Ion Exchange

Card 1/2

Authors : Materova, E. A., Vert, Zh. L., and Grinberg, G. P.

Title : Ion exchange in organo-aqueous solutions

Periodical : Zhur. Ob. Khim, 24, Ed. 6, 953 - 965, June 1954

Abstract : The process of ion exchange was investigated in alcohol-water and acetone-water solutions. It is shown that B. P. Nikol'skiy's isotherm equation is well applicable to exchange processes in organo-aqueous solutions. The ions exchange process was investigated in dynamic conditions in aqueous and organo-aqueous solutions. The exchange process in an organo-aqueous medium has a much higher rate than in water and the rate increases with the increase in the content of the organic substance in the solution. The swelling of SBS cationate was determined in relation to the composition of the solution. It was found that the swelling increases linearly

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GRINBERG, G.M.

Adjustment controls for triangulation calculations [illegible] computer. Geod. i kart. no.7:25-28 J. [illegible]

[illegible]

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GRINBERG, G.M.

Practice of one man adjusting small triangulation nets. Geod.i kart. no.8:21-28 Ag '62. (MIRA 15:8)
(Triangulation)

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GRINBERG, G.M.

Check of corrections of horizontal directions for reduction to a plane. Geod.i kart. no.3:21-24 Mr '62. (MIRA 15:12)
(Surveying)

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GRINBERG, G.M.

Metal triangulation signals. Geod.i kart. no.3:25-27 Mr '60. (MIRA 13:6)

(Triangulation towers)

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SOV/6-60-1-4/17

Portable External Triangulation Signal With Screwless Joints

quadrupod and tripod pyramids is the same in principle. 40% of round timber, 73% of cut timber, and 50% of nails are saved by these new signals. A portable external metallic signal, including material, costs 1100 rubles. It is convenient to use such composite signals in woodless regions. There are 2 figures.

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SOV/6-60-1-4/17

3(4)

AUTHOR: Grinberg, G. M.

TITLE: Portable External Triangulation Signal With Screwless Joints

PERIODICAL: Geodeziya i kartografiya, 1960, Nr 1, pp 28-30 (USSR)

ABSTRACT: In setting up a simple signal, 67% of the timber and nails are used for the external pyramid. Instead of simple signals 4-12 m high, only internal pyramids were built in establishing the triangulation net of 2nd and 3rd order in one of the steppe areas by the Moskovskoye aerogeodezicheskoye predpriyatiye (Moscow Aerogeodetical Service) in 1957-58. In this case, the observations were made from portable external metallic signals. 10 such portable signals were built (Fig 1). The first design showed some shortcomings, and was improved later (Fig 2). The signal is described. Its maximum height to the table is 11.2 m. It is made of angle steel, and weighs 723 kg complete with boards and suspended ladder. It is made up of component parts with a maximum length of 3.85 m, and a weight of 10.6 kg. The parts are joined without screws. These external signals may be carried on the same truck along with the brigade, or on a two-horse draft. A tripod pyramid was also designed to reduce the number of parts and the weight. The construction of the

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SOV/6-59-7-4/25

Results of the Competition for the Best Improving Suggestion

(Severo-Zapadnoye AGP (North-west AGP)) "Template [illegible] for Determining the Corrections of Centering and Reducing With an Auxiliary Scale for Determining the Corrections of the Curvature of the Image of the Geodetic Line and of the Spheric Excess". 3) V. G. Mauverer (Moskovskoye AGP (Moscow AGP)), "Variation of the Construction of the Heliotrope". 4) G. M. Shlefendorf (Moskovskoye AGP (Moscow AGP)), "Zero Thermostat for the Gravimeters of the GAK-ZK-type". 5) P. I. Popov (Moskovskoye AGP (Moscow AGP)), "Device for Cutting Aluminum". 6) A. I. Fikhman and G. M. Grinberg (Moskovskoye AGP (Moscow AGP)), "Prospecting Mast". 7) Ya. I. Negnevitskiy, N. A. Pashkevich and M. F. Glushanin (Minskaya kartograficheskaya fabrika (Minsk Cartographic Institute)), " A Workbench Device for Mixing Offset Colors". 8) I. L. Gintsberg (Tashkentskaya kartograficheskaya fabrika (Tashkent Cartographic Institute)), "Device for Grinding the Edges of Plate Glass". 9) A. A. Vnukov (Tashkentskaya kartograficheskaya fabrika (Tashkent Cartographic Institute)), a) "Mechanism for Inclining the Grinding Case". b) "Mechanism for Lifting the Trough With the Balls". 10) T. I. Yurchenko and S. A. Lonshteyn (Tashkentskaya kartograficheskaya fabrika (Tashkent Cartographic Institute)), "Automatic Switch-off of Arc Lamps". 11) I. V. Vasil'yeva (Tashkentskaya kartograficheskaya fabrika (Tashkent Cartographic Plant), "Increase in the Durability of Light-sensitive Rubber Solution (Adhesive)". 12) V. M. Sher (Kiyevskaya kartograficheskaya fabrika (Kiyev Cartographic Plant), "Correspondence of the Stroke-elements on Topographic Maps With the Letters on the Machine Printing Forms". 13) V. V. Bozrikov, S. F. Yakunin (Rizhskaya kartograficheskaya fabrika (Riga Cartographic Plant), "On the Improvement in the Construction of Mechanisms for Pressing-on the Inking Rollers and Friction Drums on the Offset Machines 'Planeta-Super-Kvinta'". 14) A. Ya. Simanovskiy (Rizhskaya kartograficheskaya fabrika (Riga Cartographic Plant), "A Rational Method of Making Positives of Printing Forms of Relief Printing on Tracing Paper for Printing Books on Offset Machines". 15) O. M. Yankovskiy (Rizhskaya kartograficheskaya fabrika (Riga Cartographic Plant), "Synchronization and Automatization of the Switching on and off of Arc Lamps and of the Suction Fan in the Copying Department". 16) V. F. Alampiyev (Rizhskaya kartograficheskaya fabrika (Riga Cartographic Plant), "Variation in the Technology of Making Sets of Outline Maps of the Fifth Class". 17) V. V. Il'yushin (Rizhskaya kartograficheskaya fabrika (Riga Cartographic Plant), "Preparation of Collecting- and Corresponding Positives by the Method of the Washed-out Relief on 'viniproz'". 18) V. M. Dudochkin (Tbilisskaya kartograficheskaya fabrika (Tbilisi Cartographic Plant), "Switching off the Motor of the Compressor on the Copying Frame by Means of the Change Lever for Lifting the Glass and by Means of the Vacuum". 19) D. I. Matkava (Tbilisskaya kartograficheskaya fabrika (Tbilisi Cartographic Plant), "Device for Laying on the Negatives in Copying". 20) N. M. Serbin (Tbilisskaya kartograficheskaya fabrika (Tbilisi Cartographic Plant), "Device for Drying Paper on Offset Machines". 21) S. M. Konstantinova (Tbilisskaya kartograficheskaya fabrika (Tbilisi Cartographic Plant), "Progressive Method and Procedure for the Preparatory Work in Calculating and Plotting the Geographic Network on Maps to Be Compiled". 22) K. I. Mironov (NRKCh) "A Workbench for Repairing the Guides of the Offset Machine". 23) Yu. P. Tarasov (NRKCh) "Device for Regulating the "taler" of the Offset Machine". 24) Ye. N. Klyuchanskaya and S. V. Nesterova (NRKCh) "Improving the Method of Precipitating the Silver Nitrate in Used Solutions".

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Card 5/6

Card 6/6

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CRINBERG, G.M.

3(2), 3(4) SOV/6-59-7-4/25

AUTHOR: Sokolova, O. I.

TITLE: Results of the Competition for the Best Improving Suggestion (Itogi konkursa na luchsheye ratsionalizatorskoye predlozheniye)

PERIODICAL: Geodeziya i kartografiya, 1959, Nr 7, pp 17-21 (USSR)

ABSTRACT: In May 1959, the ordinary competition for the best improving suggestion in the field of topographic-geodetic and cartographic production was concluded at the Glavnoye upravleniye geodezii i kartografii MVD SSSR (Main Administration of Geodesy and Cartography of the Ministry of Internal Affairs of the USSR). 7 aerogeodetic services, 8 cartographic institutes and NRKCh took part. A total of 30 topographic-geodetic, and 31 cartographic, suggestions were submitted. The 1st prize of 1,000 rubles was awarded to V. A. Morozov and V. V. Drusov (Minskaya kartograficheskaya fabrika (Minsk Cartographic Plant) for the "Seamless Fastening of Atlas Blocks". The 2nd prizes of 750 rubles were awarded to: 1) Ya. L. Bratalavskiy, V. M. Varzugin, Yu. N. Galitskiy, O. P. Shetler and V. P. Stepanov (NRKCh) for "Technology of the Use of Standard Bases (tipovaya osnova)". 2) I. V. Gurevich, V. M. Varzugin, E. O. Radovil'skaya, O. D. Shetler, L. I. Smeyakova for "Technology of the Manufacture of Combined Diapositives" (NRKCh). 3) D. A. Larin (Moskovskoye AGP (Moscow AGP)) for "Reduction of Work in Evaluating the Accuracy of Symmetric Geodetic Nets Formed by Figures of Regular Shape". 4) N. V. Shreyber (Novosibirskoye AGP (Novosibirsk AGP)) for "Light Collapsible Ladder of Dural for Prospecting". - The 3rd prizes of 500 rubles each were awarded to: 1) I. F. Shevaldin (Yakutskoye AGP (Yakutsk AGP)) for "Establishment of Fixed Points by the Method of Thawing by Means of Vapor". 2) Y. D. Ol'shanskiy (Yakutskoye AGP (Yakutsk AGP)) for "Construction of an Overhead Trolley for Timber Transport". 3) I. A. Kyzin (Moskovskoye AGP (Moscow AGP)) for "Variation in the Attachment of Photographs on the STD-2". 4) V. F. Zarubin (Moskovskoye AGP (Moscow AGP)) for "Raising of Geodetic Signs by 5-7 Meters". 5) D. I. Smirnov, I. V. Gurevich, Z. I. Aleksandrova, V. M. Varzugin, V. K. Kirillov and I. Ye. Kislyakov (NRKCh) for "Technology of the Completion and Edition of Topographic Maps by the Photorelief Method". 6) M. P. Gluchanin (Minskaya kartograficheskaya fabrika (Minsk Cartographic Institute)) for "Vertical Piling Machine for Brochures". 7) A. A. Vnukov (Tashkentskaya kartograficheskaya fabrika (Tashkent Cartographic Institute)) for "Mechanism for the Loading of Trucks With Paper Rolls". 8) A. N. Tsokolenko (Ukrainskoye AGP (Ukrainian AGP)) for "Replacement of the Arc Lamp for the Heliographic-printing Machine KF-1 by an Illuminating Device With Luminescent Lamps DS-40". 9) G. M. Gridor'yev (Sverdlovskoye AGP (Sverdlovsk AGP)) for "Ruler for Drawing in the Preparation of Map Compilations and Final Compilations". 10) [illegible] Izrailev (Severo-Zapadnoye AGP (North-west AGP)) for "Improvement of the Contact Mechanism in the Micrometer by Vodar". 11) G. M. [illegible]yev (Moskovskoye AGP (Moscow AGP)) for "Formulas and Form for a More Rational Computation of Superelevations From the Trigonometric Leveling". 12) D. [illegible] Vil'ner (Sverdlovskoye AGP (Sverdlovsk AGP)) for "New Numbering and Painting of Leveling Staffs". 13) [illegible] (Moskovskoye AGP (Moscow AGP)) for "Formulas and Table for Extreme Divergences Between the Free Terms of Polar and Base Conditions Computed on a Plane and on a Ball". - Besides, the following suggestions were approved by the jury: 1) V. T. Trykov (Sverdlovskoye AGP (Sverdlovsk AGP)), "Underframe for Observations From the Telescopic Tower". 2) [illegible] (Minskiy

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On the Selection of Material and the Cross-section Forms for Parts Used for a Portable Composed Triangulation Signal

SOV/[illegible]

than in the case of angular cross-sections. This [illegible] should be used in building portable signals of a light type. For parts which show transverse bent in all directions a tubular cross-section is most favorable as far as weight is concerned. With respect to rigidity, angular, circular, T and U cross-sections offer the most favorable possibilities. The author investigated also the individual types of section cross-sections and compared pyramids of duralumin, plastics, wood and steel. The approximate weight of portable signals made from various materials and with various cross-section forms is given in table 7. Furthermore, the author determined the weight of internal pyramids according to the conditions of rigidity (tensile strength), and that of external pyramids according to the conditions of [illegible]. There are 7 tables.

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3(4) SOV/6-59-2-5/22

AUTHOR: Grinberg, G. M.

TITLE: On the Selection of Material and the Cross-section Forms for Parts Used for a Portable Composed Triangulation Signal (O vybore materiala i forme poperechnogo secheniya detaley dlya postroyki perenosnogo sborno-razbornogo triangulyatsionnogo signala)

PERIODICAL: Geodeziya i kartografiya, 1959, Nr 2, pp 15 - 26 (USSR)

ABSTRACT: Collapsible sign is must be sufficiently rigid and stable at a minimum weight. With respect to specific rigidity steel ranks first though its specific weight is the highest. It is useless to replace the internal pyramid by Duraluminum since such a pyramid would be heavier by 4% than that made from steel. The weight of signals of unprocessed wood and concrete is about two times as high as that of steel signals. It is shown that on the same load the cross-section shape of rods requires the weight, rigidity and stability of the signal. With respect to weight, rods with angular cross-section offer the most favorable conditions. The moments of resistance of angular, T and U cross-sections at certain axes are higher

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GRINBERG, G. K. [Grinbergs, G.] (Riga)

Magnetization of long cylinders in weak permanent fields. Vestis Latv ak no.2:73-77 '60. (EEAI 10:1)

1. Akademiya nauk Latviyskoy SSR, Institut fiziki.
(Magnetic fields)

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GRINBERG, G. K. Cand Phys-Math Sci — (diss) "Magnetizations of cylinders in weak permanent fields," Riga, 1960, 14 pp, 300 cop. (Inst. of Physics, AS Lativan SSR) (KL, 42-60, 111)

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Electromagnetic Processes in Metals SOV/3753

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Grigor'yev, M.N. Some Problems of Magnetizing a System of Interacting Cylindrical Particles 57

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continuously distributed electromagnetic forces, particularly turbulent fields; the magnetization of a system of interacting cylindrical particles; determination of the criterion relationships for the motions of an asynchronous engine rotor with similar mechanical characteristics (rotational moment, period of rotational oscillations around a point of equilibrium and attenuation ratio) when the slip is close to unity; the problem of computing the ponderomotive forces acting on a cylindrical conducting body placed in the traveling magnetic field of a cylindrical inductor; the motion of a sphere in magnetic hydrodynamics; the reflection and refraction of hydromagnetic waves of arbitrary polarization on the boundary of two ideal incompressible liquids with infinite conductivity; a study of phenomena in the turbulent flow of liquid metal in induction pumps under the effect of a traveling magnetic field; the operating principle of d-c pumps and the computation of their electromagnetic and hydraulic characteristics; abbreviating computations in designing linear induction pumps as suggested by I.A. Tyutin; nomographic computation of functions $\varphi(k', h)$ and $\psi(k', h)$; and the construction of heaters producing thermal energy by an induced current. No personalities are mentioned. References accompany the articles.

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GRINBERG, G.K.

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PHASE I BOOK EXPLOITATION SOV/3753

Akademiya nauk Latviyskoy SSR. Institut fiziki

Elektromagnitnyye protsessy v metallakh (Electromagnetic Processes in Metals) Riga, Izd-vo AN Latviyskoy SSR, 1959. 200 p. (Series: Its: Trudy, No. 11) Errata slip inserted. 1,000 copies printed.

Ed.: A. Teytel'baum; Tech. Ed.: A. Klyavinya; Editorial Board: V.G. Vitol, T.K. Kalnyn', I.M. Kirko (Resp. Ed.), and Ya. Ya. Klyavin'.

PURPOSE: This book is intended for physicists interested in electromagnetic processes in metals.

COVERAGE: This is a collection of fifteen articles by various authors on the investigation of electromagnetic processes in metals by modeling. Individual articles treat the following: conditions necessary for modeling particular phenomena; modeling the magnetization of ferromagnetic metals in a variable field on an iterated network consisting of choke coils with saturable reactors and constant resistances; external fields produced by ferromagnetic tubes which have been magnetized in a constant uniform field oriented along the axis; the possibility of using galvanic baths and other models for investigating fields with

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ACC NR: AP6029958

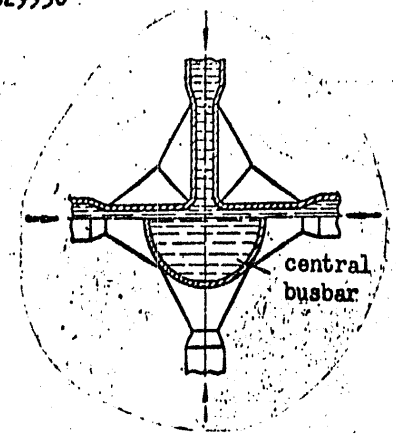

Fig. 1

Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 06Mar65/

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L 10414-67 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWP(v)/EWP(k) IJP(c) W/EM/DJ

ACC NR: AP6029958 SOURCE CODE: UR/0413/66/000/015/0143/0143

53

AUTHOR: Grinberg, G. K.

ORG: none

TITLE: Electromagnetic pump on the contraction effect. Class 59, No. 184621

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 143

TOPIC TAGS: electromagnetic pump, pump, electromagnetic effect

ABSTRACT: This Author Certificate presents an electromagnetic pump on the contraction effect. The pump consists of a current-conducting and a central busbar, electrodes, and a channel (see Fig. 1). To increase the pump pressure, the working zones of the pump are placed, in part, outside the central busbar.

UDC: 621.689

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LOPOTKO, I.A.; UNDRITS, V.F.; PREOBRAZHENSKIY, B.S.; KHILOV, K.L.; SENDUL'SKIY, I.Ya.; LIKHACHEV, A.G.; MIL'SHTEYN, T.N.; GRINBERG, G.I.; ROMM, S.Z. (Leningrad - Moskva)

Most important problems in Soviet otorhinolaryngology; on the research plan for the field of otorhinolaryngology during 1961-1962, according to the Academy of Medical Sciences of the U.S.S.R. Vest.otorin. 22 no.5:3-24 S-O '60. (MIRA 13:11)
(OTOLARYGNOLOGY)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I., doktor med.nauk

Selection of a zero level sound intensity in the study of hearing by means of speech audiometry. Vest. otorin. 22 no.1:17-21 Ja-F '60. (MIRA 14:5)

1. Iz Leningradskogo nauchno-issledovatel'skogo instituta bolezney ukha, gorla, nosa i rechi (dir. - prof. I.A.Lopotko, nauchnyy rukovoditel' - deystvitel'nyy chlen AMN SSSR prof. V.I.Voyachek).
(AUDIOMETRY)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

VOYACHEK, V.I.; UNDRITS, V.F.; LOPOTKO, I.A., prof.; GRINBERG, G.I., doktor meditsinskikh nauk

In memory of Professor Nikolai Vasil'evich Belogolovov; obituary. Vest. otorin. 22 no.1:119 Ja-F '60. (MIRA 14:5)

1. Deystvitel'nyy chlen AMN SSSR (for Voyachek). 2. Chlen-korrespondent AMN SSSR (for Undrits).
(BELOGOLOVOV, NIKOLAI VASIL'EVICH, 1874-1959)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

LOPOTKO, I.A.; UNDRITS, V.F.; PREOBRAZHENSKIY, B.S.; KHILOV, K.L.; LIKHACHEV, A.G.; SENDUL'SKIY, I.Ya.; MIL'SHTEYN, T.N.; GRINBERG, G.I.; ROMM, S.Z.

Basic problems in Soviet otorhinolaryngology; on the 1960 working plan for research in the Academy of Medical Sciences of the U.S.S.R. Vest.otorin. 21 no.5:3-14 S-O '59. (MIRA 13:1)
(OTORHINOLARYNGOLOGY)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

LOPOTKO, I.A., prof., GRINBERG, G.L., doktor med.nauk, LAKOTKINA, O.Yu.
ROMM, S.Z., kand.med.nauk, BELKINA, N.P., kandmed nauk.,
ZLOTNIKOV, S.A., kand.med.nauk (Leningrad).

Principal accomplishments of the Fifth Congress of Opthalmologists of the U.S.S.R., July 7-12, 1958. Vest. oto-rin. 21 no.1:5-61 Ja-F'59
(OTORHINOLARYNGOLOGY) (MIRA 12:1)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I., doktor med. nauk; DORFMAN, G.V., inzhener; VISLENEVA, M.G., [redacted]g

Tables of Russian words for a hearing test using an audiometer [with summary in English]. Vest.oto-rin. 19 no.3:78-83 My-Je '57. (MIRA 10:10)

1. Iz akusticheskoy laboratorii Leningradskogo nauchno-issledovatel'skogo instituta po boleznyam ukha, gorla, nosa i rechi (dir. - prof. I.A.Lopotko, nauchnyy rukovoditel' - deystvitel'nyy chlen AMN SSSR prof. V.I.Voyachek)

(HEARING TESTS
use of tables of Russian words for audiometric tests)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I.

[Principles of the physiology and methods of studying auditory, vestibular and olfactory analysers] Osnovy fiziologii i metody funktsional'nogo issledovaniia slukhovogo, vestibuliarnogo i oboniatel'nogo analizatorov. Izd. 2-e, dop. i perer. [Leningrad] Medgiz, 1957. 166 p. (MIRA 11:4)
(SENSE ORGANS)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I., doktor meditsinskikh nauk (Leningrad)

Prevention and therapy of non-suppurative ear diseases leading to hard hearing and deafness. Vest. oto-rin. 16 no.6:3-9 N-D '54. (MLRA 8:1)

(EAR, diseases
non-suppurative, leading to hearing disord. & deafness, prev. & ther.)
(HEARING DISORDERS, etiology and pathogenesis
ear dis., non-suppurative, prev. & ther.)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

ZASOSOV, R. A., GRINBERG, G. I.

Zasosov, R. A.

Review of R. A. Zasosov's and G. I. Grinberg's book "Basis of physiology and practical methods for the study of the auditory, vestibular, and olfactory analyzers." Prof. L. P. Lozanov. Vest. oto-ria. 14 no. 4, 1 [illegible].

Monthly List of Russian Accessions, Library of Congress
November 1954. UNCLASSIFIED.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I.

Relation between force and loudness of sound in various forms of hearing disorders. Vest. otorinolar., Moskva 14 no.1:21-24 Jan-Feb 52. (CIML 21:4)

1. Doctor Medical Sciences. 2. Leningrad.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

KOROVITSKIY, Leonid Konstantinovich, prof.; GRIGORACHENKO, Aleksandr Yefimovich, dots.; STANKOV, Aleksandr Georgiyevich; CHERNYAVSKAYA, Larisa Vasil'yevna; GRINBERG, G.I., red.

[Toxoplasmosis; epidemiology, clinical aspects, treatment and prevention] Toksoplazmoz; epidemiologiia, klinika, terapiia i profilaktika. [by] L.K.Korovitskii i dr. Kiev, Gosmedizdat USSR, 1962. 187 p. (MIRA 18:6)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I., dotsent; NAUMOVA, R.P., kand.med.nauk

Course of the toxic forms of diphtheria in recent years. Pod. akush. i gin. 24 no.1:6-9'62. (MIRA 16:8)

1. Klinika infektsionnykh bolezney (zav. - prof. L.K. Korovitskiy [Korovyts'kyi, L.K.]) Odesskogo meditsinskogo instituta (rektor - zasluzhennyy deyatel' nauki UkrSSR I.Ya.Deyneka [Deineka, I.IA.]) i Odesskaya gorodskaya infektsionnaya bol'nitsa (glavnyy vrach - L.T.Zhidovlenko).
(DIPHTHERIA)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I., doktor med.nauk

Classification of various lesions of the acoustic analysor and their differential diagnosis. Zhur.ush., nos.i gorl.bol. 22 no.4:3-8 Jl-Ag '62. (MIRA 16:2)

1. Is Leningradskogo nauchno-issledovatel'skogo instituta ukha, gorla, nosa i rechi (dir. - prof. I.A. Lopotko, nauchnyy rukovoditel' - deystvitel'nyy chlen AMN SSSR prof. V.I. Voyachek).
(ACOUSTIC NERVE—DISEASES)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

KOROVITSKIY, L.K., professor; GRINBERG, G.I., dotsent

[Rational classification of clinical forms of brucellosis. Vrach. delo no.8:801-803 Ag '57. (MLRA 10:8)

1. Klinika infektsionnykh bolezney (zav. - prof. L.K.Korovitskiy) Odesskogo meditsinskogo instituta
(BRUCELLOSIS--CLASSIFICATION)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I., dotsent; EYDEL'MAN, M.R.

Evaluating the role of bacteria carrying in the development of a dysentery epidemic. Vrach.delo no.7:709-711 Jl '57. (MIRA 10:8)

1. Klinika infektsionnykh bolezney Odesskogo meditsinskogo instituta i infektsionnaya bol'nitsa Voroshilovskogo rayona Odessy

(DYSENTERY)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G. I.

Grinberg, G. I. -- "Study of the Clinical Course of Brucellosis with Consideration of Its Pathogenesis and of the Dynamics of the Changes of the Serological and Allergic Reactions." Odessa State Med Inst imeni N. I. Pirogov, Odessa, 1955 (Dissertation for the Degree of Doctor of Medical Sciences)

SO: Knizhnaya Letopis', No. 23, Moscow, Jun 55, pp 91-1[illegible]

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I.

Allergic reaction diagnosis of brucellosis. Zhur.mikrobiol.epid.i immun. no.3:86 Mr '54. (MLRA 7:4)

1. Iz kliniki infektsionnykh bolezney Odesskogo meditsinskogo instituta i 1-y infektsionnoy bol'nitsy Odessy. (Brucellosis)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G. I. and TIMANER, R. S.

"The Transfusion of Blood in the Clinic of Infectious Diseases," Vrachebnoye Delo, No.7, pp. 663-664, 1952

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.I.

Grinberg, G.I. "On the influence of vaccination against typhoid on the Weil-Felix reaction in exanthematous typhoid", Vrachebn. delo, 1952, No. 1, paragraphs 71-72.

SO: U-3042, 11 March 53, (Letopis 'nykh Statey, No. 9, 1952)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, G.G.; SKUDRA, A.M.

Vibromixing of asphalt-concrete mixes. Avt.dor. 22 [i.e.23] no.9:15-16 S '60. (MIRA 13:9)
(Asphalt concrete) (Mixing machinery)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

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GRINBERG, G. G.

5000

4

The Electromagnetic Field of a Linear Emitter Located Inside an Ideally Conducting Parabolic Screen. G. G. Grinberg, N. N. Lebedev, I. P. Skal'skaia, and G. S. Ufland. (*Zhurnal Experimental'noi i Teoreticheskoi Fiziki*, Mar., 1956, pp. 528-543.) *Soviet Physics - JETP*, Oct., 1956, pp. 360-378. 10 refs. Translation. Solution of the wave problem for a parabolic region which shows that, in the limiting case of very high frequencies, the solution takes the form which corresponds to the ray approximation of optics.

LFH

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

[illegible]KBERG, G.[illegible]; [illegible], Ye.[illegible]; ROSTIK, M.B.

Clinical and epidemiological evaluation of the [illegible] for the control of poliomyelitis in Sverdlovsk Province. [illegible] mat. i det. 8 no.7:88-91 '63. [illegible]

[illegible] Sverdlovskoy oblastnoy sanitarno-[illegible] stantsiy.

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GRINBERG, G.D., kand.med.nauk (Sverdlovsk)

Methods and practices of epidemiological inspection in an infection focus. Fel'd. i akush. 27 no.9:11-15 S'62. (MIRA 16-8)

(EPIDEMIOLOGY)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

GRINBERG, Grigoriy Davidovich; MEL'NIKOV, Ye.B., red.; ROMANOVA, Z.A., tekhn. red.

[Epidemiological study in a focus of infection]Epidemiologicheskoe obsledovanie v ochage infektsii. Moskva, Medgiz, 1962. 129 p. (MIRA 15:10)

(EPIDEMIOLOGY)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

IVANOV, D.A.; GRINBERG, G.B.

Certain problems concerning the introduction of telephone to rural areas. Vest. sviazi 21 no.11:25-27 N '61. (MIRA 14:11)

1. Nachal'nik Leningradskoy oblastnoy direktsii radiotranslyatsionnykh setey (for Ivanov). 2. Glavnyy inzh. Leningradskoy oblastnoy direktsii radiotranslyatsionnykh setey (for Grinberg).
(Telephone)

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PHASE I BOOK EXPLOITATION

Grinberg, Grigoriy Borisovich, and Arkadiy Petrovich Morozov

Sovmeshcheniye oborudovaniya usiliteli'nogo punkta elektrosvyazi i radiofikatsii (Combination Equipment for Electrocommunication and Wire-Broadcasting Repeater Station) Moscow, Svyazizdat, 1960. 49 p. 3,000 copies printed (Series: Opyt peredovykh svyazistov).

Resp. Ed.: A. B. Kogan; Ed.: V. I. Bashchuk; Tech. Ed.: G. I. Shefer.

PURPOSE: This booklet is intended for technical personnel of long-distance and local communication services and of the wire-broadcasting system.

COVERAGE: The authors present a generalization of the experience gained from combined arrangement of equipment and unified servicing of combined rediffusion stations and intrablast and long-distance repeater stations. The book is based on work done in communication establishments in the Leningradskaya oblast, parts of the Sverdlovskaya and Kirovskaya oblasts, the Krasnodarskiy and Khabarovskiy krays, the RSFSR, and the Latvian SSR. [illegible]

Card 1/3

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GRINBERG, G.B.

Technical maintenance of automatic equipment for wire-broadcast radio networks and regional-type telephone exchanges. Vest. sviazi 16 no.12:16-18 D '56. (MLRA 10:2)

1. Glavnyy inzhener Leningradskoy oblastnoy Direktsii radiotranslyatsionnykh setey.
(Radio) (Telephone)

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L 1624-66

ACCESSION NR: AP5021878

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F. Ioffe, Akademii nauk SSSR (Physico-Technical Institute, Academy of Sciences, SSSR)

SUBMITTED: 26Mar65 ENCL: 00 SUB CODE: MA

NO REF SOV: 002 OTHER: 000

Card 2/2

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

L 1624-66 EWT(d) IJP(c)

ACCESSION NR: AP5021878 UR/0020/65/163/006/1310/1313

AUTHOR: Grinberg, G. A. (Corresponding member AN SSSR)

TITLE: Integral equations with kernel depending on the absolute value of the difference of the arguments, and finite interval of variation of the variables

SOURCE: AN SSSR. Doklady, v. 163, no. 6, 1965, 1310-1313

TOPIC TAGS: integral equation

ABSTRACT: In this work, which is a continuation of a previous paper (DAN, 128, No. 3, 450, 1959), the author finds general properties of solutions of equations of the form

$$\int_0^h \psi(\xi, h) K(|x-\xi|)\, d\xi = f(x), \qquad (1)$$

with special emphasis on so-called "key" equations defined in the above reference. He studies the solution of (1) (where $f(x) = -K(R + x)$, R and h are constants) as a function of all three variables, R, ξ, h, for R and h within certain specified limits. He asserts that analogous results hold for equations of the second type. Orig. art. has: 25 formulas.

Card 1/2

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GRINBERG, G.A.

New data on the structure of the Pre-Riphean basement of the Okhotsk central massif. Dokl. AN SSSR 163 no.3:694-697 Jl '65. (MIRA 18:7)

1. Institut geologii Yakutskogo filiala Sibirskogo otdeleniya AN SSSR. Submitted April 21, 1965.

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L 10753-65
ACCESSION NR: AP4046329

section, but the method should be generalizable to more general shapes. The Green's function must be calculated separately in the body of the fluid and near the wall. It is shown that in the limit of large M the flow is stratified in the direction perpendicular both to the axis of the tube and the external magnetic field. The Green's function on the axis of a tube with circular section, which can be calculated exactly, is discussed in order to illustrate the error involved in employing only the first few terms of the expansion. The case of a tube with a square section, the Green's function for which the author was previously derived by an image method (PMM, No.1,26,1962), is also discussed. Orig.art.has: 86 formulas and 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im.A.F.Ioffe AN SSSR, Leningrad (Physico-technical Institute, AN SSSR)

SUBMITTED: 01Apr64 ENCL: 00

SUB CODE: ME,MA NR REF SOV: 003 OTHER: 003

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

L 10753-65 EWT(1)/EWP(m)/EPA(sp)-2/EWG(v)/EPR/EPA(w)-2/T-2/EWA(m)-2 Pd-4/Pe-5/Pi-4/Ps-4/Pab-24 IJP(c)/SSD/ASD(f)-2/ASD(a)-5/AFETR/ASD(d)/ASD(p)-3/ESD(dp)/RAEM(c)/AEDC(a)/ESD(gs)/BSD/AFWL/ESD(t)

ACCESSION NR: AP4046329 S/0057/64/0034/010/1721/1731

AUTHOR: Grinberg, G.A.

B

TITLE: On the stationary flow of a viscous conducting fluid through a straight tube in a transverse external magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.10, 1964, 1721-1731

TOPIC TAGS: magnetohydrodynamics, steady flow, Green function, applied mathematics

ABSTRACT: The author discusses the stationary flow of a viscous conducting liquid through a straight tube of arbitrary but uniform section and with insulating walls in a uniform transverse magnetic field. J.A.Shercliff (Proc.Camb.Phil.Soc., No.1,49,1953; J.Fluid Mech.,1,644,1956; 13,513,1962) has reduced this problem to the solution of the partial differential equation $\Delta\varphi - M^2\varphi = 0$, where Δ is the two-dimensional Laplacian operator and M is the Hartman number, and has given some solutions in the form of series that converge rapidly for small values of M. In the present paper an integral equation is derived for the Green's function, which can be solved by iteration to give an asymptotic series valid for large values of M. The calculation of the Green's function is discussed in detail for a tube with a convex

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GRINBERG, G.A.

Diffusion break-up of a plasma in a magnetic field in the presence of nonlinear effects. Zhur. tekh. fiz. 33 no.12:1430-1443 D '63. (MIRA 16:12)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR, Leningrad.

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UFLYAND, Yakov Solomonovich; GRINBERG, G.A., otv. red.; TRAVIN, N.V., red. izd-va; GALIGANOVA, L.M., tekhn. red.

[Integral transformations in problems of the theory of elasticity] Integral'nye preobrazovaniia v zadachakh teorii uprugosti. Moskva, Izd-vo AN SSSR, 1963. 366 p. (MIRA 16:7)

1. Chlen-korrespondent AN SSSR (for Grinberg).
(Elasticity) (Transformations (Mathematics))

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S/040/62/026/001/009/023
D237/D304

On some cases of flow ...

Number M. Finally, utilizing a modified Green function the author gives a new method of solution for the Shercliff (Ref. 1 Proc. of the Cambr. Phil. Soc. 1953, no. 1, 49) problem on the flow in a similar tube with non-conducting walls which is particularly suitable for large M. The author expresses his gratitude to K.A. Aristova, T.A. Chernova and N.V. Koroleva for performing numerical and graphical work. There are 1 figure and 5 references 3 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows I.A. Shercliff, Proc. of the Cambr.Phil.Soc., 1953, n.1, 49; K. Pearson, Tables of the incomplete Γ-Function, Printed by the Cambridge University Press and published by the Office of Biometrika, Re-issue, 1951.

SUBMITTED August 11, 1961

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

S/040/62/026/001/009/023
D237/D304

26.1410

AUTHOR: Grinberg, G.A. (Leningrad)

TITLE: On some cases of flow of conducting fluid in tubes of a rectangular cross-section in the presence of a magnetic field

PERIODICAL: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk. Prikladnaya matematika i mekhanika, v. 26, no. 1, 1962, 80-87

TEXT: A steady flow of conducting fluid along the tube of rectangular cross section with two conducting walls parallel to the inner magnetic field H^0, whose direction defines the x-axis, is considered. Statement of the problem and its solution by the method of successive approximations are quoted from the author's earlier work (Ref. 2: PMM 1961, v. 25, no. 6) and this is followed by a discussion of the solution obtained, its further simplification and comparison of numerical results obtained by the present formulae, with those of Ref. 2 (Op.cit.). It is noted that the solutions obtained are applicable, in particular, for large values of Hartmann

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The steady flow of a conducting... S/020/61/141/002/009/027
B104/B138

the English-language publication reads as follows: A. Shercliff, Proc. Cambr. Phil. Soc., 49, 1, 136 (1953).

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

SUBMITTED: July 26, 1961

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where $K_0(z)$ is the MacDonald function, $x_m = 2ml + x$, $x'_m = 2ml - x$, $y_n = 2nd + y$, $y'_n = 2nd - y$. This means that the solution of the problem can be given in the form

$$u(x, y) = \int_0^l [g(\xi, d, x, y) + g(\xi, 0, x, y)] f(\xi) \operatorname{sh}\gamma(x - \xi)\, d\xi - \alpha \frac{\operatorname{sh}\gamma(l-2x)}{\operatorname{sh}\gamma l}, \quad (1)$$

$$v(x, y) = \int_0^l [g(\xi, d, x, y) + g(\xi, 0, x, y)] f(\xi) \operatorname{ch}\gamma(x - \xi)\, d\xi + 2\alpha \frac{\operatorname{sh}\gamma x \operatorname{sh}\gamma(l - x)}{\operatorname{sh}\gamma l}, \quad (2)$$

where $\alpha = (Pl \frac{H^0 \mu I}{c})/4\eta\pi$; $f(\xi)$ is the solution of the integral equation

$$\int [g(\xi, d, x, 0) + g(\xi, 0, x, 0)] f(\xi) \operatorname{ch}\gamma(x - \xi)\, d\xi = \frac{2\alpha \operatorname{sh}\gamma x \operatorname{sh}\gamma(l - x)}{\operatorname{sh}\gamma l}. \quad (3).$$

The treatise is followed by a detailed discussion of this solution. There are 4 references: 2 Soviet and 2 non-Soviet. The reference to

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Ya. S. Uflyand, ZhTF, 30, 10, 1256 (1960)) the solutions for both types of walls can only be represented by trigonometric series. The results from these papers are here applied to those two cases, where the walls parallel to $\vec{H}^0$ are conducting (or non-conducting) and the walls perpendicular to $\vec{H}^0$ are non-conducting (or conducting). The corners of the rectangular cross section are assumed to be at points (0,0), (0,d), (l=2a, 0) and (l,d). The density of the current passing into, y = 0 and out through, the wall of ideal conductivity y = d, is denoted by I. Two functions are introduced:

$$u = \frac{1}{\mu\gamma}\left[\frac{H^0\mu}{4\pi\eta}H_z + \frac{P}{\eta}(x-a)\right],$$

where $\gamma = \frac{\mu H^0}{2c}\sqrt{\frac{\sigma}{\eta}}$, and

$$g(\xi, \eta, x, y) = \frac{1}{2\pi}\sum_{m=-\infty}^{\infty}\sum_{n=-\infty}^{\infty}\left\{K_0\left[\gamma\sqrt{(x_m-\xi)^2+(y_n-\eta)^2}\right]+\right.$$
$$+K_0\left[\gamma\sqrt{(x_m-\xi)^2+(y_n-\eta)^2}\right]-K_0\left[\gamma\sqrt{(x_m-\xi)^2+(y_n-\eta)^2}\right]-$$
$$\left.-K_0\left[\gamma\sqrt{(x_m-\xi)^2+(y_n-\eta)^2}\right]\right\}.$$

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

S/020/61/141/002/009/027
B104/B138

24.7120

AUTHOR: Grinberg, G. A., Corresponding Member AS USSR

TITLE: The steady flow of a conducting liquid in a rectangular tube having two conducting and two non-conducting walls, placed in an external magnetic field

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 2, 1961, 330-333

TEXT: On the assumption that an homogeneous external magnetic field $\vec{H}^0$ is in the direction of the x-axis, that $-\partial p/\partial z = P = \text{const}$ and that lateral volumetric forces are absent, the equations $\Delta H_z + \frac{4\pi\mu\sigma H^0}{c^2}\frac{\partial v}{\partial x} = 0$, $\Delta v + \frac{H^0\mu}{4\pi\eta}\frac{\partial H_z}{\partial x} = -\frac{P}{\eta}$ are derived for H_z and v respectively, where $\Delta = \partial^2/\partial x^2 + \partial^2/\partial y^2$; the boundary conditions of H_z at the conducting walls are given by $\partial H_z/\partial n|_s = 0$, $\partial H_z/\partial n|_s = 0$. As has been shown in other papers (A. Shercliff, Proc. Cambr. Phil. Soc., 49, 1, 136 (1953);

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000616900050-6

27161
S/057/61/031/009/001/019
B109/B138

Diffraction of a plane ...

$$t = \frac{\pi^2 (kR)^4}{6\varepsilon} \left\{ \left\{ \frac{1}{\left(\ln \frac{16}{\varepsilon} - 2\right)^2} + \frac{\varepsilon^2}{2} \left[\frac{\quad}{\ln \quad - 2} - \frac{9}{\left(\ln \frac{16}{\varepsilon} - 2\right)^2} + \right.\right.\right.$$

$$\left.\left. + \frac{4}{\left(\ln \frac{16}{\varepsilon} - 2\right)^3} \right] + O(\varepsilon^4) \right\} - \frac{(kR)^2}{5} \left\{ \frac{9}{\left(\ln \frac{16}{\varepsilon} - \quad\right)^2} + \frac{40}{\left(\ln \frac{16}{\varepsilon} - 2\right)^3} + O(\varepsilon^2) \right\} + \qquad (33).$$

$$\left. + O[(kR)^4] \right\}. \qquad (33)$$

N. N. Lebedev (Techn. Phys. USSR, 4, 1,3, 1937) is mentioned. There are 6 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

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Diffraction of a plane ...

$j_{rc3} = O(\varepsilon)$ (30),

$$+ \varepsilon \left[3 - \frac{8}{\ln \frac{16}{\varepsilon} - 2} \right] \cos\alpha + O(\varepsilon^2) \Bigg\}. \quad (31)$$

which describe the radial and tangential components of current density up to orders of $(kR)^3$ (O denotes terms of the order ...). For the scattering cross section of the plane wave, the authors give the expression

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$$j_{r\varepsilon 1} = \frac{i\omega\delta R \sin\alpha}{2\pi(1+\varepsilon\cos\alpha)}\left[2\varepsilon + \frac{\varepsilon^2}{2}\cos\alpha + O(\varepsilon^3)\right],$$

$$j_{\theta\varepsilon 1} = -\frac{i\omega\delta R}{2\pi\varepsilon(1+\varepsilon\cos\alpha)\sin\alpha}\left\{\frac{1}{\ln\frac{16}{\varepsilon}-2} - \frac{\varepsilon}{2}\left(1-\frac{2}{\ln\frac{16}{\varepsilon}-2}\right)\cos\alpha + \right. \tag{28}$$

$$+\frac{\varepsilon^2}{32}\left\{\left[4-\frac{18}{\ln\frac{16}{\varepsilon}-2}+\frac{8}{\left(\ln\frac{16}{\varepsilon}-2\right)^2}\right]-\left[6-\frac{1}{\ln\frac{16}{\varepsilon}-2}\right]\cos 2\alpha\right\}+$$

$$\left. +\frac{\varepsilon^3}{128}\left\{\left[84\left(\ln\frac{16}{\varepsilon}-2\right)+87-\frac{68}{\ln\frac{16}{\varepsilon}-2}+\frac{32}{\left(\ln\frac{16}{\varepsilon}-2\right)^2}\right]\times\right.\right. \tag{29},$$

$$\left.\left.\times\cos\alpha - 29\cos 3\alpha\right\} + O(\varepsilon^4)\right\}.$$

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Diffraction of a plane ...

gives the solution of Eq. (2) for the electrostatic problem. (2) Solution of the diffraction problem: Assumptions: The wave $E_x^0 = -H_y^0 = E_0 e^{ikz}$ is normal to the ring. For the components of the surface currents, the authors give in cylindrical coordinates

$$j_r = [kj_{r01} + k^3 j_{r03} + O(k^4)]\cos\theta, \quad j_\theta = [kj_{\theta 01} + k^3 j_{\theta 03} + O(k^4)]\sin\theta, \qquad (32);$$

and by way of the vector potential and the scalar potential of induced currents, for which analogous equations hold as for the potential in the electrostatic case, they obtain the expressions

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and one restricts himself to terms up to the order ε^2 in the usual trigonometric series expansion for $U(\varepsilon,\alpha)$, then (7) together with

$$u_0=\frac{1}{2\pi}\frac{U_0^{(0)}}{2S(m)},\quad u_1=\frac{1}{2\pi}\frac{1}{4}(U_0^{(0)}+4U_1^{(1)})\cos\alpha,$$

$$u_2=\frac{1}{2\pi}\frac{1}{32}\left\{2\left[(U_0^{(0)}+4U_1^{(1)})-\frac{(4m^2+5)U_0^{(0)}-16U_2^{(0)}}{2S(m)}+\frac{2U_0^{(0)}}{S^2(m)}\right]+\right.$$

$$\left.+\left[-(4m^2-1)U_0^{(0)}+24U_1^{(1)}+64_2^{(2)}+\frac{4m^2-3}{2S(m)}U_0^{(0)}\right]\cos 2\alpha\right\},$$

$$u_3=\frac{1}{2\pi}\frac{1}{256}\left\{\left[4S(m)(4m^2-1)(U_0^{(0)}+4U_1^{(1)})-\right.\right. \tag{13}$$

$$-(20m^2-9)U_0^{(0)}-4(4m^2-5)U_1^{(1)}+64U_2^{(0)}+192U_2^{(2)}+256U_3^{(1)}+$$

$$\left.+2(4m^2-3)\frac{U_0^{(0)}}{S(m)}\right]\cos\alpha+[(4m^2-1)(3U_0^{(0)}-4U_1^{(1)})+$$

$$\left.+320U_2^{(2)}+768U_3^{(3)}-2(4m^2-3)\frac{U_0^{(0)}}{S(m)}\right]\cos 3\alpha\right\}. \tag{13}$$

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Diffraction of a plane ...

where $\sigma_{\nu}^{(m)}(\eta)$ is the required coefficient of the series expansion of charge density distribution, $U_{\nu}^{(m)}(r)$ is the coefficient, known for the ring surface, of the series expansion of the scalar potential of induced charges; if $r = R(1 + \varepsilon\cos\alpha)$ and $\eta = R(1 + \varepsilon\cos\beta)$, (1) is transformed to

$$U(\alpha) = \int_0^{\pi} u(\beta)\, d\beta R \int_0^{2\pi} \frac{\cos m\theta d\theta}{L(\alpha, \beta)}, \qquad (2),$$

where

$$\sigma(\alpha) = \frac{u(\alpha)}{R\varepsilon(1 + \varepsilon\cos\alpha)\sin\alpha}, \qquad (3).$$

If the required function $u(\varepsilon,\alpha)$ [illegible] ε [illegible] (1) [illegible] expanded,

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9.3700

AUTHORS: Grinberg, G. A., Kuritsyn, V. N.

TITLE: Diffraction of a plane electromagnetic wave on an ideally conducting plane ring, and the electrostatic problem for such a ring

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 9, 1961, 1017-1025

TEXT: The authors give approximate solutions for the diffraction of a plane electromagnetic wave when the wavelength is appreciably larger than ring dimensions. They first solve the electrostatic problem, and then the diffraction problem from the former. (1) Solution of the electrostatic problem: Assumptions: (a) $\varepsilon = h/R$ small (R mean radius of the ring, h half ring width); (b) the external field can be expanded in a Fourier series in cylindrical coordinates. Determination of the Fourier coefficients gives the integral equation

$$U_\nu^{(m)}(r) = \int_{R-h}^{R+h} \sigma_\nu^{(m)}(\eta)\,\eta\,d\eta \int_0^{2\pi} \frac{\cos m\theta\, d\theta}{L}, \quad L = (r^2 + \eta^2 - 2r\eta\cos\theta)^{1/2}, \qquad (1)$$

$$R+h \geqslant r \geqslant R-h \qquad (1),$$

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The magnetohydrodynamic problem ... S/057/61/031/001/004/017
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investigated. Expressions are given for $A = A^0 + A'$ and $\overline{H}$, and a solution for the velocity potential and the flow function is obtained. This solution is discussed in detail for the case in which the ellipse differs only little from a circle. There are 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad (Institute of Physics and Technology AS USSR, Leningrad)

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cases. On the other hand, the reverse problem, i.e., the determination of the corresponding potential flow of a perfect, perfectly conducting fluid with given sources of a primary field and given (s) may be solved comparatively easily. Here, the Dirichlet problem for the region bounded by (s) must be solved first, after which some quadratures must be carried out. In this case, Eqs. (7) and (8) determine the magnetic field $\vec{H}$ in the interior of (f) and also $H = (H)_{(s)}$. The solutions obtained in this manner have singularities at a finite distance from the region round which the fluid flows, i.e., the solutions do not fully correspond to the flow around the system of sources of a magnetic field. If, however, a region is selected in the (x,y) plane, which is bounded by two flow-lines and two lines of constant pressure in such a manner that this region, while containing (f), does not contain the singularities, the flow-lines form the walls of a solid tube containing field sources. In this manner, an exact solution to the problem of a flow round a system of sources in a flow tube is obtained, at the ends of which there is a pressure drop. As an example hereto, the flow of a perpendicular conducting fluid round an ellipse through whose center an infinitely long linear flow J passes is

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$$p = \varrho\left[C - u - \frac{1}{2}(\mathrm{grad}\varphi)^2\right] = \varrho\left[C - u - \frac{1}{2}\left(\frac{\partial\varphi}{\partial s}\right)^2\right] = \bar{H}^2/8\pi \qquad (5)$$

is satisfied on (s), where $\bar{H} = (H)_{(s)}$ is the magnetic field within (s) on the boundary. It is further assumed that in the fluid there exists no magnetic field, i.e., $(H_n)_{(s)} = 0$. It then holds for the magnetic field inside the region concerned that:

$$H_x = \frac{\partial}{\partial y}(A^0 + A'); \; H_y = -\frac{\partial}{\partial x}(A^0 + A'); \; \frac{\partial^2 A'}{\partial x^2} + \frac{\partial^2 A'}{\partial y^2} = 0 \qquad (7).$$

$A^0 = A^0(x,y)$ and $A' = A'(x,y)$ are the vector potentials of the primary and secondary fields, which must satisfy the condition $(A^0 + A')_{(s)} = \mathrm{const}$ (8). This system of differential equations and boundary conditions may, if additional conditions regarding the flow at infinity (plane-parallel flow or the like), or with respect to the flow on the outer boundaries of the region (tube walls) are made, be used also for finding the form of (s) or of other quantities. The nonlinearity of the boundary condition (5) complicates the determination of the shape of (s) even in very simple

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10 8000

AUTHOR: Grinberg, G. A.

TITLE: The magnetohydrodynamic problem of the flow of a perfect, perfectly conducting incompressible fluid round sources of a magnetic field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 1, 1961, 23-28

TEXT: The author discusses the finding of exact solutions or approximations of the two-dimensional problem of the flow of a perfect, perfectly conducting fluid round a given system of magnetic-field sources. Under steady-state conditions it is possible, by confining oneself to a laminar potential flow, and by assuming that $\vec{v} = -\operatorname{grad}\varphi$, to describe the velocity of a fluid by

$$\frac{1}{2}v^2 + \frac{p}{\varrho} + u = \frac{1}{2}(\operatorname{grad}\varphi)^2 + \frac{p}{\varrho} + u = C \qquad (2).$$

C is a general constant, and φ satisfies the Laplace equation; on the boundary (s) of the region (f) round which the fluid flows, the boundary condition $(\partial\varphi/\partial n)_{(s)} = 0$ (4) must be satisfied. Besides, the condition

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Steady motion of a conducting ... S/057/61/031/001/003/017
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There are 5 references: 1 Soviet-bloc and 2 non-Soviet-bloc.

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is introduced: $v = v_0 + \partial\psi/\partial x$ (10). ψ is investigated by studying the boundary conditions it must satisfy in both cases, and the solution of the present problem for the case in which ψ gives a conformal mapping of any tube cross section onto a circular cross section or circular ring cross section is discussed. The system

$$\Delta\psi = \varphi, \tag{16}$$

$$\frac{\mu\sigma H^{0^2}}{4\pi\rho c^2}\frac{\partial^2\varphi}{\partial x^2} = -\varphi(x, y), \tag{17}$$

is set up; an integral equation for $\varphi(x,y)$ is obtained; and the determination of v and H_z from this system is briefly outlined. Further, the determination of v and H_z by means of an auxiliary function $\chi = \chi(x,y)$ from the system

$$v = v_0 + \Delta\chi, \tag{22}$$

is dealt with.

$$H_z = -\frac{4\pi\mu\sigma H^0}{c^2}\frac{\partial\chi}{\partial x} - \frac{4\pi P}{\mu H^0}x, \tag{23}$$

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or perfectly conductive, the boundary conditions may be set up without taking the electromagnetic processes taking place outside the fluid into consideration. The author studies only these two special cases; however, the possibility is left open that part of the wall is perfectly conductive, whereas the remaining part is non-conductive. Using (3) and (4), the boundary conditions are

$$\partial H_z/\partial s\Big|_{(s)} = 0 \qquad (7)$$ for a non-conductive, and

$$\partial H_z/\partial n\Big|_{(s)} = -\frac{4\pi\mu\sigma v_0}{c^2} H_n^0\Big|_{(s)} \qquad (8)$$

for a perfectly conductive wall. On the basis of boundary conditions (7) and (8) as well as on the condition that $v\Big|_{(s)} = v_0$, H_n and v may be found from equations (5) and (6). Furthermore, the author carries out some general considerations which lead to the solution of the above problem. Thus, in the second and third parts of the present paper, a new function

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where $\vec{E} = \frac{c}{4\pi\sigma}\left[\mathrm{grad}H_z, \vec{i}_z\right] + \frac{\mu}{c}\left[\vec{H}\vec{v}\right]$ (3);

$\vec{j} = \frac{c}{4\pi\sigma}\left[\mathrm{grad}H_z, \vec{i}_z\right]$ (4).

If the x-axis is laid in the direction of the magnetic field $\vec{H}^0$, if it is assumed that $-\partial p/\partial z = P$, where P does not depend on the coordinates, and if the external forces are neglected, the Shercliff equations

$$\Delta H_z + \frac{4\pi\mu\sigma H^0}{c^2}\frac{\partial v}{\partial x} = 0 \quad (5) \text{ and}$$

$$\Delta v + \frac{\mu H^0}{4\pi\eta}\frac{\partial H_z}{\partial x} = -\frac{P}{\eta} \quad (6) \text{ are obtained.}$$

The boundary conditions on the tube walls for v are $v\big|_{(s)} = 0$ if the tube is at rest relative to the external magnetic field, and $v\big|_{(s)} = v_0$ if it moves with v_0 in the direction of its axis. If the walls are not conductive

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B104/B204

AUTHOR: Grinberg, G. A.

TITLE: Steady motion of a conducting fluid through tubes in a transverse magnetic field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 1, 1961, 18-22

TEXT: The steady motion of conducting, incompressible, viscous fluids in straightlined tubes in a transverse magnetic field has repeatedly been studied. In the introduction mention is made, above all, of Shercliff (Ref. 1) who showed that for a homogeneous external magnetic field $\vec{H}^0$, and with the velocity field and the induced electric and magnetic fields being independent of the z-axis having the direction of the tube axis there exist solutions of the equations of the magnetohydrodynamics if

$$\vec{v} = v\vec{i}_z \qquad (1);$$

$$\vec{H} = \vec{H}^0 + H_z\vec{i}_z \qquad (2);$$

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Diffraction of electromagnetic waves ... S/057/61/031/001/002/017
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ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad
(Institute of Physics and Technology AS USSR, Leningrad)

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$$\frac{iD_1 e^{i\gamma t}}{\pi} = \frac{1}{\sqrt{\pi\gamma}} \left\{ \frac{\sqrt{l+1}\, e^{-i\frac{\pi}{4}}}{2} + \frac{1}{\sqrt{\gamma}} \left[\frac{i e^{-\gamma t}}{2\sqrt{2\pi l}} - \frac{e^{-2i\gamma(l+1)}}{2\pi^{3/2}} \operatorname{arc\,ctg} \frac{2\sqrt{l+1}}{l} \right] + \right.$$

$$+ \frac{e^{-i\frac{\pi}{4}}}{2\gamma} \left[\frac{1}{4i\sqrt{l+1}} + \frac{e^{-i\gamma(2+l)}\sqrt{l}}{2\sqrt{2}\,\pi(2+l)} - \frac{i e^{-\gamma t}\sqrt{l+1}}{2\pi l} + \right. \tag{13}$$

$$\left. \left. + \frac{e^{-i\gamma} e^{-2i\gamma(l+1)}}{\sqrt{2}\,\pi^2\sqrt{l(l+1)}} \operatorname{arc\,ctg} \frac{2\sqrt{l+1}}{l} + \frac{i e^{-4i\gamma(l+1)}}{\pi^2\sqrt{l+1}} \operatorname{arc\,ctg}^2 \frac{2\sqrt{l+1}}{l} \right] \right\}. \tag{13}$$

These results are used to calculate the dark currents $\vec{j}_2$ and, thus, the total currents $\vec{j}$ are obtained from the relation

$$\vec{j} = 2\vec{j}_2 + \frac{c}{2\pi} \left[\vec{i}_z \vec{H}^0 \right]_{z=0} \tag{14}$$

There are 2 Soviet-bloc references.

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$$
\begin{aligned}
u^{(0)}(t) - u^{(2)}(t) = {} & \frac{i}{4\sqrt{t}} \int_{\delta}^{\infty} \frac{e^{-\lambda t} e^{-i\frac{\lambda}{2}}}{\lambda} H_1^{(1)}\left(\frac{\lambda}{2}\right) d\lambda + \\
& + \frac{l+1}{4\sqrt{l-t}} \int_{\delta}^{\infty} \frac{e^{-i\lambda(l-t)} e^{i\lambda\frac{l+1}{2}}}{\lambda} H_1^{(2)}\left(\lambda\frac{l+1}{2}\right) d\lambda - \frac{2e^{-2\gamma t} e^{-\gamma l}}{\pi\gamma(2+l)} \times \\
& \times \left[\frac{1}{\sqrt{t}} + \frac{N(l-t)}{\sqrt{l-t}}\right] + \frac{e^{-i\frac{\pi}{4} - \gamma l - \gamma t}}{(\pi\gamma)^{3/2}\sqrt{t}} \left[\frac{ie^{-2\gamma l}}{(2+l)} + \frac{e^{-\gamma l}\sqrt{l+1}}{(2+l+D)} \times \right. \\
& \left. \times \left(\sqrt{\frac{2}{l}} + \frac{\sqrt{t}}{\sqrt{2+l+l}} \operatorname{arc\,ctg} \sqrt{\frac{2(2+l+D)}{lt}}\right)\right].
\end{aligned}
\tag{11}
$$

$$
\begin{aligned}
\frac{D_2}{\pi} = {} & \frac{2D_1 e^{-2\gamma l}}{\pi^2} \operatorname{arc\,ctg} \sqrt{\frac{2}{l}} + \frac{e^{-i\frac{\pi}{4}}}{\sqrt{\pi\gamma}} \left[\frac{iD_1}{\pi\sqrt{2l}} - \frac{1}{2}\right] + \\
& + \frac{e^{-2\gamma l}}{4\pi\gamma} \left[1 + \frac{iD_1}{\pi\sqrt{2l}}\right] + \frac{e^{-i\frac{\pi}{4}}}{2\sqrt{\pi}\,\gamma^{3/2}} \left[\frac{1}{4l} - \frac{e^{-\gamma l(2+l)}\sqrt{2(l+1)}}{\pi(2+l)\sqrt{l}}\right];
\end{aligned}
\tag{12}
$$

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(10) is solved in successive approximation, and voluminous expressions for the calculation of $u^{(2)}(t)$, $u^{(0)}(t)$, D_1, and D_2 are obtained:

$$
\begin{aligned}
u^{(2)}(t) = -\frac{iD_1 e^{i\gamma t}}{\pi} \Bigg\{ & \left[\frac{1}{\sqrt{l-t}} + \frac{N(t)}{\sqrt{t}}\right] - \Bigg[\frac{2ie^{-2i\gamma}}{\pi}\Bigg(\operatorname{arc\,ctg}\sqrt{\frac{2}{l}} - \\
& - \frac{\sqrt{t}}{\sqrt{2+l+t}}\operatorname{arc\,ctg}\sqrt{\frac{2(2+l+t)}{lt}}\Bigg) - \frac{2e^{-i\gamma}e^{-i\frac{\pi}{4}}}{\pi\sqrt{(2+t)\sqrt{\gamma}}}\operatorname{arc\,ctg}\sqrt{\frac{2}{l}}\Bigg] \times \\
& \times \left[\frac{1}{\sqrt{t}} + \frac{N(l-t)}{\sqrt{l-t}}\right] + \frac{e^{-2i\gamma}}{\pi\gamma(2+t)\sqrt{t}}\left[\frac{e^{-i\gamma}}{\pi}\operatorname{arc\,ctg}\sqrt{\frac{2}{l}} - \frac{1}{2\sqrt{2l}}\right]\Bigg\} + \\
& + \frac{D_2 e^{-i\gamma t}}{\pi}\Bigg\{\left[1 - \frac{ie^{-2i\gamma}e^{-i\frac{\pi}{4}}}{\sqrt{\pi\gamma(2+t)}}\right]\left[\frac{1}{\sqrt{t}} + \frac{N(l-t)}{\sqrt{l-t}}\right] + \frac{ie^{-i\gamma}}{2\pi\gamma(2+t)\sqrt{t}}\Bigg\};
\end{aligned}
\tag{11}
$$

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is assumed to exist, the authors transform (4) into an integral equation of second kind. As a solution of this integral equation

$$
\begin{aligned}
V^{(1)}(t) = & -i\int_0 V^{(1)}(\tau)\varphi(\tau+2, t, l)\,d\tau + \\
& + \delta_1\left\{\sqrt{t+1} - \frac{i}{4\sqrt{t}}\int_{\infty}^{1}\frac{e^{-i\lambda t}e^{-i\frac{\lambda}{2}}}{\lambda}H_1^{(1)}\left(\frac{\lambda}{2}\right)d\lambda + \right. \\
& \left. + \frac{l+1}{4\sqrt{l-t}}\int_{\infty}^{1}\frac{e^{-i\lambda(l-t)}e^{i\lambda\frac{l+1}{2}}}{\lambda}H_1^{(2)}\left(\lambda\frac{l+1}{2}\right)d\lambda\right\} - \\
& - iD_1\left\{\frac{e^{i\eta t}}{\pi\sqrt{l-t}} + \frac{e^{i\eta t}}{\pi\sqrt{t}}N(t)\right\} + \qquad (10) \\
& + D_2\left\{\frac{e^{-i\eta t}}{\pi\sqrt{t}} + \frac{e^{-i\eta t}}{\pi\sqrt{l-t}}N(l-t)\right\} + 0\left(\frac{1}{\gamma^2}\right),
\end{aligned}
$$

где

$$V^{(0)}(t) \equiv u^{(0)}(t) + \sqrt{t+1}, \quad V^{(2)}(t) \equiv u^{(2)}(t),$$

$$N(t) = -\frac{i}{2}\int_{\infty}^{1} e^{-2\lambda t}\frac{d}{d\lambda}e^{i\lambda t}H_0^{(2)}(\lambda l)\,d\lambda.$$

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The terms of the order $1/\gamma^2$ have been neglected. For the solution of (4), results from Ref. 2 on the diffraction of electromagnetic waves by a band of finite width are used. On the assumption that $\varphi(R,t,l)$, $\psi(t,l)$, and $\chi(t,l)$ are solutions of the integral equations

$$\int_0^l \varphi(R,t,l)H_0^{(2)}(\gamma|y-t|)dt = H_0^{(2)}\left\{\gamma(R+y)\right\}; \quad \int_0^l \psi(t,l)H_0^{(2)}(\gamma|y-t|)dt = e^{i\gamma y}$$

$$\int_0^l \chi(t,l)H_0^{(2)}(\gamma|y-t|)dt = e^{-i\gamma y} \quad (5),$$

where the following coupling

$$\left.\begin{aligned} \psi(t,l) &= \sqrt{\frac{\pi\gamma}{2}}\, e^{-i\frac{\pi}{4}} e^{i\gamma l} \lim_{R\to\infty} \sqrt{R}\, e^{i\gamma R}\varphi(R, l-t, l); \\ \chi(t,l) &= \sqrt{\frac{\pi\gamma}{2}}\, e^{-i\frac{\pi}{4}} \lim_{R\to\infty} \sqrt{R}\, e^{i\gamma R}\varphi(R, t, l). \end{aligned}\right\} \quad (6)$$

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Diffraction of electromagnetic waves ... S/057/61/031/001/002/017
B104/B204

$$\int_0^l u^{(\nu)}(t)\, H_0^{(2)}[\gamma|t-y|]\, dt = -i\int_0^l u^{(\nu)}(\tau)\, H_0^{(2)}[\gamma(\tau+2+y)]\, d\tau +$$

$$+\delta_\nu\left\{-i\int_0^l \sqrt{\tau+1}\, H_0^{(2)}[\gamma(\tau+2+y)]\, d\tau + i\int_0^\infty \sqrt{\tau}\, H_0^{(2)}[\gamma(\tau+1+y)]\, d\tau +\right.$$

$$\left.+\int_0^l \sqrt{1-\tau}\, H_0^{(2)}[\gamma(\tau+y)]\, d\tau + \int_0^\infty \sqrt{\tau+1+l}\, H_0^{(2)}[\gamma(\tau+y_1)]\, d\tau\right\} +$$

$$+D_1\sqrt{\frac{2}{\pi\gamma}}\, e^{-i\frac{\pi}{4}} e^{i\gamma y} + D_2\sqrt{\frac{2}{\pi\gamma}}\, e^{i\frac{\pi}{4}} e^{-i\gamma y};\quad 0\leqslant y\leqslant l, \qquad (4)$$

where

$$u^{(\nu)}(t) = \frac{4\pi}{cE^0}\sqrt{t+1}\, J_{2\tau}^{(\nu)}[a(1+t)];$$

$$D_1 = \frac{4iA_1 e^{i\eta}}{aE^0};\quad D_2 = \frac{4iA_2 e^{-i\eta}}{aE^0};\quad \delta_\nu = \begin{cases} 1 & \text{for } \nu=0 \\ 0 & \text{for } \nu=2; \end{cases}$$

$$t=\xi-1;\quad y=\eta-1;\quad l=\alpha-1;\quad y_1=l-y$$

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9.1920 (3402, 2603, 2904, 1103)

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S/057/61/031/001/002/017
B104/B204

AUTHORS: Grinberg, G. A. and Kolesnikova, E. N.

TITLE: Diffraction of electromagnetic waves by a perfectly conducting plane ring

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 1, 1961, 13-17

TEXT: The diffraction of perpendicularly inciding plane waves by a perfectly conducting plane ring has been studied on the assumption that the inner ring radius and the ring width are greater than the wavelengths. The ring is in the xy plane, and a linearly polarized plane wave $E_x^o = - H_y^o = E^o e^{ikz}$ is assumed to incide from the side $z > 0$. The electric current induced by the incident wave in the ring is sought. With reference to a previous paper (Ref. 1), the authors give an approximative equation for the current induced on the dark side of the ring.

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Averaging of the function ... S/057/61/031/001/001/017
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for (42). Further, the calculation of a Newtonian potential or of an electrostatic potential with the help of (42) is briefly discussed. K. A. Petrzhak, M. A. Bak, M. M. Agrest, M. Z. Masimov, and A. K. Khmelevskiy are mentioned. There are 3 figures and 10 references: 3 Soviet-bloc and 6 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad (Institute of Physics and Technology AS USSR, Leningrad)

SUBMITTED: August 11, 1960

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integration of the originally triple integral is reduced to finding a double integral of a variable R. This result may also be represented in a different form, which follows immediately from (41). If it is assumed that F(R) as a Laplacian

$u(R) = \int (\chi(R)/R^2)dR$, where $\chi(R)$ is determined by (40), it is possible to give integral (38) the form $P = \int_{(v)} \Delta u dv = \int_{(f)} \frac{\partial u}{\partial n} df = \int_{(f)} \frac{du}{dR}(\vec{n}^o, \mathrm{grad} R) df$

$= \int_{(f)} \frac{1}{R}\frac{du}{dR}(\vec{n}^o, \vec{R}) df = \int_{(f)} \frac{\chi(R)}{R^3}(\vec{n}^o, \vec{R}) df$ (42). f is the surface bounding the volume v; $\vec{n}^o$ is the unit vector of the outer normal on f; $\vec{R}$ is the radius vector of 0 on the surface element df. (42) is a generalized representation of (41). The demand (made in deriving (41)) that the radius vector intersect the surface f only at two points need not be satisfied

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or Newtonian potential, of a wave potential, and of a solid angle are discussed, and the application of the formulas for some concrete cases is dealt with in detail. In the last part of the paper, the integral $P = \int_{(v)} F(R)dv$ (38) is calculated, where v denotes a certain volume; R is the distance between a volume element dv, and a fixed point; and F(R) is any function of R. If O is considered to be the origin of coordinates, and if it is assumed to lie outside of v, the following holds if $dv = R^2 d\omega$:

$$P = \int_{(\omega)} \left\{ \int_{R_{min}}^{R_{max}} F(R)R^2 dR \right\} d\omega \quad (39).$$

By introducing the function $\chi(R) = \int F(R)R^2 dR$ (40), the author obtains the integral $P = \int_{(\omega)} \left\{ \chi(R_{max}) - \chi(R_{min}) \right\} d\omega$ (41) for (39). Thus, the

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the introduction of $\psi(R) = \int F(R)RdR$ (6), and with the help of the denotations $\sqrt{r^2(\theta) + h^2} = R(\theta)$, $\sqrt{r^2_{min} + h^2} = R_{min}$, and $\sqrt{r^2_{max} + h^2} = R_{max}$, the author obtains

$$I_1 = \int_0^{2\pi} (\psi[R(\theta)] - \psi(h))\, d\theta, \tag{7}$$

$$I_2 = \int_{\theta_{min}}^{\theta_{max}} (\psi[R(\theta)] - \psi(h))\, d\theta, \tag{8}$$

$$I_3 = \int_{\theta_{min}}^{\theta_{max}} (\psi(R_{max}) - \psi(R_{min}))\, d\theta. \tag{9}$$

If integral (6) is expressed by known functions, integrals (7) - (9) for the required I are simple integrals. The calculations of an electrostatic

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where f is any plane figure; **R** is the distance of a certain point A from a surface element df; and F(R) is a given function of R. From A, the normal onto the plane in which f lies, is drawn, and into the point where the normal passes through this plane, the origin O of the polar coordinates is placed. Depending on whether O lies in f, on the edge of f, or outside of f, the integration of (1) is carried out. If r and θ are the polar coordinates, $R = \sqrt{r^2 + h^2}$, where h = OA. Thus, for case 1), where O is in f: $I \equiv I_1 = \int_{\theta=0}^{\theta=2\pi} d\theta \int_0^{r(\theta)} F(\sqrt{r^2 + h^2})rdr$ (3); for case 2), where O is on the edge of f: $I \equiv I_2 = \int_{\theta_{min}}^{\theta_{max}} d\theta \int_0^{r(\theta)} F(\sqrt{r^2 + h^2})rdr$ (4); and for case 3), where O is outside of f, $I \equiv I_3 = \int_{\theta_{min}}^{\theta_{max}} d\theta \int_{r_{min}}^{r_{max}} F(\sqrt{r^2 + h^2})rdr$ (5). By

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3.2100 (1057,1168 only)
9.3140 (4501140)

S/057/61/031/001/001/017
B104/B204

AUTHOR: Grinberg, G. A.

TITLE: Averaging of the function of a distance to a point over a surface and a volume

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 1, 1961, 3-12

TEXT: In calculating static potentials or wave potentials of uniformly occupied double layers, of charges which are uniformly distributed over a volume or a surface, in calculating solid angles under which distant bodies are seen, and in similar technical and physical problems, the calculation of the functions of the distance is the main problem. This is a quadrature which is in most cases very complicated. The author describes a general method for calculating integrals occurring in these problems. He first studies integrals of the form

$$I = \int_{(f)} F(R)df \quad (1),$$

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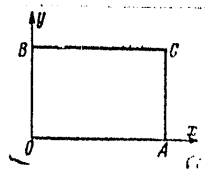
If the right-hand side of Eqs. (4.5) or (4.9) would be known, $\chi(z)$ could be found by quadratures by means of the solution of the integral equation

$$\int_0^1 \frac{\chi(\zeta)\,d\zeta}{\sqrt{|z-\zeta|}} = w(z) \qquad (0 \leqslant z \leqslant 1) \tag{4.10}$$

where the function w(z) is assumed as known. There are 1 figure and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: I.A. Shercliff, Steady motion of conducting fluids in pipes under transverse magnetic fields. Proc. of the Cambr. Phil. Soc., 1956, 1, 49; G. A. Grinberg, The coastal refraction of electromagnetic waves. Journ of Phys. of the USSR, 1942, 2, 6.

SUBMITTED: August 11, 1961

Fig. 1.



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From Eq. (2.43) it is evident that for small and moderate values of M, this equation can be solved numerically by reducing it to a system of linear equations, whereby $\psi(0) = \psi(1) = 0$; for large u, the function $K_0(u)$ approaches asymptotically $e^{-u}\sqrt{\pi/2u}$; hence for large M, the series (2.44) converges very fast, whereby it is enough to retain 3 terms only. Further, the asymptotic form of Eq. (2.43) is derived (with $M \to \infty$). After transformations, one obtains

$$\int_0^1 \frac{\chi(\zeta)\,d\zeta}{\sqrt{|z-\zeta|}} = \frac{2\,\mathrm{sh}\,Mz\,\mathrm{sh}\,M(1-z)}{\mathrm{sh}\,M} - \delta(z) + R(z) \tag{4.5}$$

where

$$R(z) = e^{-2Mz}\int_z^1 \frac{\chi(\zeta)\,d\zeta}{\sqrt{z+\zeta}} + e^{-2M(1-z)}\int_0^z \frac{\chi(\zeta)\,d\zeta}{\sqrt{2-z-\zeta}} \tag{4.7}$$

and $\delta(z)$ is given by an expression; in the first approximation, $\delta(z)$ can be dropped, as well as other terms in Eq. (4.5). Thereupon Eq. (4.5) is written (approximately) as

$$\int_0^1 \frac{\chi(\zeta)\,d\zeta}{\sqrt{|z-\zeta|}} = \frac{2\,\mathrm{sh}\,Mz\,\mathrm{sh}\,M(1-z)}{\mathrm{sh}\,M} + e^{-2Mz}\int_z^1 \frac{\chi(\zeta)\,d\zeta}{\sqrt{z+\zeta}} + e^{-2M(1-z)}\int_0^z \frac{\chi(\zeta)\,d\zeta}{\sqrt{2-z-\zeta}} \tag{4.9}$$

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If $[\partial v/\partial y]_{y=0} = 0$, the formulas (2.34) and (2.35) give the exact solution of the corresponding one-dimensional problem. If $\alpha = 0$, one obtains

$$H_z = \frac{2\pi I}{c}\left(1 - \frac{x}{a}\right), \tag{2.37}$$

and for the current density j, the formula

$$j = \frac{c}{4\pi} \operatorname{grad} H_z \times i_z = -\frac{I}{l} i_y, \tag{2.38}$$

i.e. the current flows parallel to the y-axis, whereby its density with respect to the x-axis is constant. Introducing the dimensionless variables $z = x/l$, $\xi = \xi/l$, and setting $\gamma l = M$ (Hartmann's number), and $l\varphi(zl) = \psi(z)$, one finally obtains

$$\int_0^1 g(l\zeta, 0, lz, 0)\,\psi(\zeta)\operatorname{ch} M(z-\zeta)\,d\zeta = \frac{2\operatorname{sh} Mz \operatorname{sh} M(1-z)}{\operatorname{sh} M} \tag{2.43}$$

where

$$g(l\zeta, 0, lz, 0) = \sum_{m=-\infty}^{\infty} [K_0(M|2m+z-\zeta|) - K_0(M|2m-z-\zeta|)] \tag{2.44}$$

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By means of Green's function, the following expression is obtained:

$$S(x, y) = \int_0^l \{G(\xi, d, x, y) f_d(\xi) - G(\xi, 0, x, y) f_0(\xi)\} e^{\gamma(\xi - a)} d\xi - \\ - a \int_0^d \{G_\xi'(l, \eta, x, y) e^{\gamma a} + G_\xi'(0, \eta, x, y) e^{-\gamma a}\} d\eta \tag{2.18}$$

After transformations, one obtains

$$\int_0^l \{G(\xi, d, x, 0) + G(\xi, 0, x, 0)\} f_0(\xi) \operatorname{ch} \gamma (x - \xi) d\xi = 2\alpha \frac{\operatorname{sh} \gamma x \operatorname{sh} \gamma (l - x)}{\operatorname{sh} \gamma l} \tag{2.33}$$

for determining the function $f_0(\xi)$. For u and v one obtains

$$u = \int_0^l [G(\xi, d, x, y) + G(\xi, 0, x, y)] f_0(\xi) \operatorname{sh} \gamma (x - \xi) d\xi - \alpha \frac{\operatorname{sh} \gamma (l - 2x)}{\operatorname{sh} \gamma l} \tag{2.34}$$

$$v = -\int_0^l [G(\xi, d, x, y) + G(\xi, 0, x, y)] f_0(\xi) \operatorname{ch} \gamma (x - \xi) d\xi + 2\alpha \frac{\operatorname{sh} \gamma x \operatorname{sh} \gamma (l - x)}{\operatorname{sh} \gamma l} \tag{2.35}$$

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is introduced and

$$p = e^{-\gamma(x-a)}s, \quad q = e^{\gamma(x-a)}t \tag{2.10}$$

$$\left.\frac{\partial v}{\partial y}\right|_{y=0} = f_0(x), \quad \left.\frac{\partial v}{\partial y}\right|_{y=d} - f_d(x) \quad (0 \leq x \leq l) \tag{2.11}$$

where $p = u + v$ and $q = u - v$. In order to find the functions S and t, Green's function G for the rectangular region under consideration is set up:

$$2\pi G(\xi, \eta, x, y) = \sum_{m=-\infty}^{\infty} \sum_{n=-\infty}^{\infty} \{K_0[\gamma\sqrt{(x_m-\xi)^2+(y_n-\eta)^2}] + K_0[\gamma\sqrt{(x_m-\xi)^2+(y_n'-\eta)^2}] - K_0[\gamma\sqrt{(x_m'-\xi)^2+(y_n-\eta)^2}] - K_0[\gamma\sqrt{(x_m'-\xi)^2+(y_n'-\eta)^2}]\} \tag{2.15}$$

where K_0 is MacDonald's function and

$$x_m = 2ml + x, \quad x_m' = 2ml - x \quad (m = 0, \pm 1, \pm 2, \ldots)$$
$$y_n = 2nd + y, \quad y_n' = 2nd - y \quad (n = 0, \pm 1, \pm 2 \ldots) \tag{2.16}$$

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21340
S/040/61/025/006/006/021
D299/D304

24,2110(1138,1147,1164)

AUTHOR: Grinberg, G. A. (Leningrad)

TITLE: On the steady flow of conducting fluid in a rectangular pipe with two nonconducting- and two conducting walls which are parallel to the external magnetic field

PERIODICAL: Prikladnaya matematika i mekhanika, v. 25, no. 6, 1961, 1024 - 1034

TEXT: The problem is reduced to an integral equation of the first kind which can be readily solved by numerical methods for small and moderate values of Hartmann's number, and given an asymptotic solution for large values. Setting $OA = \ell = 2a$, $OB = d$ (see Fig. 1) and denoting by I the current which flows in through the ideally conducting side OA, and flows out through BC, one obtains the boundary conditions for the external field H. The function

$$u = \frac{1}{2\gamma}\left[\frac{H^0 u}{4\pi\eta} H_z + \frac{p}{\eta}(x - a)\right], \quad \gamma = \frac{\mu H^0}{2c}\sqrt{\frac{\sigma}{\eta}} \qquad (2.4)$$

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ROZHKOV, I.S.; GAINBERG, G.A.; KUKHTINSKIY, G.G.

Some characteristics of the geology and metallogeny of the upper Indigirka Valley. Geol. i geofiz. no.11:3-13 '61. (MIRA 15:2)

1. Yakutskiy filial Sibirskogo otdeleniya AN SSSR.
(Indigirka Valley--Gold ores)

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GRINBERG, G.A., KOLESNIKOVA, E.N.

Calculating the electrostatic field of a system of plane diaphragms with round apertures. Zhur. tekhn. fiz. 30 no.6:723-733 Je '60. (MIRA 13:8)

1. Fiziko-tekhnicheskiy institut AN SSSR, Leningrad.
(Electrostatics)

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66731

Diffraction of Electromagnetic Waves on a Band of Finite Width

SOV/20-129-2-16/66

$$j_2(\xi,h)=\sqrt{\frac{\pi}{2}}\,e^{-i\pi/4}\left\{A\lim_{R\to\infty} e^{ikR}\sqrt{R}\;j(R,\xi,h)+Be^{ikh}\lim_{R\to\infty} e^{ikR}\sqrt{R}\;j(R,h-\xi,h)\right\}$$

The author then discusses the determination of tne solution of the equation written down first. The equations which are suited for the determination of the required solution at any value of γ are especially well suited for determining the asymptotic form of the solution at $\gamma \gg 1$. There are 4 figures and 6 references, 5 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Physico-technical Institute of the Academy of Sciences, USSR)

SUBMITTED: August 3, 1959

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Diffraction of Electromagnetic Waves on a Band of Finite Width

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quadratures if only the solution of the "key problem" is known. This problem is defined by the integral equation

$$\int_0^h j(R,\xi,h)\, H_0^{(2)}(k|x-\xi|)\, d\xi = -H_0^{(2)}\left[k(R+x)\right] \quad 0<x<h,\ R>0 \quad .$$

In this connection $H_0^{(2)}(z)$ denote the Hankel function, $j(R,\xi,h)$ - the density of those currents which are induced in the band under the action of a unit current flowing in parallel direction and at a distance R from the edge $\xi = 0$ of the band. Furthermore also the solution of equation $\int_0^h j_2(\xi,h) H_0^{(2)}(k|x-\xi|)d\xi = Ae^{-ikx}+Be^{ikx}, 0<x<h$ must be known where A and B denote arbitrary constants. If the general solution of the first equation at any $R>0$ is found the solution of the second equation is obtained by a simple limiting process. The solution of this second equation has the form

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66731

SOV/20-129-2-16/66

~~24(3)~~ 9.3700

AUTHOR: Grinberg, G. A., Corresponding Member, Academy of Sciences, USSR

TITLE: Diffraction of Electromagnetic Waves on a Band of Finite Width

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 2, pp 295-298 (USSR)

ABSTRACT: By using the new method for the solution of the problem of the diffraction of electromagnetic waves on a plane perfectly conductive screen ("method of the shadow fluxes") suggested by the author the problem of the diffraction on a gap may be easily reduced to the solution of the Fredholm equations of the second kind of simpler structure. From these also the asymptotic form of the required solution at high γ may be easily determined. With the principle of the completion it is easy to pass over to the solution of the problem of the diffraction in a gap. This method, however, leads to complicated formulas. In the present paper the method recently suggested by the author for the solution of the Fredholm integral equations with a kernel depending only on the absolute value of the difference of the arguments is used. In this case it is especially easy and simple to determine the asymptotic form of the desired solution when $\gamma \gg 1$. The solution of the most simple two-dimensional [redacted] problem for a band may be reduced to

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