DENISOV, N.

A man can do anything. Grazhd. av. 18 no.6:24-25 Je '61.
(MIRA 14:7)

(Air pilots)

DENISOV, N., polkovnik

"From Stalingrad to Berlin;" three hundred battle pictures by IAkov Riumin. Reviewed by N. Denisov. Sov. foto 21 no. 2:24 F '61. (MIRA 14:2)
(World War, 1939-1945--Photography) (Riumin, IAkov)

DENISOV, N.

Improtant seconds. Kryl.rod. 12 no.10:6-8 O '61. (MIRA 15:2)
(Air pilots) (Aeronautics--Competions)

ACCESSION NR: AN3001191 S/9012/63/000/166/0003/0003

AUTHOR: Borzenko, S. and Denisov, N.

TITLE: Pilot-cosmonaut Valeriy Bykovskiy

SOURCE: Pravda, 15 Jun 63, p. 3, col. 1-6

TOPIC TAGS: General characteristic of V. Bykovskiy

TEXT: It is mentioned that V. Bykovskiy was at the cosmodrome during the launching of Vostoks 1, 2, 3, and 4. The Theoretician of Cosmonautics is also mentioned by the authors [few other sources on Vostok-5 mention him]: "Even long before the flights of the Vostok-3 and Vostok-4, the Chief Designer [of the Vostok spaceships] and the Theoretician of Cosmonautics.... saw in Valeriy Bykovskiy an analytical mind, an inclination to generalization, and the ability to make the right decision quickly in complex situations."

Card 1/2

ACCESSION NR: AM3001181

In this and other articles published in connection with the Vostok-5 flight, the authors use the term "cosmonaut detachment" instead of the term "cosmonaut group," as was used in previous publications. According to these articles, Cosmonaut Yuriy Gagarin is the cosmonaut detachment commander. Bykovskiy's backup pilot is also mentioned. According to Brzenko and Denisov, he is a tall young man with clear eyes; he is quiet and is deliberate in his judgement.

The important purpose of this launching and significant changes in spaceship design are emphasized. The authors state: "...Never before has science come up with such tasks as were put by Soviet scientists to V. F. Bykovskiy. For the solution of these tasks, the design concepts of the developers of space technology improved the ship and ... developed the most precise instruments and reliable apparatuses...."
SPAO - Item no. 2

DATE ACQ: 18Jun63

Card 2/2

DENISOV, N.

The main formula. Izobr. i rats. no.11:36 '63. (MIRA 16:12)

1. Direktor sukonnoy fabriki "Krasnyy Oktyabr'", Sursk, Penzenskoy obl.

ZHOMOV, Yu. (UA3FG); DENISOV, N. (UA3XN)

Short and ultrashort radio waves. Radio no.1:17 Ja '65. (MIRA 18:4)

DENISOV, N.A.

KRILICHEVSKIY, V.V., redaktor; DENISOV, N.A., redaktor; YERSHOV, P.R., redaktor; TROFIMOV, A.V., tekhnicheskiy redaktor.

[Progressive practice of builders in the oil industry; materials of a conference of innovators of the Main Western Petroleum Construction trust] Peredovoi opyt neftianikov-stroitelei; materialy soveshchaniia novatorov glavzapadneftestroia. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1952. 61 p. (MLRA 7:8)

1. Russia (1923- U.S.S.R.) Ministerstvo neftyanoy promyshlennosti.
(Building) (Petroleum industry)

DENISOV, N. A.

Uchet i analiz proizvoditel'nosti truda i zarabotnoy platy v stroitel'stve neftyanoy promyshlennosti (Calculation And Analysis Of The Operating Efficiency And Wages In The Building Up Of The Petroleum Industry, By) N. A. Denisov i A. P. Chebotayev. Moskva, Gostoptekhizdat, 1952.

128 p. tables.

DENISOV, N. A.

[redacted]

Fulfillment of output norms and the productivity of labor. Sots.trud no.6:121-122 Je '57. (MIRA 10:7)

1. Nachal'nik otdela truda i zarplaty Glavtsentroneftestroya.
(Construction industry--Production standards)

RUMYANOV, Mikhail Vasil'yevich; DENISOV,N.A., inzhener, redaktor; KRYUGER,Yu.V., redaktor; TOMLOV,V.S., tekhnicheskiy redaktor

[Complex mechanization of painting work] Opyt kompleksnoi mekhanizatsii maliarnykh rabot. Moskva, Gos.izd-vo lit-ry po stroitel'stvu i arkhitekture, 1955. 49 p. (MIRA 9:3)
(Paint machinery)

DENISOV, N.A. (Moskva)

Piecework payment system for construction workmen. Stroi.pred. neft.prom.1 no.3:26-27 My '56. (MIRA 9:9)
(Piecework) (Construction workers)

DENISOV, N.A.

DENISOV, N.A.; IVANCHUKOV, A.F., nauchnyy red.; KRYUGER, Yu.V., red.izd-va; BOROVNEV, N.K., tekhn.red.

[Organizing the training of workers in the construction industry] Organizatsiia obucheniia rabochikh na stroike. Moskva, Gos.izd-vo lit-ry po stroit.i arkhit., 1957. 27 p. (MIRA 11:1)
(Building trades--Study and teaching)

Denisov, Nikolay Aleksandrovich

DENISOV, Nikolay Aleksandrovich; VOVZHENYAK, P.N., nauchnyy red. KRYUGER, Yu.V., red.izd-vo; EL'KINA, E.M., tekhn. red.

[Experience in organizing mixed brigades] Opyt organizatsii kompleksnykh brigad. Moskva, Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 58 p. (MIRA 11:2)
(Construction industry)

DENISOV, N. G.

Denisov, N. G. Propagation of electromagnetic signals in an ionized gas. Akad. Nauk SSSR. Žurnal Eksper. Teoret. Fiz. 21, 1354–1363 (1951). (Russian)

This paper discusses the propagation of a finite wave train in a homogeneous ionized medium. The wave train is represented as a Fourier transform over all frequencies ω and then using the fact that the dielectric constant for waves of frequency ω is $\epsilon=1-a^2/\omega^2$, where a is a constant depending on the electron density, the author obtains an integral to represent the electromagnetic field produced by the signal. The integral is expressed in terms of Lommel functions of two variables and then, by means of certain approximations, simple expressions are obtained for the physically significant quantities. *B. Friedman.*

Gor'kiy Phys. Tech. Inst.

Source: Mathematical Reviews, Vol 13 No 10

DENISOV, N.G.

Answer to P.I.Kuznetsov's letter concerning N.G.Denisov's article.
Zhur.eksp. i teor.fiz. 24 no.3:368 Mr '53. (MLRA 7:10)
(Kuznetsov, P.I.)

DENISOV, N.G.

USSR/Physics - Waves in ionsphere FD-2980

Card 1/1 Pub. 146 - 21/28

Author : Denisov, N. G.

Title : Interaction of ordinary and extraordinary waves in the ionosphere and the magnification effect of reflected signals

Periodical : Zhur. eksp. i teor. fiz., 29, September 1955, 380-381

Abstract : The electromagnetic field of a wave propagated in an inhomogeneous magnetoactive medium (ionosphere) generally cannot be represented in the form of a superposition of independent extraordinary and ordinary waves; taking into account of the inhomogeneity of the medium leads to the fact that in the propagation of waves of one type in the medium waves of the other type arise, this interaction existing in the entire expanse of the inhomogeneous medium (however, under the conditions of the ionosphere, a slowly varying medium, noticeable interaction occurs only in bounded regions, outside of which it is extremely small). Only under conditions of small interaction can one talk about the separation of a field into ordinary and extraordinary waves. In connection the present writer obtains an expression for the coefficient of reflection for normal incidence. He thanks V. L. Ginzburg for posing the theme and for his assistance. Four references: e.g. Ya. L. Al'pert, V. L. Ginzburg, Ye. L. Feynberg, Rasprostraneniye radiovoln [Propagation of radio waves], Moscow, 1953; B. N. Gershman, Sbornik pamyati Andronova, 1955.

Institution : Gor'kiy State University

Denisov, N. G.

Phys

Interaction of ordinary and extraordinary waves in the ionosphere, and the effect of amplification of reflected signals. N. G. Denisov. *Soviet. Phys. JETP* 2, 342-4 (1956)(Engl. translation).—See *C.A.* 50, 2270*f*.

B. M. R.

DENISOV, N.G.

USSR / Radiophysics. Radio-Waves Propagation I-5

Abs Jour : Ref Zhur - Fizika, No 5, 1957, No 12532

Author : Denisov, N.G.

Inst : Not given

Title : Effect of a Constant Magnetic Field on the Resonant Effect Observed Upon Reflection of an Electromagnetic Field from an Inhomogeneous Plasma.

Orig Pub : Radiotekhn. i elektronika, 1956, 1, No 6, 732-738

Abstract : The author establishes the presence of a resonance in the reflection of radio waves from an inhomogeneous gyrotropic plasma, at the level where the frequency of the incident wave coincides with the natural frequency of the plasma oscillations. In a medium without absorption, the field

Card : 1/2

USSR./Radiophysics. Radio-Waves Propagation I-5

Abs Jour : Ref Zhur - Fizika, No 5, 1957, No 12532

Abstract : of the wave increases at this level to infinity. Estimates show that upon reflection of waves from the ionosphere, the influence of the resonant region is insignificant. Also discussed is the influence of the plasma waves that arise at the resonant level.

Card : 2/2

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310120013-0"

DENISOV, N.G.

SUBJECT USSR / PHYSCIS CARD 1 / 2 PA - 1890
AUTHOR DENISOV, N.G.
TITLE ~~On a Peculiarity~~ of the Field of an Electromagnetic Wave which is Propagated in an Inhomogeneous Plasma.
PERIODICAL Žurn.eksp.i teor.fis, 31, fasc.4, 609-619 (1956)
Issued: 1 / 1957

In the course of various previous works cited it was not explained how the amplitude of the growing field behaves in a medium with absorption, and what physical significance this peculiarity has in a medium without absorption. These problems will form the object of a close examination in the course of the present work.

At first the special features of the field of the electromagnetic wave in the case of an inclined incidence on to the linear layer of a medium, the properties of which depend only on the z-coordinate, are investigated. From this investigation the following result was essentially obtained: For an isotropic plasma with slowly changing properties the increase of fieldstrength in the domain of low values of $\varepsilon(z)$ in the case of large angles of incidences is of no importance whatever. However, in the case of small angles $\vartheta_0 \sim 2 - 2^{\circ}$ ($\nu_{eff} \leqslant 10^3$) this effect becomes noticeable and the existence of a point with $\varepsilon = 0$ causes a considerable change in the form of the solution behind the point of reflection. The increase of the strength of the electric field of the standing wave is then not balanced by existing absorption.

Žurn.eksp.i teor.fis,31,fasc.4,609-619 (1956) CARD 2 / 2 PA - 1890

The influence exercised by plasma waves is then approximatively taken into account. In media with very low absorption the anomalous behavior of the corresponding solutions is conserved and the actual behavior of the field remains without an explanation, because in an inhomogeneous medium also other factors are able to play an important part. The characteristic behavior of the vertical component E_z of the field of an electromagnetic wave propagated in an ionizing medium with plane layers suggests a certain connection between this phenomenon and certain resonance properties of the quasineutral plasma. Resonance occurs where the frequency ω of the inciding wave is identical with the eigenfrequency ω_0 of the plasma oscillations. Such a dependence of $|E_z|^2$ on the coordinate is characteristic of the idealized problem in which every kind of scattering of the energy of a standing electromagnetic wave is neglected. The width of the corresponding "resonance curve" is on this occasion determined by absorption. However, in an inhomogeneous plasma also an other mechanism of the dissipation of energy is possible, viz. the production of plasma waves. The existence of a sharply changing longitudial component of the electric field causes a spatial inhomogeneity of the electron gas. In all such"disturbed" domains of the medium the electrons perform oscillations the amplitude of which grows with a growing approach to the point of resonance. Taking the heat motion of electrons into account leads to equations of a higher order.

INSTITUTION: State University Gor'kij

. DENISOV, N.G.

AUTHOR GERSHMAN, B.N., GINZBURG, V.L., DENISOV, N.G. 53-4-4/7

TITLE The Propagation of Electromagnetic Waves in a Plasma (in the Ionosphere). (Rasprostraneniye elektromagnitnykh voln v plasme (ionosfere) -Russian).

PERIODICAL Uspekhi Fiz. Nauk, 1957, Vol 61, Nr 4, pp 561-612 (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT Starting out from the monograph by Ya.L.Al'pert, V.L.Ginsburg, El.Feynberg "The Propagation of Radio Waves" (Raspostraneniye rediovoln- Gostekhizdat, 1953, the paper under review deals with some problems of this field which have been clarified to a certain extent since the publication of the monograph. The consideration of the heat motion of electrons in a homogeneous medium in the magnetic field leads to the ocurrence of plasma waves, the consideration of the heat motion of ions, on the other hand, results in low-frequency magnetohydrodynamic and quasi-acoustic waves, both with dispersion. In inhomogeneous media it is possible that we have cases where the approximation of geometrical optics is no more permissible and where an interaction of waves takes place which would be independent in the homogeneous or quasi-homogeneous case. This is the case in the absence of a magnetic field at vertical incidence in the proximity of the reflection point and at oblique incidence in the proximity of the point (ω) = 0, at the existence of a magnetic field at a small angle between the wave normal and the magnetic field (multiplication of the reflected radio signals), and at the beginning of the layer where the concentration of the electrons still is

The Propagation of Electromagnetic Waves in a Plasma (in the Ionosphere). 53-4-4/7

small. For the latter case the paper under review computes the boundary polarization of the short waves which leave the ionosphere for a certain model of the ionosphere, but it is unable to offer any new information about the ionosphere.
(With 18 reproductions, 73 references).

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DENISOV, N. G., ZVEREV, V. A. (NIRFI, Gor'kiy)

"The Wave Propagation in Mediums With Random Heterogeneities".

report presented at the All-Union Conference on Statistical Radio Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh uchev zaved-Radiotekh., vol. 2, No. 1, pp 121-127) COMPLETE card under SIFOROV, V.I.)

DENISOV, N. G.

"The Wave Propagation in a Plane-Laminar Medium With Statistical Heterogeneities".

report presented at the All-Union Conference on Statistical Radio Physics, Gor'kiy, 13-18 October 1958. (Izv. vyssh uchev zaved-Radiotekh., vol. 2, No. 1, pp 121-127) COMPLETE card under SIFOROV, V. I.)

06461

SOV/141-1-5-6-5/28

AUTHOR: Denisov, N.G.

TITLE: Wave Propagation in a Planar Laminary Medium Containing Statistical Inhomogeneities

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, Vol 1, Nr 5-6, pp 34-40 (USSR)

ABSTRACT: It is assumed that the waves propagate in a medium whose refractive index is a point function of the height z and undergoes random fluctuations with respect to its average value n(z) . The problem can be solved by dividing the non-uniform medium into a number of flat layers. The thickness of these layers should be small enough so as to make it possible to assume that each layer is statistically uniform. On the other hand, each layer should contain a large number of inhomogeneities so that the correlation between the layers can be neglected. The probability $W(z\vartheta)$ that a ray which passed a thickness z will have a direction determined by the angle ϑ is defined by (M.A. Leontovich - Ref 3):

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$$\sin \vartheta \frac{\partial W}{\partial z} = \frac{\partial}{\partial \vartheta} \left\{ \sin \vartheta \left(D \frac{\partial W}{\partial \vartheta} - \frac{d\vartheta}{dz} W \right) \right\} \qquad (2) .$$

The diffusion coefficient D in Eq (2) is defined by the statistical properties of an elementary layer and is given (L.A. Chernov - Ref 1, M.A. Leontovich - Ref 3) by Eq (3), where $\overline{\vartheta^2}$ is the average square value of the deflection angle of the initial direction, at the exit from a layer having a thickness Δz . The final expression for the diffusion coefficient is:

$$D = \frac{\sqrt{\pi}}{l} \frac{\overline{(\Delta n)^2}}{n^2} \qquad (6)$$

where l denotes the scale of the random inhomogeneities. If ϑ is comparatively small, the solution of Eq (2) is in the form of Eqs (8). From this, it is found that the average

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Wave Propagation in a Planar Laminary Medium Containing Statistical Inhomogeneities

square of the incidence angle fluctuations is given by Eq (9). If the non-uniform layer has a thickness z_o ; Eq (9) is in the form of Eq (9a). Since the average square fluctuation of the refractive index is given by Eq (10), Eq (9a) can be written as Eq (11). The above formulae are valid for the plane waves whose incidence is normal to the layer. It is of interest to define the same parameters for the case of an inclined incidence. The problem can be solved by considering Eq (15) (L.A. Chernov - Ref 2), where n' denotes the refractive index of a non-uniform layer, S is a unit vector of the tangent to the ray and σ is a linear co-ordinate measured along the ray. The average square value of the ray deviation (due to the random fluctuations) is now expressed by Eq (20), where N(r) is the correlation function of the refractive index. By introducing a diffusion coefficient D , as defined by the second equation on p 38, Eq (20) can be written in the form of Eq (21). The fluctuation of the intensity of a ray which passed through an inhomogeneous

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layer can be evaluated by using the method of L.A. Chernov (Ref 2), provided that the average refractive index is independent of the co-ordinates. If the refractive index is represented by the last equation on p 38, Eq (15) leads to Eqs (22). The first two of these can be written as Eqs (23). Consequently, the lateral displacements of a ray at the exit from the non-homogeneous layer, having a thickness z, are given by Eqs (24). The relative change of the ray intensity is, therefore, determined by Eq (25). Integration of Eq (25) leads to Eq (26). Consequently, the average square fluctuation of the intensity is given by Eq (27). The correlation function of this equation is defined by the last equation on p 39. The expression for the average square fluctuation can, therefore, be written as Eq (28). If the thickness of the layer z_o is much smaller than the scale of the inhomogeneities, Eq (28) can be written as Eq (29). When the correlation function is in the form:

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$$N = \exp(-r^2/l^2) ,$$

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Wave Propagation in a Planar Laminary Medium Containing Statistical Inhomogeneities

the average square fluctuation is given by Eq (31). This formula indicates that the fluctuations increase when n in a layer tends to 0 (at a certain level). All the above formulae were derived for the waves with an infinite front. The results can be used, however, for the evaluation of the fluctuations in wave beams, provided that the transverse dimensions are greater than those of the random inhomogeneities. The author makes acknowledgment to V.L. Ginzburg for discussing this work and for valuable remarks. There are 5 references, 4 of which are Soviet and 1 English.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Research Radiophysics Institute of the Gor'kiy University)

SUBMITTED: May 23, 1958

Card 5/5

06462
SOV/141-1-5-6-6/28

AUTHOR: Denisov, N.G.

TITLE: Wave Scattering in a Planar Laminary Medium

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, Vol 1, Nr 5-6, pp 41 - 48 (USSR)

ABSTRACT: The problem is formulated as follows. The average value of the permittivity ε is a function of the height z. The random deviations of the permittivity $\Delta\varepsilon$ from its average value are comparatively small. The problem of finding the scattered field consists, therefore, of finding the field of elementary radiators whose power is determined by $\Delta\varepsilon$ and by the field of the primary wave. If the field at $z = 0$ is E_o and the wave enters the non-uniform layer without reflection, the field at a height z is given by:

$$E(z) = \frac{E_o}{\sqrt{n(z)}} \cdot e^{-ik_o\int_0^z ndz + i\omega t} \quad \left(k_o = \frac{\omega}{c}\right) \qquad (1).$$

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Wave Scattering in a Planar Laminary Medium

The scattering volume can be divided into elementary volumes dV . The dipole moment of such a volume is given by Eq (2). It is now necessary to determine the field of an elementary radiator situated in a non-uniform layer. The radiation can be approximately represented by Eq (3), where r is the distance between the radiator and the point of observation, ψ is the angle between the vector k and the direction of the dipole moment. The field at the output of a non-uniform layer (due to a dipole situated at a height z) can be written in the form of Eq (4), where ϑ_o and φ_o are the angles determining the direction of a ray at the exit of a layer and R_o is the radius vector at the point of observation, The function f in Eq (4) is given by Eq (5), where $d\Omega$ is the spherical angle of the radiation "tube" at the source level and dS_o is the area of the "tube" at a level $z = z_o$. The square of the intensity of the scattered field can be written in the form of Eq (8). This can also be represented by Eq (10), or, finally, as Eq (11). The average square value of the

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intensity is, therefore, in the form of Eq (12), where ρ is the correlation function of the permittivity fluctuations. The effective scattering cross-section is, therefore, given by Eq (13). If the correlation function is exponential, the scattering cross-section is expressed by Eq (15). The above formulae are valid for a plane wave. In order to determine the scattering of spherical waves, it is necessary to take into account the divergence of the rays of the primary waves. In this case, the average square value of the scattered field is given by Eq (23), where δ is determined by Eq (13). The quantity $d\Omega_1$ denotes the spherical angle of the ray tube of a radiator which is situated at a distance h_1 from the non-uniform layer; dS_1 is the cross-section of the tube at the beginning of the non-uniform layer ($z = 0$ - Figure 1). For a point situated on the axis z at a distance h_2 from the upper boundary of a flat layer (Figure 1), the average square field

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is given by Eq (24). This can further be written as Eq (28), where r and Γ_1 are defined in Eqs (26) and (27). The final expression for the scattered field is given by:

$$\overline{E_o'^2} = E_o^2 \frac{\sqrt{\pi} k_o^2 l}{4(\Gamma_1 + \Gamma_2)^2} \int_0^{z_o} \frac{\overline{(\Delta\varepsilon)^2}}{\varepsilon} dz \qquad (35).$$

This formula is similar to Eq (22) except for the divergence factor:

$$(\Gamma_1 + \Gamma_2)^{-2} .$$

There are 5 references, of which 1 is English and 4 are Soviet; 1 of the Soviet references is translated from English.

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Wave Scattering in a Planar Laminary Medium SOV/141-1-5-6-6/28

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Research Institute of Gor'kiy University)

SUBMITTED: November 21, 1958

Card 5/5

56-2-46/51

AUTHOR: Denisov, N. G.

TITLE: On the Problem of the Absorption of Electromagnetic Waves Within the Resonance Ranges of an Inhomogeneous Plasma (K voprosu o pogloshchenii elektromagnitnykh voln v rezonansnykh oblastyakh neodnorodnoy plazmy)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 2, pp. 528 - 529 (USSR)

ABSTRACT: The phenomenologic description of the propagation of electromagnetic waves in a plasma is based on the possibility of the introduction of the index of refraction of the medium. First the author refers to several earlier works dealing with the same subject. K. G. Budden (reference 3) computed the absorption within the vicinity of the singular point of the index of refraction for the most simple model of an inhomogeneous layer. The complete solution of this problem can be obtained for the case of a weak inhomogeneous plasma. The present work gives the results of such an investigation.

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56-2-46/51

On the Problem of the Absorption of Electromagnetic Waves Within the Resonance Ranges of an Inhomogeneous Plasma

In a weak inhomogeneous medium the interaction of the ordinary and extraordinary ray can be neglected, with the exception of the special case to be investigated later on. For reasons of simplicity the author restricts himself to the investigation of the transverse propagation, although the final formulae can easily be generalized. In the transverse propagation the index of refraction of the extraordinary wave has a singular point. For the dependence of this index of refraction on the concentration of electrons a formula is put down. A formula is also given for the reflection coefficient. The maximal value of the absorption coefficient is about 35 %. In the calculation of the absorption within the range of resonance the interaction of the various types of waves must be taken into account only in the case of quasilongitudinal propagation. Then various details are shortly discussed. The absorption effect discussed here is connected with the transition of electromagnetic waves to plasma waves. The mechanism investigated here, can, by the way, only explain the appearance of the triplet. Multiple reflections can not occur. There are 6 references, 4 of which are Slavic.

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Gorkiy State U.

05494

AUTHOR: Denisov, N.G. SOV/141-2-2-19/22

TITLE: Amplitude and Phase Fluctuations of a Wave Passing Through a Layer with Random Inhomogeneities

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 2, pp 316 - 318 (USSR)

ABSTRACT: Previous analyses have considered either a layer with constant average parameters (L.A. Chernov - Ref 1 and V.I. Tatarskiy - Ref 2) or a layer in which only the intensity, e.g. of turbulence, varied (Ref 3). In the case considered here, besides the regular variation in refractive index, there are random inhomogeneities whose mean intensity depends on height. Starting from the scalar wave, Eq (1), and supposing that the scale of the random inhomogeneity is much larger than the wavelength and much smaller than the scale of regular changes in permittivity, a simplified expression for the potential Φ is Eq (5). The solution to this equation is in terms of Fourier integrals for variables x and y, as shown in Ref 2.

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SOV/141-2-2-19/22

Amplitude and Phase Fluctuations of a Wave Passing Through a Layer with Random Inhomogeneities

The inhomogeneous layer has a thickness L_1 and contains within it a randomly non-uniform layer of thickness, L_o. The correlation function for complex phase is Eq (10), which practically coincides with the expression obtained in the work of H. Scheffler (Ref 7), with approximate geometric optics. V.L. Ginzburg advised in this work. There are 7 references, of which 5 are Soviet, 1 German and 1 English.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Research Institute of Gor'kiy University)

SUBMITTED: February 13, 1959

Card 2/2

67528

24,2300

AUTHOR: Denisov, N.G. SOV/141-2-3-5/26

TITLE: An Estimate of the Accuracy of the Adiabatic Invariant

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 3, pp 374 - 376 (USSR)

ABSTRACT: The adiabatic invariant:

$$\mu_m = mv_{\perp}^2/2H = \text{const}$$

holds in the case of motion of a charged particle in a slowly varying magnetic field H , where $v_{\perp}$ is the component of the electron velocity perpendicular to the direction of the external magnetic field. How far this relation holds has been a matter of some controversy. If one introduces a small parameter describing the rate of change of the magnetic field, then it is known that the adiabatic invariant holds with an accuracy up to the square of the small parameter (Ref 1). It has been shown (Ref 2) that in the case of a uniform slowly varying field the adiabatic invariant holds to an accuracy which is proportional to exp(-A/a) , where A is a constant and

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SOV/141-2-3-5/26

An Estimate of the Accuracy of the Adiabatic Invariant

a is a small parameter describing the rate of change of the magnetic field. The present paper is also concerned with the case of a uniform field which was considered in Ref 2 and it is shown that the above two estimates of the accuracy are not contradictory but refer to different conditions.
There are 4 references, 2 of which are Soviet and 2 German.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Research Institute of Gor'kiy University)

SUBMITTED: April 2, 1959

Card 2/2

DENISOV, N.G.; ZVEREV, V.A.

Some questions of the theory of wave propagation in media with random inhomogeneities; survey. Izv.vys.ucheb.zav.; radiofiz. 2 no.4:521-542 '59. (MIRA 13:4)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Radio waves--Scattering)

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E032/E314

AUTHORS: Denisov, N.G. and Polyanin, L.N.

TITLE: Amplitude and Phase Fluctuations in a Wave Propagated in a Non-uniform Absorbing Medium

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 6, pp 1010 - 1012 (USSR)

ABSTRACT: Usually, fluctuations in the wave parameters are calculated without taking into account absorption in the medium. The present note is concerned with a method for taking absorption into account. It is assumed that the mean value of the complex dielectric constant ε' in the layer depends on z. In that case, the propagation of a scalar wave is described by an equation of the form given by Eq (1), where $\Delta\varepsilon'(x, y, z)$ represents random changes in the complex dielectric constant and $k_o = \omega/c$, where ω is the frequency of the wave and c is the velocity of light. If the layer is sufficiently regular, then the solution can be written in the form $E = \exp[\Phi_o(x, y, z) + \Phi_1(x, y, z) + \dots]$ and Φ_o and Φ_1

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are given by Eqs (2) and (3). The time dependence is harmonic ($e^{i\omega t}$). The random functions in Eq (3) are then expanded into a Fourier integral in x and y, so that Eqs (4) and (5) are obtained. It is assumed that the point of observation $z = L_1$ is outside the region in which irregular changes in the dielectric constant are present ($L_1 \geq L_o$). Using Eqs (6), (7) and (8), the real and the imaginary parts of the solution (4) can be written in the form given by Eq (9). The change in the amplitude and the phase due to absorption over distances of the order of the scale of the random irregularities l is negligible. The analysis is continued to obtain the correlation function for the complex phase. It is shown that in amplitude and phase calculations absorption need not be taken into account if the condition given by Eq (15) is satisfied. That is equivalent to saying that in the geometrical-optics zone, absorption need not be taken into account. In the ionosphere this condition may not

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hold for frequencies $\omega < 2\pi \, 10^7 \sec^{-1}$ and in the calculation of scattering in the E-layer absorption must be taken into account in this frequency region. There are 3 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific-research Radiophysic Institute of Gor'kiy University)

SUBMITTED: October 7, 1959

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SOV/109-- -- -4-3-7/38

AUTHOR: N.G. Denisov

TITLE: Absorption of Radiowaves in the Resonant Regions of a Non-Homogeneous Plasma (O pogloshchenii radiovoln v rezonansnykh oblastyakh neodnorodnoy plazmy)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 3, pp 388-397 (USSR)

ABSTRACT: A magnetically active plasma is generally characterised by two refraction indices. It is known that for certain values of the electron concentration, one of these indices tends to infinity. This condition of the plasma can be referred to as the resonant region, since it is caused by the resonant properties of the plasma (Refs 1,2). For the purpose of analysis it is assumed that the plasma is situated in a magnetic field H_0 and that the electron concentration is dependent only on the co-ordinate z. If the direction of the horizontal magnetic field coincides with the axis x, the wave equation for the system can be written as:

$$\frac{d^2E_y}{dz^2} + k_o^2\left(1 - \frac{v(1 - v)}{1 - u - v}\right)E_y = 0. \quad (1)$$

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Absorption of Radiowaves in the Resonant Regions of a Non-Homogeneous Plasma

where the various parameters are defined by Eq (2), and ω_H is the gyromagnetic frequency of an electron. Eq (1) describes the propagation of the extraordinary wave whose refraction index is expressed by Eq (3). If the function v of Eq (1) is linear and has a slope a, Eq (1) can be written as Eq (4), where $1 - u - v = \zeta$. The general solution of Eq (4) can be found on the basis of the approximation of geometrical optics and is in the form of Eq (5). This can also be written as Eq (7). If the extraordinary wave impinges on a non-uniform layer from the left, it is found on the basis of Eq (7) that the refraction coefficient is given by Eq (11). If the wave impinges from the right, it is shown that no refraction takes place. A more accurate expression for the refraction coefficient R is given by Eq (16). The modulus of the refraction coefficient can, therefore, be expressed by Eq (17). The parameters δ and S in Eq (17) are defined by Eqs (18) and (19). For $\delta \sim 1$, S is given by Eq (20) and Eq (17) can be written as Eq (21). A graph of Eq (21) is shown in Fig 3. If the

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properties of the medium (plasma) change as a function of z, and if the magnetic field of the earth H_0 is at an angle α with respect to the axis z, the solution of the equations describing the propagation of plane waves along the axis z is in the form of Eq (22). Here n_1 and n_2 denote the refraction coefficients of the ordinary and the extraordinary waves; the remaining parameters of Eq (22) are defined by Eq (23). Eq (22) is derived on the basis of the approximation of geometrical optics. The equation is not applicable in the regions where the reflection or interaction of the two waves takes place. The presence of the interaction results in a change of the constants $c_{1,2}$ and $d_{1,2}$ in Eq (22). However, if the lower integration boundary A in Eq (22) is chosen, so that the point A is situated to the right of the interaction region, the resulting solution of Eq (22) describes the incident and the reflected wave to the right of the point A. The solution in the area to the left of the interaction region is also in the form of Eq (22), but the values of

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Absorption of Radiowaves in the Resonant Regions of a Non-Homogeneous Plasma

the constants are different. These constants are expressed by Eq (24). The author expresses his gratitude to V.L. Ginzburg for his valuable remarks. There are 4 figures, 1 appendix and 8 references, 4 of which are Soviet, 3 English and 1 German: the appendix discusses the solution of Eq (4).

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SUBMITTED: September 5, 1957

S/141/60/003/02/005/025
E192/E382

AUTHOR: Denisov, N.G.

TITLE: Influence of the Reflection Region on the Scattering of Radiowaves in the Ionosphere

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 2, pp 208 - 215

ABSTRACT: It is assumed that in a nonhomogeneous ionospheric layer, whose permittivity $\varepsilon(z)$ is dependent on the height z, there exist also random fluctuations $\Delta\varepsilon(x,y,z)$. The investigation of the problem can be based on the solution of the following scalar equation:

$$\Delta\Psi + k_o^2\left[\varepsilon(z) + \Delta\varepsilon(x,y,z)\right]\Psi = 0 \quad (k_o = \omega/c) \qquad (1).$$

The solution is in the form

$$\Psi = \Psi_o + \Psi_1 ,$$

where Ψ_o is the solution for the case when $\Delta\varepsilon = 0$. The function Ψ_1 can be found by solving:

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Influence of the Reflection Region on the Scattering of Radiowaves in the Ionosphere

$$\Delta\Psi_1 + k_o^2\varepsilon(z)\Psi_1 = - k_o^2\Delta \varepsilon\Psi_o \quad (2)$$

It is seen therefore that the problem amounts to the determination of the field in a nonhomogeneous medium for the case of a given distribution of sources. The equation can be solved by representing the random functions Ψ_1 and $\Delta\varepsilon$ in the form of Fourier integrals dependent on the variables x and y (Ref 3). Two functions Φ and f, defined by Eqs (3), are introduced. The function Φ satisfies Eq (4). For a linear layer in which $\varepsilon = -az$, Eq (4) can be written as Eq (5), where $\zeta = az$ and Ψ_o satisfies Eq (6). The solution of Eq (6) is in the form of Eq (7), where v is the Airy function and A_o is the amplitude of the incident wave at the boundary of the non-homogeneous layer. The general solution of Eq (5) is in the form of Eq (10). The component of the scattering field at the boundary of the layer ($\zeta = -1$) can therefore

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be expressed by Eq (13). If the random irregularities form a fine diffraction grid, having a thickness $d \ll \lambda$, Eq (13) can be written as Eq (16). The mean spectrum of the correlation function of the complex field can therefor be written as Eq (17). The average angular spectrum of the field at the output of the nonhomogeneous layer can be expressed by Eq (18). On the basis of Eq (18) it can be seen that the angular spectrum is dependent on the position of the diffraction grid in the nonhomogeneous layer. This is illustrated in Figure 1, which shows the angular spectra for two different positions of the diffraction grid. The dotted curve in the figure illustrates the case when the grid is situated at the reflection level, while the second curve corresponds to the case when the grid is below the reflection level. On the basis of Eq (13), it is also possible to obtain a general formula for angular spectrum of the scattering field for the case when the random irregularities extend over a comparatively deep layer.

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The simplest case is represented by the presence of cylindrical irregularities which are oriented along the axis z . In this case the function f in Eq (13) is independent of ζ . It is also assumed that the random irregularities fill only a portion of the layer, such that the lower boundary L of the scattering layer is smaller than z_o , where z_o represents the lower boundary of the regular layer. For this case, Eq (13) can be written as Eq (20). The average energy spectrum of the scattered field can therefore be written in the form of Eq (21), where I is defined by Eq (22). The function $I(L)$ in Eq (21) depends on the depth L of the scattering layer. The function can be represented by Eqs (25), where v is the Airy function and v' is its derivative. The function $I(p)$ is represented graphically in Figure 3. It is seen that, if the lower boundary of the scattering layer is above the reflection point, the scattered field is comparatively small. However, as p is increased $I(p)$ at first increases rapidly and then

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Influence of the Reflection Region on the Scattering of Radiowaves in the Ionosphere

comparatively slowly. This is due to the presence of a region, where the scattering is comparatively high. There are 3 figures and 5 references, 2 of which are English and 3 Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific-research Radiophysics Institute of Gor'kiy University)

SUBMITTED: September 15, 1959

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S/141/60/003/03/005/014
E192/E382

AUTHOR: Denisov, N.G.

TITLE: Diffraction of Electromagnetic Waves in a Gyrotropic Layer Containing Random Non-homogeneities

PERIODICAL: Izvestiya vysshikh uchenbykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 3, pp 393 - 404 (MIRA 13:9)

ABSTRACT: The work is concerned with the determination of the statistical parameters of the wave transmitted through a layer of gyrotropic plasma containing random irregularities in its electron concentration. It is assumed that a flat gyrotropic layer (plasma in an external magnetic field $H^{(o)}$) is situated between planes $z = 0$ and $z = L_o$. The medium between the two planes is subject to regular and irregular changes and fluctuations. It is necessary to determine the field at a plane $z = L$ $(L \gg L_o)$. The basic equations for a wave propagating in gyrotropic irregular medium are:

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$$\text{rot } \underline{E} = - ik_o\underline{H} \;;$$

$$\text{rot } \underline{H} = ik_o\left[\hat{\varepsilon}(z) + \Delta\hat{\varepsilon}(x, y, z)\right]\underline{E} \quad (k_o = \omega/c) \qquad (1)$$

where $\hat{\varepsilon}(z)$ is the average value of the permittivity tensor for the gyrotropic plasma and $\Delta\hat{\varepsilon}$ is the fluctuation of the tensor $\hat{\varepsilon}$. The components of the tensor can be evaluated from Eq. (2), where v and u can be determined from Eqs. (3), while D represents the electric induction. If the external magnetic field is constant, the fluctuations of the tensor are determined by the non-homogeneities of the electron concentration ΔN. On the basis of Eq. (2), $\Delta\hat{\varepsilon}$ is given by Eq. (4), where $\Delta v = 4\pi e^2/m\omega^2 \Delta N$. If the fluctuations are small, Eqs. (1) can be solved by the method of successive approximations. It is assumed, therefore, that $E = E_o + e$ and $H = H_o + h$, where E_o and H_o are the values of the electric and magnetic field,

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Diffraction of Electromagnetic Waves in a Gyrotropic Layer Containing Random Non-homogeneities

which satisfy the Maxwell equations at $\Delta\hat{\varepsilon} = 0$. Thus, the scattered field e and h can be determined by solving Eqs. (5). In this manner the problem of scattering due to the irregularities of the tensor $\hat{\varepsilon}$ is equivalent to finding the field caused by a given distribution of sources. The latter is defined by Eq. (6). There are various methods of solving the problem (Refs. 2-4). The method employed in this work is based on the reciprocity theorem for a magnetically-active medium (Ref. 4). On the basis of this theorem it is assumed that E_1 and H_1 represent the solution of Eqs. (7), where $\check{\varepsilon}$ is a tensor whose components are obtained from the tensor $\hat{\varepsilon}$ by changing $H^{(o)}$ to $-H^{(o)}$. The solution of Eqs (5) and (7) satisfies Eq.(8), where S is a surface limiting a certain volume V . Eq. (8) can also be written as Eq. (9), where n is a normal to the surface S . The partial solution of Eq (7) is in the form of Eq.(11). For the layer situated between z = 0 and z = L , Eq (9) can be written as Eq. (10). By substituting the solution

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of Eq.(11) into Eq. (10), an expression for $\underline{a}$ is obtained; this is in the form of Eq. (12). For $z \geqslant L$ the expression for $\underline{a}$ is given by Eq. (14). By means of this formula it is possible to determine the angular spectrum of the scattered field at any point situated outside the non-homogeneous layer. However, to simplify the calculations a new system of coordinates x', y', z' is introduced; this is illustrated in Fig. 1. The two components of the vector $\underline{a}$ can therefore be expressed by Eqs. (16), where Q denotes the polarization coefficients for the wave $E^{(1)}$. The expression for $\tilde{f}$ in Eq. (16) is defined by Eq. (20), whose functions f and P are given by Eqs. (21) and (22), respectively. The final expressions for the components of the vector $\underline{a}$ are in the form of Eqs. (23), whose various parameters are defined by Eqs.(24). On the basis of Eqs.(23) it is possible to evaluate the angular spectrum of the scattered field; this is expressed by Eq. (28) or (29). For the case of an ordinary wave impinging on the non-homogeneous layer, the angular spectrum is given by Eq.(30).

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Diffraction of Electromagnetic Waves in a Gyrotropic Layer Containing Random Non-homogeneities

In the investigation of the cosmic radiation the problem of determining the scattering of the waves at the ionospheric non-homogeneities is considerably simplified, since the wavelengths employed are of the order of 10 m so that the parameter $u = (\omega_H^2/\omega^2) \ll 1$. It is shown that in this case the angular spectrum is expressed by Eq (48). There are 1 figure and 11 references: 2 English and 9 Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitet (Scientific-Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: December 10, 1959

Electromagnetic waves
Diffraction

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85981

S/141/60/003/004/006/019
E032/E314

AUTHOR: Denisov, N.G.

TITLE: Statistical Parameters of an Electromagnetic Wave Propagated Through a Nonuniform Layer of Magneto-active Plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol. 3, No. 4, pp. 619 - 630

TEXT: Most of the papers which have been published so far are concerned with fluctuations in the parameters of an electromagnetic wave, propagated through a randomly non-uniform layer, which are assumed to have isotropic properties. However, in the case of electromagnetic waves passing through the ionosphere, or reflected from the ionosphere, it is, in general, necessary to take into account the effect of the Earth's field. It is then necessary to consider the scattering of waves in an anisotropic medium. In a previous paper (Ref. 1) the present author obtained a solution describing the field scattered by a layer of magneto-active plasma, and the angular energy spectrum was investigated.

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Statistical Parameters of an Electromagnetic Wave Propagated Through a Nonuniform Layer of Magneto-active Plasma

This solution can be used to calculate other statistical parameters of a random field. In the present paper, the solution obtained in Ref. 1 is used to calculate correlation functions for amplitude and phase fluctuations in a wave propagated through a layer of nonuniform magneto-active plasma. The calculation of the fluctuations is carried out both for separate normal waves and for a wave which, on entering the layer, has an arbitrary linear polarisation.
There are 3 figures and 6 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute of Gor'kiy University)

SUBMITTED: March 17, 1960

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APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310120013-0"

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S/141/61/004/004/006/024
E032/E514

AUTHOR: Denisov, N. G.

TITLE: Diffraction of waves by a random screen

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol.4, No.4, pp.630-638

TEXT: Most papers devoted to the study of the correlation properties of the wave field transmitted by a random screen are concerned with the region occupied by the screen itself. However, in practice it is frequently necessary to observe the scattered field at some distance from the scattering layer, e.g. in the case of the transmission of radio-waves through the ionosphere. The problem is formulated as follows. Consider a plane wave incident normally on a plane random layer. Suppose the lower boundary of the layer lies in the z = 0 plane and the wave is propagated along the z-axis. The wave leaving the layer through the z = 0 plane will, in general, be amplitude and phase modulated. This modulation is, of course, a function of the distance from the "screen" and if the amplitude and phase modulations are random, then the correlation properties will also be functions of the

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Diffraction of waves by a random screen S/141/61/004/004/006/024
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distance from the "screen". The problem of the static properties of the field in any plane behind the random screen for a given field statistics at the screen is mathematically similar to the problem of the transmission of noise through a linear system with given dispersive properties. It can be solved with the aid of the usual diffraction formulas giving the field behind the screen as a function of the field at the screen. The present author derives expressions for the correlation functions for the random field in the Fraunhofer region. Two correlation functions are derived which determine the amplitude and phase autocorrelation and also the mutual correlation between the amplitude and the phase. The field correlation functions are expressed in terms of their values on the screen. The correlation properties in the Fraunhofer region are examined both for small and large phase variations due to the random screen. It is stated that the result obtained by E.N.Bremley (Ref.9: Proc. IEE, Pt.III, 98, 19, 1951) will hold only in the Fraunhofer region and for large phase changes due to the screen. The paper is entirely theoretical. There are 4 figures and 9 references: 5 Soviet and 4 non-Soviet. The English-language references read as follows: Ref.4, S. A. [illegible]whill, J.Atm.Terr.

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Physics, 11, 91, 1957; Ref.7, R.P. Mercier, Phil.Mag., 4, 763, 1959; Ref.9: quoted in text.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete
(Scientific Research Radiophysical Institute of the Gor'kiy University)

SUBMITTED: January 27, 1961

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6,4400

S/141/61/004/006/008/017
E032/E114

AUTHOR: Denisov, N.G.

TITLE: On the influence of the receiving system on fluctuations in the incident radiation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.4, no.6, 1961, 1045-1051

TEXT: The author is concerned with the transmission of noise through linear systems. Such systems may be various types of antenna used in the reception of scattered radiation, or optical and accoustic focussing systems. The appropriate correlation functions are derived on the assumption that the intensity and phase of the incident radiation are distributed in accordance with the normal law. The analysis is then specialised to the case of small and large functuations. The general formulas give the relationship between the receiver input and output correlation functions.
There are 12 references: 11 Soviet-bloc and 1 non-Soviet-bloc. The English language reference reads as follows:

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On the influence of the receiving... S/141/61/004/006/008/017
E032/E114

Ref. 2: A.D. Wheelon. J. Appl. Phys., v.28, 684 (1957).

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute at Gor'kiy University)

SUBMITTED: April 14, 1961

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GETMANTSEV, G.G.; DENISOV, N.G.

One effect of measuring the electron concentration in the ionosphere by the antenna probe method. Geomag. i aer. 2 no.4:691-693 Jl-Ag '62. (MIRA 15:10)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete.
(Ionospheric research)

DENISOV, N.G.; TATARSKIY, V.I.

Average diffraction pattern in the focal plane of a lens. Izv. vys. ucheb.zav.; radiofiz. 6 no.3:488-494 '63. (MIRA 16:9)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Lenses) (Diffraction)

ACCESSION NR: AP4039738 S/0141/64/007/002/0378/0380

AUTHOR: Denisov, N. G.

TITLE: On wave scattering under total reflection conditions

SOURCE: IVUZ. Radiofizika, v. 7, no. 2, 1964, 378-380

TOPIC TAGS: electromagnetic wave reflection, electromagnetic scattering, wave field, standing wave, traveling wave, statistical analysis, correlation statistics

ABSTRACT: The author has shown earlier (IVUZ. Radiofizika v. 3, 208, 1960) that a medium containing totally-reflecting random inhomogeneities can support scattered standing waves, in contrast with the traveling waves of an ordinary medium. The scattering of such standing waves is analyzed for the simple case of scattering of a plane wave normally incident on a reflecting surface bounding a plane layer filled with random inhomogeneities, the size of which is as-

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ACCESSION NR: AP4039738

sumed to be much larger than the wavelength. It is shown that the angular power spectrum of the standing wave differs from that of the traveling wave only by a constant factor, so that standard methods for the investigation of the correlation properties of the phase fluctuations can be applied in this case, too. Orig. art. has: 8 formulas.

ASSOCIATION: Nauchno issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute at the Gor'kiy University)

SUBMITTED: 10Jun63 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: EM, EC NR REF SOV: 004 OTHER: 000

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ACCESSION NR: AP4009971 S/0109/64/009/001/0033/0040

AUTHOR: Denisov, N. G.; Ry*zhov, Yu. A.

TITLE: Fluctuation of radiation in a lens focus

SOURCE: Radiotekhnika i elektronika, v. 9, no. 1, 1964, 33-40

TOPIC TAGS: lens antenna, lens focus radiation fluctuation, lens antenna design, receiving lens antenna

ABSTRACT: For turbulence-caused inhomogeneities of a medium, the phase fluctuation of a complex field in a lens focus is always wide. The type of fluctuation depends on the ratio of the field correlation radius to the lens diameter. The article mathematically considers the fluctuation of level, phase, and intensity (in a lens focus) of a radiation that passes through a turbulent layer. Simple formulas for the structural functions of level, phase, and intensity in a lens focus are developed for two extreme cases: (a) small (as compared to the complex-

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ACCESSION NR: AP4009971

field correlation radius) lens and (b) large lens. "We wish to thank V. I. Tatarskiy for his valuable advice which permitted us to essentially improve the article." Orig. art. has: 1 figure and 23 formulas.

ASSOCIATION: none

SUBMITTED: 15Dec62 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: CO NO REF SOV: 009 OTHER: 001

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L 13971-65 EWT(1)/FCC/EEC-4/EEC(t)/EEC(b)-2/FCS(k) Pac-4/Pae-2/Pi-4/Pj-4/
Pl-4 BSD/ASD(a)-5/RAEM(a)/ESD(t) GW/WR

ACCESSION NR: AP4048878 S/0109/64/009/011/1944/1947

AUTHOR: Denisov, N. G.; Ry*zhov, Yu. A.

TITLE: On the mean radiation pattern of a radiator in a turbulent atmosphere

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SOURCE: Radiotekhnika i elektronika, v. 9, no. 11, 1964, 1944-1947

TOPIC TAGS: radiator, directional radiator, radiation pattern, antenna pattern, pattern distortion

ABSTRACT: The effect of turbulent atmospheric inhomogeneities on the mean radiation pattern of a radiator is investigated. If the radiation source is considered as located at the focal point of a lens with a sufficiently long focal length, then by means of the reciprocity theorem the problem is reduced to finding the mean field intensity at the focal point of the lens for oblique incidence of a plane radiated wave on a plane turbulent layer. Letting the incident angle between the emerging plane wave and the optical axis of the lens be θ, the authors introduce the notation $a = \theta^2/2\theta_0^2$ where θ_0 characterizes

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ACCESSION NR: AP4048878

the normal beamwidth of the undisturbed pattern; they show that the mean beam pattern emerging from the nonhomogeneous layer is a function of a. It is found that at a = 0.1, the mean radiation pattern of the major lobe is virtually identical to that of a radiator in an homogeneous medium. At a = 1 there is already a considerable difference between them. At a > 1 the mean field intensity at the focal point of the lens varies monotonically. Orig. art. has: 17 formulas and 2 figures.

ASSOCIATION: none

SUBMITTED: 13Sep63 ENCL: 00 SUB CODE: DC, EC

NO REF SOV: 004 OTHER: 001 ATD PRESS: 3133

Card 2/2

ACC NR: AP7013706 SOURCE CODE: UR/0203/66/006/004/0695/0702

AUTHOR: Denisov, N. G.; Yerukhimov, L. M.

ORG: Radio Physics Institute, Gor'kiy State University (Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete)

TITLE: Statistical properties of phase fluctuations during complete reflection of waves from an ionospheric layer

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 4, 1966, 695-702

TOPIC TAGS: ionosphere, ionospheric radio wave, ionosphere inhomogeneity, geometric optics, atmosphere model, reflected signal, radio wave propagation

SUB CODE: 04

ABSTRACT:
This is a discussion of phase fluctuations and amplitude variations of a signal at the time of its reflection from a layer of the ionosphere. It is shown that the principal contribution to phase fluctuation is from the region of signal reflection. Specifically, the principal effect of distortion of the phase of a plane wave is determined by random inhomogeneities situated in a relatively thin layer near the reflection level. Under these conditions it can be assumed that

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ACC NR: AP7013706

the layer is equivalent to a phase screen and for computation of the change of phase of the wave on the screen it is possible to use the approximation of geometrical optics. Beyond the screen, in the process of wave propagation in free space, strong amplitude fluctuations arise which are registered by ground receivers. The frequency dependence of phase dispersion is considered for two models of the ionosphere. Formulas are derived which show that the character of the frequency correlation of amplitude records of the reflected signal is essentially dependent on the statistical properties of the phase fluctuations arising in an inhomogeneous layer. The results of the computations are used for explaining the experimental data. Orig. art. has: 3 figures and 33 formulas. [JPRS: 40,106]

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LENISOV, N.A., inzhener-kapitan-leytenant

Training the personnel of a submarine to fight for the boat's power of survival. Mor. sbor. 46 no.8:56-59 Ag '63. (MIRA 16:10)

(Naval education) (Submarine disasters)

S/085/61/000/010/001/002
D038/D113

AUTHOR: Denisov, N.

TITLE: Important seconds

PERIODICAL: Kryl'ya rodiny, no. 10, 1961, 6-8

TEXT: The article describes the career of a Soviet test pilot and CP member, Georgiy Konstantinovich Mosolov (Fig.1) who was awarded the "Order of Lenin", and the "Gold Star of a Hero of the Soviet Union" on 31 December 1960. After graduating from secondary school in 1944, Mosolov was trained at the Tsentral'nyy aeroklub SSSR imeni V.P.Chkalova (USSR Central Aeroclub imeni V.P. Chkalov), then finished an aviation school, became a flight instructor, and later on a test pilot. On graduation from an aircraft-building division of an aviation institute [Abstracter's note: no relevant information as to the institute's location is available], he successfully defended a diploma project on a design of a Mach 2.5 aircraft which, according to Mosolov, would almost reach the heat barrier. It is stated that during one of a series of test flights in an aircraft provided with special

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S/085/61/000/010/001/002
D038/D113

Important seconds

equipment for the study of supersonic speeds and maneuverability, Mosolov succeeded, at an altitude of 200-300 m, in pulling the aircraft out of a dive which lasted 30 seconds. During this dive he was subjected to g-force 17 times. The above mentioned delta-shaped aircraft designated as the E-66 (Ye-66) was designed for speeds at which the temperature surrounding the aircraft would drop to -60°C, and the projecting parts of the aircraft would reach temperatures of almost 150°C. Mosolov broke an international speed record when he flew the Ye-66 aircraft at a speed of over 2,500 km/hr, and in April 1961 he set up a new high altitude flight record by flying at an altitude of 34,714 m. Test pilot Georgiy Aleksandrovich Sedov organized these flights, Candidate of Technical Sciences Konstantin Konstantinovich Vasil'chenko supervised the work of a team of specialists who worked out the aerodynamic calculations, and chief engineer Aleksandr Sergeyevich Izotov, and mechanic Viktor Ivanovich Kichev together with the ground personnel prepared the Ye-66 aircraft for the record flights. There is 1 figure.

Card 2/2

DENISOV, N.D. [Denysov, M.D.]

Quality of water used in pharmacies of the Ukrainian S.S.R. for the preparation of injections. Farmatsev. zhur. 18 no.5: 12-16 '63. (MIRA 17:8)

1. Kafedra tekhnologii lekarstvennykh form i galenovykh preparatov Kiyevskogo instituta usovershenstvovaniya vrachey (zaveduyushchiy kafedroy prof. G.A. Vaysman [Vaisman, H.A.]).

DENISOV, N.D. [Denysov, M.D.]

Studies in the field of preparing injection solutions. Report No.2: Effect of hydrogen-ion concentration on the stability of dicaine, bencaine and novocaine injection solutions. Farmatsev.zhur. 20 no.1:46-49 '65. (MIRA 18:10)

1. Kafedra tekhnologii lekarstvennykh form i galenovykh preparatov Kiyevskogo instituta usovershenstvovaniya vrachey (zaveduyushchiy kafedroy prof. G.A.Vaysman).

DENISOV, N.D. [Demysov, M.D.]

Studies in the field of the preparation of injection solutions. Report No.1: Effect of stabilizers and sterilization regimen on the stability of bencaine, dicaine, novocaine and novocaine amide injection solutions. Farmatsev. zhur. 19 no.4:45-50 '64. (MIRA 17:11)

1. Kafedra tekhnologii lekarstvennykh form i galenovykh preparatov Kiyevskogo instituta usovershenstvovaniya vrachey.

DENISOV, N. F.

7626. DENISOV, N. F. -- Formula dlya opredeleniya vsekh vozmozhnykh deleniy prostoy delitel'noy golovkoy. -- raspolozheniye vershin rezhushchikh zub'yev v napil'nikakh s perekrestnoy nasechkoy. M., oborongiz, 1954. 12 s. s chert. 22 sm. (M-vo vyssh. obrazovaniya SSSR. mosk. ordena lenina aviats. in-t im. sergo ordzhonikidze. nauch.--issled. sektor. trudy...42). bespl. --- na obl. tol'ko zagl. serii. ---(55-350 zh)
621.914-2 & 621.918

SO: Knizhnaya Letopsis', Vol. 7, 1955

DENISOV, N. I.

Denisov, N. I. "The food value of fodders and norms for feeding cows", Doklady (mosk. s.-kh. akad. im. Timiryazova), Issue 8, 1948, (In index: 1949), p. 171-77.

SO: U-411, 17 July 53, (Letopis' Zhurnal 'nykh Statey, No. 20, 1949).

DENISOV, N. I.

Denisov, N. I. "New principles for determining the food value of fodder and feeding norms", Sov. zootekhniya, 1949, No. 1, p.87-90.

SO: U-4630, 16 Sept. 53, (Letopis 'Zhurnal 'nykh Statey, No. 23, 1949).

DENISOV, N. I.

33354. Povysheniye Molochnoy Produktivnosti Korov V Opytnom Khozyaystve Vsesoyuznogo Instituta Kormleniya Sel'kokhozyaystvennykh Zhivotnykh. Sov. Zootekhniya, 1949, No. 6, c. 50-64.

Letopis' Zhurnal'nykh Statey, Vol. 45, Moskva, 1949

DENISOV, N.I., podpolkovnik meditsinskoy sluzhby

Organizing and conducting lessons in winter camps. Voen.-med. zhur. no.10:68-70 O '55. (MIRA 9:10)
(MEDICINE, MILITARY)

DENISOV, N.I., podpolkovnik med. sluzhby

Transportation splint for the lower extremity. Voen.med.zhur. no.3:80 Mr '57. (MIRA 11:3)

(LEG, fractures,
splinting for transportation(Rus)

BUKATY, B.B., inzh.; DENISOV, N.I., inzh.; NAGRODSKIY, I.A., kand. tekhn.nauk; POZHITKOVA, Ye.I., nauchnyy sotrudnik; NAUMOVA, Z.I., nauchnyy sotrudnik

Preparation of viscose pulp of low ash content. Bum. prom. 34 no.11: 13-14 N '59. (MIRA 13:3)

1. Priozerskiy tsellyuloznyy zavod (Bukaty, Denisov). 2. TSentral'nyy nauchno-issledovatel'skiy institut tsellyuloznoy i bumazhnoy promyshlennosti (for Nagordskiy, Pozhitkova, Naumova).
(Priozersk--Woodpulp)

DENISOV, N.I., prof.

Problems concerning the buildings on loess soil. Hidrotehnica 7 no.9: 289-294 S '62.

1. Institutul pentru ingineri constructori, Moscova.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310120013-0"

PETROV, M.K. , kapitan dal'nego plavaniya; BUKHANOVSKIY, I.L., retsenzent; DENISOV, N.I., spets. red.; BOCHEK, A.P., spets. red.; TROFIMOV, A.V., tekhn. red.

[Marine signaling] Morskaia signalizatsiia. Moskva, Izd-vo "Morskoi transport," 1952. 271 p. (MIRA 16:7)
(Merchant marine--Signaling)

DENISOV, Nikolay Ivanovich; NASHIVOCHNIKOV, N., red.; NIKITINA, V., tekhn. red.

[New sonar type KhAG-400 with horizontal and vertical action] Novyi gidrolokator gorizontal'nogo i vertikal'nogo deistvii tipa KhAG-400. Kaliningrad, Kaliningradskoe knizhnoe izd-vo 1959. 21 p. (MIRA 16:1)

(Sonar)

VESELOV, Ye.A., prof.; VSYAKIKH, A.S., prof.; DENISOV, I.I., prof.; GERCHIKOV, N.P., prof.; LASTOCHKIN, S.N., prof.; ALIKAYEV, V.A., dots.; BESSARABOV, V.A., dots.; KALININ, V.I., dots.; SOKOLOV, A.K., dots.; ZAVARSKIY, A.I., red.; DEYEVA, V.M., tekhn. red.

[Animal husbandry and veterinary hygiene] Zhivotnovodstvo i zoogigiena. [By] E.A.Veselov i dr. Izd.2., perer. i dop. Moskva, Sel'khozizdat, 1963. 451 p. (MIRA 17:2)

DENISOV, N.I., red.

[Production and use of combined feeds] Proizvodstvo i ispol'zovanie kombikormov. Moskva, Kolos, 1964. 398 p. (MIRA 18:10)

ACC NR: AP7001386 (A,N) SOURCE CODE: UR/0413/66/000/021/0056/0056

INVENTORS: Denisov, N. I.; Zhernov, V. S.; Nabatnikov, A. A.; Murashov, Ye. P.; Ryzhov, N. V.; Serzhantov, V. P.; Skatkin, V. M.

ORG: none

TITLE: Multichannel pulse counting rate meter. Class 21, No. 187843 [announced by Union Scientific Research Institute for Instrument Manufacture (Soyuznyy nauchno-issledovatel'skiy institut priborostroyeniya)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 56

TOPIC TAGS: pulse counter, pulse rate, count rate meter

ABSTRACT: This Author Certificate presents a multichannel pulse counting rate meter containing a cathode ray tube, pulse registers, a high-speed electronic switch, and a vertical and horizontal deflection amplifier for the cathode ray tube. To measure counting rate differences varying over a wide range simultaneously in all channels without switching subranges, electronic commutator switches are connected to the outputs of wide-band linear differential counting rate meters, one for each channel (see Fig. 1). The switch outputs are connected through current-setting resistors and isolating capacitors to the input of a collecting stage consisting of a grounded base transistor. The output of the collecting stage is connected to the input of a linear-logarithmic CRT vertical deflection amplifier.

UDC: 621.374

Card 1/2

ACC NR: AP7001386

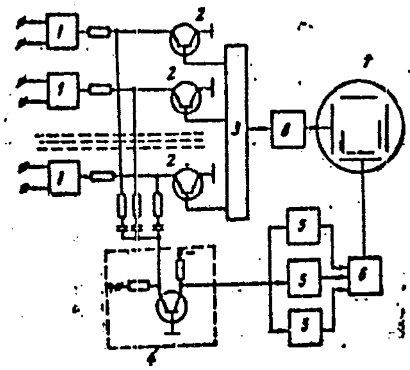

Fig. 1. 1 - counting rate meters; 2 - switches; 3 - decoder; 4 - electronic commutator; 5 - clipper amplifiers; 6 - summing stage; 7 - cathode ray tube; 8 - horizontal deflection amplifier

Orig. art. has: 1 diagram.

SUB CODE: 09/ SUBM DATE: 22Nov63

BOGDANOVICH, P.L., starshiy nauchnyy sotrudnik; DENISOV, N.K., starshiy nauchnyy sotrudnik [deceased]; AL'TER, S.Z., otv.red.; KHODNEVA, I.V., red.izd-va; GALANOVA, V.V., tekhn.red.; SHKLYAR, S.Ya.

[Insulating respirator RKK-1; instructions for use] Izoliruiushchii respirator RKK-1; instruktsiia po ekspluatatsii. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1959. 30 p. (MIRA 13:5)

1. TSentral'naya nauchno-issledovatel'skaya laboratoriya po gornospasatel'nomu delu. 2. TSentral'naya nauchno-issledovatel'skaya laboratoriya Voyenizirovannykh gornospasatel'nykh chastey (TsNIL VGSCh) (for Bogdanovich, Denisov).
(Respirators)

DENISOV, N.M., insh.

Efficient shape of the cross section in mine workings with sectional reinforced concrete supports. Shakht.stroi. no.2:17-19 F '59.
(MIRA 12:3)

1. Kusnetskiy Nauchno-issledovatel'skiy institut shakhtostroy.
(Mining engineering)
(Reinforced concrete construction)

18 SOV/127-59-4-12/27

AUTHORS: Denisov, N.M., Zaretskiy, L.I., Kapelyushnikov, L.Ye., Redekap, A.V., Sevost'yanov, I.M. and Tereshchenko, N.A.

TITLE: A Portal Timber Stacker. (Portal'nyy krepeukladchik)

PERIODICAL: Gornyy zhurnal, 1959, Nr 4, p 56 (USSR)

ABSTRACT: This is a description of a portal timber stacker - author's certificate Nr 109261, class 5s, 10_{01}. There are 3 diagrams.

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