OSTROVSKIY, I.V.

The first reconstruction stage of the Moscow Television Center has been completed. Vest. sviazi 18 no.6:23-25 Je '58. (MIRA 11:6)

1.Glavnyy inzhener proyekta rekonstruktsii Moskovskogo teletsentra Proyektnogo instituta Ministerstva svyazi SSSR.
(Moscow--Television broadcasting)

AUTHOR: Ostrovskiy, I V. 20-120-5-11/67

TITLE: On Meromorphic Functions Which Assume Certain Values in Points Lying in the Neighborhood of a Finite System of Rays (O meromorfnykh funktsiyakh, prinimayushchikh nekotoryye znacheniya v tochkakh, lezhashchikh vblizi konechnoy sistemy luchey)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 5, pp 970-972 (USSR)

ABSTRACT: The author proves a theorem which contains as special cases an earlier result of the author [Ref 4] and a result of Edrei [Ref 5]. Let f(z) be a meromorphic function for $|z| < \infty$ with the poles $r_k e^{i\varphi_k}$. Let according to Nevanlinna:

$$C(R,\alpha,\beta,f) = 2 \sum_{\substack{1 \le r_k \le R \\ \alpha < \varphi_k < \beta}} \left(\frac{1}{r_k^{\pi/\gamma}} - \frac{r_k^{\pi/\gamma}}{R^{2\pi/\gamma}} \right) \sin \frac{\pi}{\gamma} (\varphi_k - \alpha), \quad 0 < \beta - \alpha = \gamma \le 2\pi .$$

$K_1(t)$ and $K_2(t)$ denote positive non decreasing functions of $t \geq 0$; let $k_i = \overline{\lim_{t \to \infty}} \ln K_i(t)(\ln t)^{-1}$, $i=1,2$. Definition: The set of the a-points of f(z) is called neighboring to the system of rays

Card 1/4 (1) $\arg z = \theta_n$, $n = 1, 2, \ldots m$, $0 \le \theta_1 < \theta_2 < \ldots < \theta_m < 2\pi$

if for finite k_1 and $k_2 < 1$ the inequality

$$\sum_{n=1}^{m} C(R,\theta_n,\theta_{n+1},(f-a)^{-1}) \leq K_1(R)K_2(T(R,f))$$

is satisfied for all $R \geq 0$ (at most with the exception of a set $\mathfrak{A} \subset [0,\infty)$, so that $\overline{\lim\limits_{R\to\infty}}\, R^{-1} \operatorname{mes}\left\{\mathfrak{A} \cap [0,R]\right\} = 0$).

Definition: The number a is called *-defect value of f(z) if there exists a set $\mathcal{E} \subset [0,\infty)$ so that $\overline{\lim\limits_{R\to\infty}}\, R^{-1}\operatorname{mes}\left\{\mathcal{E} \cap [0,R]\right\} < 1$ and $\lim\limits_{\substack{R\to\infty \\ R \in C\mathcal{E}}} m(R,a,f)(T(R,f))^{-1} > 0$

Theorem: Let at least one of the conditions A, B, C be satisfied

A. Let zeros and poles of f(z) be neighboring to (1); for at least one $l \geq 0$, $f^{(l)}(z)$ possesses at least one * defect value different from zero and ∞;

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B. Poles of $f(z)$ and a-points of $f^{(1)}(z)$ are neighboring to (1) for a certain $a \neq 0, \infty$ and an integral $1 > 0$; zero is a *-defect value of $f(z)$;

C. Zeros and poles of $f(z)$ and a-points of $f^{(1)}(z)$ are neighboring to (1) for an $a \neq 0, \infty$ and $1 \geq 0$; ∞ is a *-defect value of $f(z)$.

Then the order of $f(z)$ is finite and not higher than

$$\chi = \chi(\gamma, k_1, k_2) = (\pi + \gamma k_1)\gamma^{-1}(1 - k_2)^{-1},$$

where

$$\gamma = \min_{1 \leq n \leq m} (\theta_{n+1} - \theta_n) \qquad \theta_{m+1} = 2\pi - \theta_1$$

For finite or vanishing $\sigma_i = \overline{\lim_{t \to \infty}} K_i(t) t^{-k_i}$, $i = 1, 2$ further estimations of the order of increase are given. The proof is based on a certain estimation for $m(R, \frac{f^{(1)}}{f^{(1+1)}})$. A third theorem

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On Meromorphic Functions Which Assume Certain Values in Points 20-120-5-**-67
Lying in the Neighborhood of a Finite System of Rays

contains sufficient conditions that the order of $f(z)$ is not higher than 4
There are 4 references, 2 of which are Soviet, 1 Finnish and 1 American

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo (Khar'kov State University imeni A.M. Gor'kiy)

PRESENTED: February 6, 1958, by S.N. Bernshteyn, Academician

SUBMITTED: February 6, 1958

1. Mathematics

Card 4/4

111- [illegible]

[illegible]

AUTHORS: [illegible]strovskiy, I. V. and Vesterman[illegible] [illegible]

TITLE: The Matching of the Equipment of Radio Relay Lines and Television Stations (Soglasovaniye oborudovaniya radio-releynykh liniy i televizionnykh stantsiy)

PERIODICAL: Vestnik svyazi, [illegible] Nr [illegible]

ABSTRACT: In the near future new radio relay lines [illegible] types [illegible] and "Vesna" will connect TV stations and relay transmitters providing a possibility to exchange TV programs between stations. Since the equipment used at the different TV stations is very different, a careful matching of the relay equipment is required. The TV transmitters present-ly in operation are designed to produce a video [illegible] positive polarity at [illegible] volts amplitude, while the signal at the outlet of the "Vesna" equipment has [illegible] amplitude. Therefore [illegible] must be amplified [illegible] when feeding it to a TV station or relay [illegible] There are [illegible] diagrams and [illegible] table.

Card 1/1

S/020/60/130/05/005/061

16(1) 16 3000

AUTHOR: Ostrovskiy, I.V.

TITLE: Location of the Zeros of the Derivative of an Integral Function Whose Zeros lie Close to the Real Axis

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 973-976 (USSR)

ABSTRACT: The author considers entire functions whose zeros a_k satisfy the condition $\sum_{k=1}^{\infty} |\operatorname{Im}(a_k^{-1})| < \infty$ (functions of class A).

The following analogue of the classical theorem of Laguerre is proved :

Theorem 1 : If an entire function f(z) belongs to the class A, and if it is representable in the form

(2) $f(z) = e^{Q(z)} P(z)$,

where Q(z) is an entire function of exponential type satisfying the condition

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Location of the Zeros of the Derivative of an S/020/60/1?? ...
Integral Function Whose Zeros lie Close to the Real Axis

$$(3) \quad \int_{-\infty}^{\infty} \frac{\ln^{+} |Q(t)|}{1 + t^{2}} \, dt < \infty ,$$

while P(z) is an entire function for which it is

$$\int_{1}^{\infty} \frac{\ln^{+} \ln^{+} M(t,P)}{t^{2}} \, dt < \infty ,$$

then all the derivatives of f(z) also belong to the class A and have the representation (2).
The theorem follows from a statement on the distribution of the zeros of the derivatives of special meromorphic functions and from the relation of Nevanlinna [Ref 2]

$$T(t, P) \leq \ln^{+} M(t, P) \leq 3T(2t, P) .$$

The author gives a generalization of the theorem.

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Location of the Zeros of the Derivative of an Integral Function Whose Zeros lie Close to the Real Axis S/020/60/130/05/005/061

There are 2 non-Soviet references, 1 of which is Finnish, and 1 French.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo (Khar'kov State University imeni A.M. Gor'kiy)

PRESENTED: October 12, 1959, by S.N. Bernshteyn, Academician

SUBMITTED: October 11, 1959

Card 3/3

80044

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S/020/60/132/01/11/064

AUTHOR: Ostrovskiy, I.V.

TITLE: Relationship Between the Growth of a Meromorphic Function and the Distribution of Its Values Over the Arguments

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 1, pp. 48-51

TEXT: Let f(z) be meromorphic in the whole finite plane ; $0 \leq \alpha < \beta \leq 2\pi$, $\gamma = \beta - \alpha$.

From the well-known results of Nevanlinna (Ref. 3), Hayman (Ref. 4) as well as from earlier results of the author (Ref. 5,9) it is concluded :

Theorem 1 : Let f(z) satisfy the conditions : 1) there exist α and β so that for at least three different values a of the extended plane it holds :

$C_{\alpha\beta}(r, (f-a)^{-1}) = O(1)$; 2) $\int_1^\infty \ln^+ T(r,f) r^{-\pi/\gamma - 1} dr < \infty$. Then it holds : 3) for $\alpha \leq \varphi \leq \beta$ there exists $\lim_{r\to\infty}^{(1)} r^{-\frac{\pi}{\gamma}} \ln |f(r e^{i\varphi})| = c \sin \frac{\pi}{\gamma}(\varphi - \alpha)$; 4) The integrals

$\int_1^\infty |\ln| f(t e^{i\alpha})|| t^{-\frac{\pi}{\gamma} - 1} dt$ and $\int_1^\infty |\ln| f(t e^{i\beta})|| t^{-\frac{\pi}{\gamma} - 1} dt$ converge.

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Relationship Between the Growth of a Meromorphic Function and the Distribution of Its Values Over the Arguments S/020/60/132/01/11/064

Theorem 2 : If $f(z) = \sum_{k=1}^{\infty} \frac{A_k}{z-a_k}$, $\sum_{a_k \neq 0} \left| \frac{A_k}{a_k} \right| < \infty$ and if for certain α, β and $0 < \gamma \leq \pi$ we have $C_{\alpha\beta}(r,f) = O(1)$, then for f(z) th... hold the assertions of theorem 1, where in 3) $c \leq 0$.

There is a further theorem and numerous conclusions.

The author mentions M.G.Kreyn, M.V. Keldysh, B.Ya. L...in and A.A. Gol'dberg.

There are 9 references : 6 Soviet, 1 Finnish and 2 French.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo (Khar'kov State University imeni A.M. Gor'kiy)

PRESENTED: December 28, 1959, by S.N. Bernshteyn, Academician

SUBMITTED: December 21, 1959

Card 2/2

OSTROVSKIY, I.V.

Decomposition [illegible] ... [illegible]

[illegible]

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238510018-2"

OSTROVSKIY, I.V.

Integral [illegible] related [illegible] theory of characteristic [illegible] functions [illegible] laws. Uch. Za. [illegible] (MIRA [illegible])

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238510018-2"

[illegible]ROV[illegible]Y, I... (Khar'kov)

[illegible]ltidimensional analog of [illegible].L[illegible]'s theorem on the resolution of a composition of Gaussian and Poisson laws. Teor. veroiat.i ee prim. 1[illegible] no.[illegible]-74[illegible] '65.

[illegible]

1. Submitted April [illegible], 1965.

L 22098-66 EWT(d) IJP(c)
ACC NR: AP6012666 SOURCE CODE: UR/0020/65/161/001/0048/0051

AUTHOR: Ostrovskiy, I. V.

ORG: Khar'kov State University im. A. M. Gor'kiy (Khar'kovskiy gosudarstvennyy universitet)

TITLE: Expansions of infinitely divisible laws involving no Gaussian component

SOURCE: AN SSSR. Doklady, v. 161, no. 1, 1965, 48-51

TOPIC TAGS: mathematics, function, Gaussian distribution, Poisson equation

ABSTRACT: The author uses the terminology adopted by Yu. V. LINNIK, according to which a Poisson spectrum of an infinitely divisible law is said to be a set of points of the increase of functions $M_1(x)$ and $M_2(x)$ which figure in the expression of its characteristic function $\varphi(t)$ by P. LEVY's formula

$$\varphi(t) = \exp\left\{i\alpha t - \gamma t^2 + \int_{-\infty}^{0}\left(e^{itx} - 1 - \frac{itx}{1+x^2}\right)dM_1(x) + \right.$$

$$\left. + \int_{0}^{\infty}\left(e^{itx} - 1 - \frac{itx}{1+x^2}\right)dM_2(x)\right\}.$$

Denoted as I_0 is a class of infinitely divisible laws having only infinitely divisible components. Yu. V. LINNIK proved that in order for an infinitely divisible law with a Gaussian component to belong to I_0, the Poisson spectrum of this law must be

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ACC NR: AP6012666

finite or countable and must satisfy a very rigid condition of an arithmetic character. The present article considers infinitely divisible laws involving no Gaussian component. Although it follows from theorems of P. LEVI and D. A. RAYKOV that the condition of an arithmetic character is not necessary for such laws to belong to I_0, it is not known whether the Poisson spectrum must be finite or countable. The author answers this question in the negative and indicates that there are two such classes of infinitely divisible laws included in I_0, each of which consists of laws with a continuous Poisson spectrum. These two classes are described by the following two theorems:

Theorem 1: Let F be an infinitely divisible law involving no Gaussian component, whose Poisson spectrum lies on the segment [a, b], with the condition $0 < a < b \leq 2a < \infty$ being met. Then $F \in I_0$.

Theorem 2: Let F be an infinitely divisible law involving no Gaussian component, whose Poisson spectrum is positive and represents a closed bounded set with linearly independent points. Then $F \in I_0$. These two theorems are derived from Theorem 3: Let F be an infinitely divisible law involving no Gaussian component, with the Poisson spectrum A, given 0 a b oo, where $a = \inf_{x \in A} x$, $b = \sup_{x \in A} x$. Then the characteristic function of any component of the law F has the form

$$\exp\left\{iat + \int_{-\infty}^{\infty} (e^{itx} - 1)\, d\sigma(x)\right\},$$

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ACC NR: AP6012666

These two theorems are derived from Theorem 3: Let F be an infinitely divisible law involving no Gaussian component, with the Poisson spectrum A, given $0 < a < b < \infty$, where $a = \inf_{x \in A} x$, $b = \sup_{x \in A} x$. Then the characteristic function of any component of the law F has the form

$$\exp\left\{iat + \int_{-\infty}^{\infty} (e^{ixt} - 1)\, d\sigma(x)\right\},$$

where a is real, and the function $\sigma(x) \in V^{(b)}$ is nondecreasing on [a, 2a] and

$$S(\sigma) \subset [a, b] \cap \bigcup_{n=1}^{\infty} (n) A.$$

The following designations are used for this theorem: $V^{(b)}$ is the totality of all functions which have a bounded variation on the axis $(-\infty, \infty)$, are continuous on the left and are equal to zero at $-\infty$; $S(\sigma)$, where $\sigma \in V^{(b)}$, is the least

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closed set whose complement consists of points of continuity $\sigma(x)$; (n)A, where n = 1, 2, 3, ..., is a set defined by the conditions: A = A, (n)A = (n — 1)A + A (A + B being a set consisting of numbers of the form a and b, where $a \in A$, $\beta \in B$). The author uses a development of D. A. RAYKOV's method to prove Theorem e. The author thanks B. Ya. Levin for his interest in this work and for valuable comments. Orig. art. has: 9 formulas. [JPRS]

SUB CODE: 12 / SUBM DATE: 26Sep64 / ORIG REF: 003 / OTH REF: 002

Card 4/4 BLG

[illegible]

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(MIRA 18:9)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238510018-2"

ACCESSION NR: AT4042331 S/3050/64/135/000/0145/0168

AUTHOR: Ostrovskiy, I. V.

TITLE: Integral functions satisfying certain special inequalities associated with the theory of characteristic functions of probabilistic laws

SOURCE: Kharkov. Universitet. Ucheny*ye zapiski, v. 135, 1964. Zapiski mekhaniko-matematicheskogo fakul'teta i Khar'kovskogo matematicheskogo obshchestva (Notes of the Faculty of Mechanics and Mathematics and of the Kharkov Mathematical Society), v. 29, Series 4, 1963, 145-168

TOPIC TAGS: integral function, characteristic function, probability theory

ABSTRACT: An integral characteristic function of a probabilistic law (which can be used as a determinant) is a function of the form:

$$\varphi(z) = \int_{-\infty}^{\infty} e^{itz}\, d\sigma(t), \tag{1}$$

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ACCESSION NR: AT4042331

where $\sigma(t)$ is a decreasing function with full variation 1 such that for any k > 0

$$\int_{-\infty}^{\infty} e^{k|t|}\, d\sigma(t) < \infty. \tag{2}$$

It is not difficult to prove that any integral characteristic function, except the characteristic function $\mathcal{Q}(z) \equiv 1$, has a growth of at least 1 and is of the normal type. If $\mathcal{Q}(z) \not\equiv 1$, then $\sigma(t)$ has a point of growth $t_0 \neq 0$ and, consequently,

$$\varphi_*(z) = k_* \int_0^{\infty} e^{itz - t^2(t)}\, dt \quad \left(k_*^{-1} = \int_0^{\infty} e^{-t^2(t)}\, dt\right) \tag{3}$$

The present work is concerned with integral functions of the following two classes: (1) the class of integral functions satisfying the inequality

$$|\varphi(x+iy)| < M(|y|, \varphi), \quad -\infty < x, y < \infty; \tag{4}$$

(2) The class of integral functions satisfying the inequality

$$\operatorname{Re}\varphi(x+iy) \leq M(|y|, \varphi), \quad -\infty < x, y < \infty. \tag{5}$$

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The basic results of the present article can be formulated in the following theorems: "Let F (ω) and f(z) be integral functions and let F(ω) $\not\equiv$ constant. Consider Φ(z) = F(f(z)). If Φ (z) satisfies condition (4), then either f(z) is a polynomial of order not greater than 2 or f(z) is an integral function no lower than the normal type of order 1. Let F(ω) and f(z) be integral functions and consider that the function F(ω)$\not\equiv$ const. is such that for every area $|w|$ = const. there is a point ω such that F(ω) = M($|\omega|$, F). Consider Φ(z) = F(f(z)). If Φ(z) satisfies conditon (5), then either f(z) is a polynomial of order not greater than 2 or f(z) is an integral function no lower than the normal type of order 1." The remainder of the article is a presentation and discussion of lemmas relating to these theorems. "The author expresses gratitude to B. Ya. Levin for attention to the work." Orig art. has: 60 numbered formulas and 1 figure.

ASSOCIATION: Mekhaniko-matematicheskiy fakul'tet, Khar'kovskiy gosudarstvenny*y universitet im. A. M. Gor'kog; Khar'Kov (Department of Mechanics and Mathematics Khar'kov State University).

Card 3/4

GOL'DBERG, A.A.; OSTR VSKIY, I.V.

Some theorem on the growth of meromorphic functions. [illegible]. [illegible] 15:3-37 [illegible]. (MIRA 17 [illegible])

OSTROVSKIY, I.V.

A problem from the theory of distribution of values. Dokl. AN SSSR 151 no.1:34-37 Jl '63. (MIRA 1[illegible])

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo. Predstavleno akademikom S.N.Bernshteynom.
(Functions, Meromorphic)

OSTROVSKIY, I.V.

Unlimitedly divisible laws with unbounded Poisson spectrum.
Dokl. AN SSSR 152 no.6:1301-1304 O '63. (MIRA 16:11)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kogo.
Predstavleno akademikom S.N. Bernshteynom.

OSTROVSKIY, I.V.

Deficiencies of meromorphic functions of low order less than unity. Dokl. AN SSSR 150 no.1:32-35 My '63. (MIRA 16:6)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo. Predstavleno akademikom S.N.Bernshteynom.

(Functions, Meromorphic)

OSTROVSKIY, I.V.

Application of a law, established by Wiman and Valiron, to a study of the characteristic functions of probability laws. Dokl. AN SSSR 143 no.3:532-535 Mr '62. (MIRA 15:3)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo. Predstavleno akademikom S.N.Bernshteynom.
(Eigenfunctions)(Probabilities)

OSTROVSKIY, I.V.

Relation of the growth of a meromorphic function to the distribution of its values by arguments. Izv. AN SSSR. Ser. mat. 25 no.2:277-328 Mr-Ap '61. (MIRA 14:8)
(Functions, Meromorphic)

OSTROVSKIY, I. Ye

3A B 65 b

621.385.16.029 : 621.396.61 5.141.2 : 537.533.8 = 82 2885

Secondary emission in magnetron generators. Braude, S. J., and Ostrovsky, I. E. Bull. Acad. Sci. URSS, Ser. Phys., 10 (No. 1) 65-74 (1946) In Russian. - 50 c/s square waves up to 1500 V in amplitude are applied to a grid magnetron, normally biased off, causing oscillations on 60-80 cm. Its secondary emission is studied by means of an oscillograph, synchronized with the pulsed input. It is found that the secondary emission is not connected with any ionization process and in the absence of oscillations cannot exceed σ (given by secondary emission coefficient of the metal used for the grid), but does considerably exceed σ when the magnetron is excited into oscillation. A. L.

OSTROVSKIY, I. Ye.

Propagation of electromagnetic ultra-short waves in the case of direct visibility. Braude, S. J., and Ostrovsky, I. E. *Bull. Acad. Sci. URSS, Sér. Phys.* 10, (No. 2) 223-34 (1946) *In Russian.*—The field vector of the vertical dipole at low elevation of communicating points is calculated. The influence of the frequency on the permittivity and of conductivity, particularly in the case of propagation above sea water, is treated analytically. Curves plotting attenuation coefficients and field strengths at the dipoles < λ and < elevation for the wave range from λ = 1 cm to λ = 9 m are given.

USSR/Electronics — May/Jun 49
Magnetrons

"Influence of Oscillation Voltages on Secondary Emission in Grid Magnetrons," I. Ye. Ostrovskiy, Cand Physicomath Sci, 4 pp

"Radiotekh" Vol IV, No 3

Shows that for a definite type of oscillation, electrons forming rotating current will repeatedly fall on the grid with additional energy given them by oscillation voltages, and cause secondary emission from the magnetron grid. Secondary emission depends only on type of oscillations excited. Tested three tube types having graphite,

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USSR/Electronics (Contd) — May/Jun 49

tungsten, and oxide (ternary barium carbonate, calcium, and strontium) grids. Submitted 9 Oct 48.

52/49T52

OSTROVSKIY I. YE

109-3-2-7/26

AUTHORS: Braude, S.Ya., Komarov, N.N. and Ostrovskiy, I.Ye.

TITLE: On the Statistic Nature of the Scattering of Centimetre Radio Waves by a Rough Sea Surface (O statisticheskom kharaktere rasseyaniya santimetrovykh radiovoln vzvolno-vannoy poverkhnost'yu morya)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, No.2, pp. 172 - 179 (USSR).

ABSTRACT: The problem can be analysed either by solving the Maxwell equations for a statistically non-uniform medium (Refs. ... and 5) or by assuming that the received signal is statistic (Refs. 6 and 7). The second approach is easier and it is adopted in this work. For the purpose of analysis, it is assumed that the propagation path is comparatively short so that the main cause of the amplitude fluctuation of the received signal is the scattering of the waves from the rough surface. The field intensity at the receiver is due to the super-position of a "direct" wave which propagates directly from the transmitter to the receiver, a reflected wave and a number of waves scattered by the sea. The field is expressed by:

$$E(t) = E_0 \cos \omega_0 t + E_0 T p \cos(\omega_0 t + \varphi) + \sum E_s \cos(\omega_s t + \varphi_s) \quad (1)$$

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109-3-2-?/[illegible]

On the Statistic [illegible] the Scattering of C[illegible]
by a Rough Sea Surface

where $E_0 \cos \omega_0 t$ [illegible] the direct wave, E_{oT_1} [illegible] reflected wave and $\Sigma E_s \cos(\omega_s t + \varphi_s)$ [illegible] scattered waves [illegible] have random [illegible] phases $\omega_s t + \varphi_s$ which are distributed over [illegible] 0 to 2π. It is assumed that the amplitude distribution [illegible] E(t) can be expressed by Eq.(?), where $I_0(z)$ [illegible] modified Bessel function of the zero order. The average [illegible] deviation and the average [illegible] of the amplitude are expressed by Eqs.([illegible]), where [illegible] is given by Eq.([illegible]) and I_1[illegible] is the modified Bessel function of the first order. [illegible] of the average square value of the amplitude and [illegible] value is expressed by Eq.([illegible]a). The roughness of the sea [illegible] is defined by:

$$\alpha^2 = \frac{\sum \bar{E}_s^2}{E_0^2}$$

Card2/5

so that it can be expressed by:

$$\alpha^2 = \frac{\overline{R^2}}{E_0^2} \frac{1}{1 + \beta^2} \quad (8)$$

The magnitude of the reflected wave can be determined by finding an expression for f (see Eq.(4)). The [illegible] distribution of E(t) is in the form of Eq.(12); it is [illegible], however, to find the square deviation of the phase directly from this expression [illegible] therefore the dependence of the phase deviation on [illegible] is expressed [illegible] Eq.(13). The scattered wave [illegible] frequency [illegible] Ω which is due to the Doppler effect [illegible] and random motion of the sea surface. [illegible] regular motion has a velocity v_- and the [illegible] velocities v_s, Ω_s is expressed by:

$$\Omega_s = \frac{4\pi (v_= - v_s)}{\lambda} = \Omega - \Omega_{0s} \quad (1\cdot)$$

where

$$\Omega = \frac{4\pi v_z}{\lambda} \quad \text{and} \quad \Omega_{0s} = \frac{4\pi v_0}{\lambda} \quad (\ldots).$$

It is shown that the two velocities can be determined from the Eqs.(19) and (2). On the other hand, the low-fre... spectrum of the fluctuation envelope $F(\Phi)$ is expressed by Eq.(38), where Φ_0, Φ_s and $2\sigma^2$ are given by Eqs.( ) and (37), while $\delta(\Phi)$ is the Dirac function. A curve of $F(\Phi)$ calculated from Eq.(1) for $\beta = 3$, $\lambda = 3$ cm, v_0 10 ... and $v_z = 0$ is given in Fig.1. The theory was checked by some measurements which were carried out at a wavelength of 3.2 cm; the height of the transmitter was ... m, while the heights of the receivers were 1, 7.5 and 10 m; the propa... path was 750 m. The amplitude fluctuations as a function of time were recorded and these are shown in Fig.2; the values of the amplitude of the received signal, as a function of the height of the receiver, are shown in Fig.3. Fig.4 ... the overall probability of the amplitude distribution $\Phi(y)$,

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108-3-2-2/26

On the Statistic Nature of the Scattering of Centimetre Radio Waves by a Rough Sea Surface

the circles denote the values obtained from the measurements while the curve illustrates the calculated results. F... 5 shows the sea roughness coefficient α as a function of $h_o\theta/\lambda$ where h_o is the average height of the surface non-uniformities, θ is the sliding angle and λ is the wave-length. From the above, it is concluded that the method of investigation adopted in this paper is suitable for determining a number of important physical parameters (β, α .., v_o, $v_=$ and $F(\phi)$) which characterise the scattering processes. The method can also be used to study the propagation of radio waves in the troposphere and, in particular, the nature of the non-uniformities causing the tropospheric scattering. There are 5 figures and 9 references, 6 of which are Russian and 3 English.

ASSOCIATION: Institute of Radiophysics and Electronics AS of the Ukrainian SSR, Khar'kov (Institut radiofiziki i elektroniki AN USSR, g. Khar'kov)

SUBMITTED: January 16, 1959

AVAILABLE: Library of Congress

Card 5/5

1. Radio waves-Scattering 2. Oceans-Turbulence-Effects 3. Mathematical analysis

SOV/142-58-4-[illegible]

AUTHOR: Braude, [illegible]Ya., Men', A.V., Ostrovskiy, I.[illegible]

TITLE: A Travelling Wave Antenna with Variable Zero Reception Bearings (Antenna begushchey volny s regulируyemymi napravleniyami nuley priyema)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Radiotekhnika, 1958, Nr 4, pp 415-421 (USSR)

ABSTRACT: The paper discusses a system of radio reception antennae that enables 2 or more sources of radio disturbance coming from different directions, to be suppressed. The system was tested experimentally. The antenna system proposed by the author consists of: (1) Certain single-wire antennae, placed low over the earth, which are connected with the receiver input by a special phase rotator. 2 The paper also examines the working principle of a simple antenna system of this type, consisting of 2 parallel antennae, connected by a phase rotator. Regarding (1) the zero point can be at any value of angle φ (angle between the line of [illegible]

Card 1/2

SOV/142-58-...

A Travelling Wave Antenna with Variable Zero Reception Bearing

dence of the ground wave and wire axis of the antenna on the path of the corresponding search for zero 2, with the help of a phase rotator. This characteristic of the antenna system can be used both for investigating radio disturbance and for direction finding. Regarding 2, this allows two disturbances from different directions to be suppressed. Clearly, the principle on which the 4-antenna system is based 2, can also be utilized to suppress 4 disturbances, requiring 2 four-wire antennae in series. The experimental tests of the qualities of this antenna were made on 2- and 4-wire antennae. The author gives technical data for the goniometer and the phase rotator. The latter allows - in the wave range .75-1.5 - phase rotations of high frequency oscillations within the range zero 360° with transmission factors of .8-0.7. The relation between the rotation angle of the phase rotator rotor and the displacement of the high frequency phases was practically linear. Experience in using a four-wire antenna showed that during

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A Travelling Wave Antenna with Variable Zero Reception Bearings

the day this antenna ensures stable suppression of the two disturbances. At night it is more difficult to locate the direction of a disturbance and even when this was possible, suppression was not stable. The antenna was tested experimentally with one or two adjustable zero points. The qualities described are effective for the reception of "surface" waves and are effective for space waves. There are ... circuit diagram, 1 diagram and ... references, ... which are Soviet and ... American.

ASSOCIATION: Uchenyy sovet instituta ... fiziki i elektroniki AN USSR (Scientific Council of the Institute of ... Physics and Electronics, Academy of Sciences, Ukrainian SSR)

SUBMITTED: January ..., 19..

Card 2/2

9,9000

S/141/60/003/01/003/020
E192/E482

AUTHORS: Komarov, N.N., Ostrovskiy, I.Ye., Zamarayev, B.D. and Rozenberg, A.D.

TITLE: Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy Radiofizika 1960, Vol 3, Nr 1, pp 39-49 (USSR)

ABSTRACT: An expression for the attenuation factor $V_1(\xi, y)$ in the "illuminated" region, for the case of a hyperbolic M-curve, was derived in the work of V.A Fok and others (Ref 2). The formula for $V_1(\xi, y)$ is given on p 40. It is seen that the formula is dependent on the parameter ν. By investigating the formula it is found that for $\nu > 1$, the expression for the attenuation factor is similar to the formula which is derived by using the methods of the geometric optics for a uniform atmosphere. The method is used to study the propagation of rays

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S/141/60/003/01/003/020
E192/E482

Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts When One of the Communicating Stations is Situated at a Great Height

through a laminary medium. This is shown in Fig 2, a beam issues from the source O at an angle α. OA shows the direction of the beam in the case of the standard refraction, while OB illustrates the passage of a beam of rays in a laminary atmosphere. For this case (see Fig 2) it is possible to write the following equations:

$$\rho_{CA} = W/d\alpha\, R_{CA} dP_C \quad \rho_B = W/d\alpha\, R_b dP_b$$

where ρ_{CA} and ρ_B are energy densities at points A and B respectively (subscript C refers to the energy density in the standard atmosphere) and W is the energy in the beam which is determined by the angle dα. First the case of a medium consisting of 2 layers having thicknesses h_n and h_{n+1} and radii

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S/141/60/003/01/003/020
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Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

of curvature of the rays ρ_n and ρ_{n+1} is considered (see Fig 3). The case is described by Eq (1a). On the basis of this formula it is possible to derive a recurrence equation relating h_n, ρ_n, a_n, r_n and a_{n+1} (see Fig 3). The resulting formula for any n is

$$\frac{dP_B}{dP_{CA}} = \frac{\sin\alpha}{\sin\alpha_{CA}} \cdot \frac{dR_B}{dR_{CA}} \cdot \frac{\sum\limits_{n=k} \partial r_n / \partial a_k}{\partial R_{CA} / \partial a_k} \cdot \frac{a_n + 1}{a_{CA}}$$

The above results are employed to investigate a duct having a height of 54 m and $\Delta M = 54$. The wavelength of the propagated signal is 10 cm. The calculated results are illustrated in Fig 4. In this the function V_1 is plotted against $\xi = x/\sqrt{v}$ which represents

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S/141/60/003/01/003/020
E192/E482

Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts When One of the Communicating Stations is Situated at a Great Height

the distance measured from the tangent point of the plane wave and the earth surface. The Curve 1 in Fig 4, refers to the standard refraction while Curve 2 is for the case of a near-water duct. From Fig 7, it is concluded that the wave duct has the following effect: (1) it increases the width of the first interference lobe and (2) the overall value of the field is slightly reduced due to the redistribution of the energy in space. Further results are shown in Fig 5 which illustrate the dependence of the distance G_0 and the parameter ΔS on ΔM, wavelength λ and the height of the duct h_1. G_0 represents the distance between the tangent point of the wave and the radio horizon. The formulae derived earlier are also used to investigate the influence of inversions on the wave propagation. The results are illustrated in

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E192/E482

Application of the Methods of Geometric Optics to the Evaluation of the Field in the Presence of a Near-Water or Raised Wave Ducts, When One of the Communicating Stations is Situated at a Great Height

Fig 6 (Curves 1 and 2) and are found to be in good agreement with the experimental results. There are 7 figures and 2 Soviet references.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR (Institute of Radio-Physics and Electronics of the Academy of Sciences UkrSSR)

SUBMITTED: May 11, 1959

Card 5/5

9,9810

25946
S/141/61/004/001/006/022
E133/E435

AUTHORS: Braude, S.Ya., Ostrovskiy, I.Ye. and Sanin, F.S.

TITLE: The use of the concept of a negative equivalent Earth's radius in estimating the intensive refraction of radio waves

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol.4, No.1, pp.67-73 1961

TEXT: S.Ya.Brande, I.Ye.Ostrovskiy and F.S.Sanin are among various authors who have considered the propagation of radio waves between two points on the Earth which are at heights above the surface large compared with the wavelength. The field at the receiver, due to the transmitter, can be considered simply as a reflection problem in geometrical optics, so long as refraction and curvature of the Earth's surface are allowed for. This can be done by replacing the actual radius of the Earth a by an "equivalent" radius $a_э$. The effect is as if reduced heights of transmitter and receiver were used which reduced the problem to one with a plane boundary. The geometry of the problem is shown in Fig.1 (where A is the transmitter, B the receiver and the wave from A to B is

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reflected at C). M.P.Dolukhanov has shown (Ref.4: Propagation of radiowaves, Rasprostraneniye radiovoln, Svyaz'izdat, M., 1951) that when the angle γ in Fig.1 tends to zero, the intensity of the reflected wave at the receiver is given by

$$E = \frac{346\sqrt{P_{\kappa e m} D}}{r_{\kappa м}} \left| \sin\left[\frac{2\pi h_1 h_2}{r \lambda} \left(1 - \frac{r^2}{r_r^2}\right)^2 \right] \right| \text{мв} \cdot \text{м}^{-1}, \tag{4}$$

where

$$r_r = \sqrt{2a_e}\left(\sqrt{h_1} + \sqrt{h_2}\right) \tag{5}$$

V.A.Fok has shown that the concept of an equivalent radius can be used in diffraction formulae too, despite the formal comparison with geometrical optics, but only if the parameter δ is small

$$\delta = \frac{\lambda^{2/3}}{2h_0}\left(\frac{a_e}{\pi^2}\right)^{1/3}$$

h_0 representing the height at which the gradient of the

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E133/E435

The use of the concept ...

refractive index changes considerably. The author now introduces the idea of a negative equivalent Earth radius, pointing out that this will become necessary when the gradient of the refractive index $dn/dh < 1.57 \times 10^{-7} m^{-1}$ for a sufficiently thick layer of the atmosphere. (The equivalent radius tends to infinity when $dn/dh = -1.57 \times 10^{-7} m^{-1}$.) Relationships analogous to those used for a positive equivalent radius can now be established. In particular, the variation of the negative equivalent radius with the height above the surface of a given interference maximum can be worked out (assuming a particular wavelength and transmitter height). Thus Fig.3 shows the variation in height of the third interference maximum for a wavelength of 3.2 cm and a transmitter height (h_1) = 18 m and for distances between the transmitter and receiver (r) = 6, 12, 18 and 24 km. Using the data from this and similar graphs, Fig.4 was constructed. This shows the height of the third interference maximum as a function of r and of the equivalent Earth radius (for both positive and negative values). These curves can be used to find the maximum reception distance of a transmitter. The equation actually employed gives the ratio r/r_c, where r is the

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E133/E435

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actual maximum distance of reception and r_c is the maximum distance under standard conditions. Table 1 gives values of this ratio for various values of the negative equivalent Earth radius. The last value in the table represents the maximum possible range. The major limitation on the use of a negative equivalent Earth radius is the assumption of a constant gradient of the refractive index. There are 4 figures, 1 table and 5 Soviet-bloc references.

ASSOCIATION: Institut radiofiziki i elektroniki AS UkrSSR
(Institute of Radiophysics and Electronics AS UkrSSR)

SUBMITTED: June 10, 1960

Table 1.

h_1 (м)	h_2 (м)	r_c/r_{ic}	$a_э$ (км)	r_c (км)	r (км)	r/r_c	[illegible]
18	6	0,8	600 000	21,9	53,6	2,45	0,2
•	•	•	100 000	•	140	6,4	0,6
•	•	•	80 000	•	165	7,5	0,8
•	•	•	— 65 000	•	174	7,9	1

Card 4/4

L 16853-63 EWT(d)/BDS/EEC-2/ES(t)-2 AFFTC/ASD/ESD-3/APGC Pg-4/Pl-4
RB
ACCESSION NR: AR3006324 S/0058/63/000/007/H029/H029

68

SOURCE: RZh. Fizika, Abs. 7Zh193

AUTHOR: Ostrovskiy, I. Ye.; Zamarayev, B. D.

TITLE: Magnitude of frequency shift in scattering of radio waves by the surface of the sea

CITED SOURCE: Sb. Radiookeanogr. issled. morsk. volneniya. Kiyev, AN USSR, 1962, 91-95

TOPIC TAGS: Radio wave propagation, scattering, frequency shift, sea surface

TRANSLATION: From the measured envelope function of a radio signal reflected from the surface of the sea, the distribution of the felocities of the elementary "retransmitters" is calculated on the assumption that the scattered signal is the sum of a large number of

Card 1/2

(N) L 11821-66 EWT(d)/EWT(l)/EEC(k)-2 RB/GW/WS-2

ACC NR: AP6002296 SOURCE CODE: UR/0141/65/008/006/1117/1127

AUTHOR: Kalmykov, A. I.; Ostrovskiy, I. Ye.; Rosenberg, A. D.; Fuks, I. M.

ORG: Institute of Radio Physics and Electronics, AN UkrSSR (Institut radiofiziki i elektroniki AN UkrSSR)

TITLE: Effect of sea-surface structure on the spatial characteristics of scattered radiation

SOURCE: IVUZ. Radiofizika, v. 8, no. 6, 1965, 1117-1127

TOPIC TAGS: sea wave scatter, radio wave scattering

ABSTRACT: The spatial correlation radius of scattered electromagnetic radiation and its connection with the dimensions of inhomogeneities of the sea surface have been theoretically and experimentally studied. The theory assumes this model of the sea surface that scatters radio waves in the cm-band: large swells, to which the Kirchhoff principle is applicable, and small ripples causing reflections which can be analysed by a disturbance method. The theoretical results are used to interpret the experimentally found radii of correlation of radio-signal envelopes, the signals being scattered by separated sea areas. A special radar correlometer having high range resolution was used for measurements within a 8-mm to 4-m band. Simultaneously with radio-wave measurements, sea-wave characteristics were also measured. The

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UDC: 538.56:519.25

Card 2/2

L 22874-66 EWT(d)/EWT(l)/EEC(k)-2 RB/GW/WS-2

ACC NR: AP6011908 SOURCE CODE: UR/0141/66/009/002/0234/0240

AUTHOR: Rozenberg, A. D.; Ostrovskiy, I. Ye.; Kalmykov, A. I.

ORG: Institute of Radio Physics and Electronics, AN UkrSSR (Institut radiofiziki i elektroniki AN UkrSSR)

TITLE: Frequency shift of radio emission scattered by the surface of the sea

SOURCE: IVUZ. Radiofizika, v. 9, no. 2, 1966, 234-240

TOPIC TAGS: radio emission, radio wave propagation, radio wave scattering

ABSTRACT: Results of a study of the frequency spectrum of 32-, 10-, and 50-cm and 1.5- and 4-m radio waves scattered over the surface of the sea are reported. A formula was derived for determining the frequency shift of scattered radio emission with respect to the frequency of the incident emission. It can be used for the wave range of 3 cm to 200 m. The measurements demonstrated that the spectrum bandwidth and the center frequency of the shift are dependent on the state of the sea and the angle between the direction of emission and that of the motion of the sea waves. Narrow spectrum bandwidths and the lowest center frequencies corresponded to a quiet sea surface. At high seas, the center frequency and the spectrum bandwidth are dependent on the angle between the emission direction and the direction of the wind. "In conclusion, we consider it our duty to thank V. I. Zel'dis for his assistance." [GS]
Orig. art. has: 6 figures and 4 formulas.

SUB CODE: 17/ SUBM DATE: 16Mar65/ ORIG REF: 003/ OTH REF: 005/ ATD PRESS: 4234

Card 1/1 UDC: 621.371.165

OSTROVSKIY, I. Ya., Cand Biol Sci -- (diss, "Some indices of the exchange of iodine in bark in the western oblasts of the Ukrainian SSR." L'vov, 1960. 1[illegible] pp; (Ministry of Agriculture UkSSR, L'vov Zoo-veterinary Inst); 200 copies; price not given; (KL, 18-60, 149)

GORELKIN, A.; OSTROVSKIY, L.; PLOKHOTNIKOV, V.; SHUL'MAN, S.

"Are intermediate outlets necessary?" Sov.torg. no.8:44-45 Ag '57. (MLRA 10:8)

1. Kommercheskiy direktor Minskogo univermaga (for Plokhotnikov).
2. Zamestitel' nachal'nika torgovozakupochnoy bazy doruresa Belorusskoy zheleznoy dorogi (for Shul'man).

(Retail trade)

OSTROVSKIY, L., kand.yuridicheskikh nauk; KALININ, G.

Reviewed by L. Ostrovskii, G. Kalinin. Okhr. truda i sots. strakh. 5 no.7:28-29 Jl '62. (MIRA 15:7)

1. Zaveduyushchiy otdelom okhrany truda Belorusskogo respublikanskogo soveta profsoyuzov (for Kalinin).
(Industrial hygiene--Law and legislation)

OSTROVSKIY, L., kand.yuridicheskikh nauk

Taking into account special aspects of agriculture. Okhr. truda i sots. strakh. 6 no.9:29-30 S '63. (MIRA 16:10)

1. Vneshtatnyy pravovoy inspektor Belorusskogo respublikanskogo soveta professional'nykh soyuzov.

OSTROVSKIY, L.A.; KHODZHIBAYEV, N.N.

Once more on artesian wells in the Aral Sea region. Uzb.geol. zhur. 6 no.1:71-72 '62. (MIRA 15:4)

1. Institut geologii i razrabotki neftyanykh i gazovykh mestorozhdeniy AN Uzbekskoy SSR.
(Aral Sea region--Artesian wells)

OSTROVSKIY, L.A.; MAKAROV, L.N.

Compressed air drilling of dry and water-bearing sands. Biul. nauch.-tekh. inform. VIMS no.2:61-63 '63. (MIRA 18:2)

1. Priaral'skaya gidrogeologicheskaya ekspeditsiya.

OSTROVSKIY, I.A.

Preservation [illegible] the [illegible] y. [illegible]
Razved. [illegible] nedr 29 no. [illegible]

[illegible] zbekskiy gidrogeologicheskiy [illegible].

OSTROVSKIY, L.A.

725. PRODUCTION OF TP-240-1 BOILERS FOR EXTRA HIGH STEAM PARAMETERS. Polyochenko, V.B. and Ostrovskii, L.A. (Energomashinostroenie (Pwr Mech., U.S.S.R.), Apr. 1956, (4), 7-13). At the Cherepetsk power station in 1953 the first of this new type of boiler, designed for operation with extra high steam parameters, was produced. With a nominal steam output of 240 t/h, pressure of primary steam behind steam cut-off valve 175 atm, and superheated steam temperature 555°C, the boilers are planned to provide steam to 150 MW turbines, two boilers to a turbine. Design features are described. C.E.A.

2

8(0) SOV/112-59-3-5254

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, Nr 3, p 135 (USSR)

AUTHOR: Ostrovskiy, L. A.

TITLE: Properties of Bridge-Type Circuits With Resistive Relative Arms (Svoystva mostovykh tsepey s aktivnymi plechami v otnositel'nykh velichinakh)

PERIODICAL: V sb. Nekotoryye novyye gidromet. i geofiz. metody izmereniy i pribory. L., Gidrometeoizdat, 1957, pp 68-91

ABSTRACT: DC bridge circuits are analyzed under the conditions of a specified supply voltage. Arm resistances are expressed in relative values. Calculations of parameters of an unbalanced bridge are presented, the bridge functioning with the specified measuring device and a specified deviation from the scale linearity. A numerical example of designing the unbalanced bridge with a rheostatic primary element is presented.

A.M.M.-Sh

Card 1/1

O STROYSKI[illegible] [illegible] A.

12 [illegible]

(с 10 до 16 часов)

А. В. [illegible]
Л. А. Островский
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[illegible] СВЧ

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[illegible] СВЧ

12 [illegible]

(с 18 до 22 часов)

А. [illegible] С[illegible]
А. [illegible]

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report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORIE), Moscow, 8-12 June, 1959

06488
SOV/141-58-4-4/26

AUTHORS: Averkov, S.I. and Ostrovskiy, L.A.

TITLE: The Propagation of Oscillations in Systems with Time-Dependent Parameters (Rasprostraneniye kolebaniy v sistemakh s parametrami, zavisyashchimi ot vremeni)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, Nr 4, pp 46-51 (USSR)

ABSTRACT: Previous studies of linear systems with variable parameters have been made by various workers (Ref 1-4). The physical basis here has been a quasi-stationary system whose dimensions are small compared with the wavelength of oscillation. Distributed systems have been considered by Rytov (Ref 5) but the validity of the approximations used have not been examined very closely. Some information on this latter point may be elicited by using Poynting's theorem for a system in which the permeability and permittivity depend on time and on the coordinates (Eq 1). The present paper considers the propagation of a plane electromagnetic

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SOV/141-58-4-4/26

The Propagation of Oscillations in Systems with Time-Dependent Parameters

wave in an ideal lossless non-dispersive medium whose properties depend on time and on the x coordinate. The general solution to Maxwell's equations (Eq 2) requires partial differential equations of not less than the third order; the problem is much simplified if we consider a particular case. If the space and time functions are the same then Eq (2) becomes Eq (3) and (4) whence the expressions for electric and magnetic field strength are found in Eq (9) and (10) in terms of auxiliary functions F_1 and F_2; these are defined in Eq (16) and (17). Making the appropriate substitutions the expressions for electric and magnetic field strength in terms of space and time are given by Eq (19) and (20). These equations apply to the case when variation of properties of the medium is linear both in time and distance. In this particular example a single type of wave is propagated whose amplitude and frequency increases according to an exponential law with distance. This is explained physically in terms of Eq (1) because

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The Propagation of Oscillations in Systems with Time-Dependent Parameters

the action of varying the properties of the medium does work upon the wave and increases its energy. The mean square value of power density is given by Eq (22) and frequency by Eq (23). The distance traversed by the wave-front in a time t is given by Eq (24). On the basis of experimental data on the rate at which the properties of a medium can be changed with time (Ref 6), it appears reasonable to plan an experiment at radio frequencies whereby the predicted change in power and frequency may be observed in practice. There are 6 references, 5 of which are Soviet and 1 English.

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

SUBMITTED: 14th January 1958

Card 3/3

9.9000

S/141/59/002/05/024/026
E041/E321

AUTHOR: Ostrovskiy, L.A.

TITLE: The Interaction of Weak Signals With Electromagnetic Shock Waves

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 5, pp 833 - 834 (USSR)

ABSTRACT: In Ref 1 it has been shown that when an electromagnetic wave is propagated in a medium with a non-linear relationship between B (induction) and H (magnetization) a shock wave is possible. In the simplest case of a plane-polarized wave in a uniform medium the quantity characterizing the vector discontinuity is Eq (1), where v is the velocity of propagation of the front and c is the velocity of light. The indices 1 and 2 refer to the field values before and after the passage of the front. The problem considered here is the interaction of a steady shock wave (as in Figure 1) with a weak disturbance of arbitrary form polarized in the same direction. It is assumed that the permittivity is constant and the differential permeability is a monotonic decreasing function of the magnetization. Using the perturbation method the

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E041/E321

The Interaction of Weak Signals With Electromagnetic Shock Waves

fields on either side of the front are Eq (2), while the velocity condition for stability of front is Eq (5). In Figure 1 the disturbance is propagated to meet the shock and continues through it at a different frequency. When μ_1 is very large the change in frequency is approximately $\sqrt{\mu}/2$. If the signal overtakes the wave the change is given by Eq (10). If the shock overtakes the signal the result, except for sign changes, is similar to the first case. The discussion is valid providing the signal wavelength is not appreciably greater than the width of the front and may be extended to transmission-line problems. A.V. Gaponov is thanked for his comments.

There are 1 figure and 3 Soviet references.

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

SUBMITTED: July 11, 1959

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238510018-2"

PATYCHENKO, V.S., inzh.; GOL'DENFARB, I.N., inzh.; OSTROVSKIY, L.A., inzh.

New high-power steam boiler for supercritical steam parameters.
Energomashinostroenie 6 no.8:1-11 Ag '60. (MIRA 14:9)
(Steam boilers)

S/141/61/004/002/009/017
E192/E382

9,1400

AUTHOR: Ostrovskiy L.A.

TITLE: The Geometric-optics Approximation for Waves in Transmission Lines With Variable Parameters

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika 1961 Vol 4, No 2, pp. 293 - 305

TEXT The problem considered has been partly investigated by several authors (Ref 1 - P. Tien, H. Suhl, Proc. IRE, 46, 700 1958, Ref. 4 - S.M Rytov, Trudy fizicheskogo instituta AN SSSR 2 1 40 1940 and Ref. 5 - S.M. Rytov, ZhETF, 17, 930 1947). In the following, an attempt is made to investigate the wave propagation in dissipative system with variable parameters. First, a waveguide filled with a non-dissipative medium is considered. It is assumed that the medium is uniform in the transverse cross-section (in the plane xy) and that its permittivity ε and permeability μ are dependent only in the time t and coordinate z which is measured along the axis of the waveguide. The electric and magnetic fields $\underline{E}$ and $\underline{H}$ can be expressed by a vector potential $\underline{A}^e$ such that:

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S/141/61/004/002/009/017
E192/E382

$$\mu \underline{H} = \text{rot}\ \underline{A}^e \qquad \underline{E} = -\frac{1}{c_1}\frac{\partial \underline{A}^e}{\partial t} \tag{1}$$

where c_1 is the velocity of light and
$\underline{A}^e$ is in the form

$$\underline{A}^e = \varphi(z\ \ t)\underline{A}_0^e\ (x\ \ y) \tag{2}$$

where $\varphi(z\ \ t)$ is a scalar function On the basis of the Maxwell equations the following equation is obtained

$$\varphi \operatorname{rot} \operatorname{rot} A_0^e = A_0^e \left[\frac{\partial^2 \varphi}{\partial z^2} - \frac{1}{\mu} \frac{\partial \mu}{\partial z} \frac{\partial \varphi}{\partial z} - \frac{\mu}{c_1^2} \frac{\partial}{\partial t} \left(\varepsilon \frac{\partial \varphi}{\partial t} \right) \right] +$$

$$+ z_0 A_{0z}^e \left[\frac{\partial \varphi}{\partial z} \frac{\partial}{\partial z} \ln \left(\varepsilon \frac{\partial \varphi}{\partial t} \right) - \frac{\mu}{c_1^2} \frac{\partial}{\partial t} \left(\varepsilon \frac{\partial \varphi}{\partial t} \right) \right] + \qquad (3)$$

$$+ [z_0 \operatorname{rot} A_0^e] \left[\frac{1}{\mu} \frac{\partial \mu}{\partial z} \varphi - \frac{\partial \varphi}{\partial z} \right]$$

where $\underline{z}_0$ is the unit vector in the z-direction, while A_{0z}^e and $\underline{A}_0^e$ are the projections of the vector $\underline{A}^e$ on the axis z and the plane xy. The variables of Eq. (3) can be separated if:

$$A_{0z}^e = 0 \qquad (4)$$

in which case the following two equations are obtained:

$$\Delta_2 A_0^e + \varkappa^2 A_0^e = 0; \tag{5}$$

$$\frac{d^2 \varphi}{dz^2} = \frac{\mu}{c_1^2}\frac{\partial}{\partial t}\left(\varepsilon \frac{\partial \varphi}{\partial t}\right) + \frac{1}{\mu}\frac{\partial \mu}{\partial t}\frac{\partial \varphi}{\partial z} + \varkappa^2 \varphi. \tag{6}$$

where $\Delta_2 = \partial^2/\partial x^2 + \partial^2/\partial y^2$ and $\varkappa$ is the transverse wave number determining the conditions at the walls of the wavegui Eqs. (5) and (6) are valid for TE-waves. In the same way, i possible to obtain the equations for TM-waves by introducing the magnetic vector potential $\underline{A}^m$, defined by:

$$\varepsilon \underline{E} = - \text{rot } \underline{A}^m, \quad \underline{H} = - \frac{1}{c_1}\frac{\partial \underline{A}^m}{\partial t}, \quad \underline{A}^m = \varphi^m(z,t)\underline{A}_0^m(x,y) \tag{7}$$

The finite conductivity of the medium for TE-waves can easily be taken into account by introducing an additional term into Eq. (6). Similarly, the finite conductivity σ leads to

$$\varepsilon \underline{E} = -\mathrm{rot}\,\underline{A}^m \qquad \underline{H} = -\frac{1}{c_1}\frac{\partial \underline{A}^m}{\partial t} - \frac{4\pi}{c_1}\frac{\sigma}{\varepsilon}\underline{A}^m \qquad (7a)$$

for TM-waves. The second system considered consists of a waveguide with a linearly polarised electromagnetic wave propagating in neutral plasma having electron concentration N which is dependent on z and t ; the electric and magnetic fields $\underline{E}$ and $\underline{H}$ and the wave vector $\underline{k}$ in the system are directed along the axis x, y, z, respectively. If the plasma moves in a medium with a constant permittivity it is possible to introduce a potential $\underline{A}$ such that

$$E_x = -\frac{1}{c_1}\frac{\partial A_x}{\partial t} \qquad H_y = \frac{\partial A_x}{\partial z} \qquad (9)$$

On the basis of the Maxwell equations and the equation of motion for the electrons, the component A_x and the potential A can be expressed by

$$\frac{\partial^2 A_x}{\partial z^2} = \frac{\varepsilon_o}{c_1^2}\frac{\partial^2 A_x}{\partial t^2} + \frac{1}{c_1^2}\,\omega_p^2(z,t)A_x, \quad \omega_p^2(z,t) = \frac{4\pi e^2}{m}N(z,t) \qquad (10)$$

The electric field can be expressed by

$$\frac{\partial^2 E_x}{\partial z^2} = \frac{1}{c_1^2}\frac{\partial^2 E_x}{\partial t^2} + \frac{1}{c_1^2}\omega_p^2(z,t)E_x, \quad \omega_p^2(z,t) = \frac{4\pi e^2 N(z,t)}{m_o} \qquad (11).$$

The above equations (6), (7), (10) and (11) are special cases of a hyperbolic equation of the second order, which is in the form

$$u_{zz} = a(z,t)u_{tt} + b(z,t)u_t + c(z,t)u_z + d(z,t)u \qquad (12)$$

where u is the unknown function,
a, b, c, d are given functions of the variables z and t.

These functions change comparatively slowly under conditions of geometrical optics and b and c are of the same order of magnitude as the first derivative of a or d. Eq. (12) can be rewritten as

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$$u_{\xi\xi} = a(\xi,\tau)u_{\tau\tau} + b(\xi,\tau)u_{\tau} + c(\xi,\tau)u_{\xi} + \frac{1}{p^2}d(\xi,\tau)u \quad (12a)$$

where $\xi = pz$ and $\tau = pt$, where p is a small constant parameter. The solution of Eq. (12a) is assumed to be in the form.

$$u = \left[u^{(0)}(\xi,\tau) + pu^{(1)}(\xi,\tau) + \dots\right]\exp\left[i\frac{\psi(\xi,\tau)}{p}\right] \quad (13)$$

By substituting Eq. (13) into Eq. (12a), a set of equations representing the successive approximations is obtained. In each of these equations it is easy to return to the variables z and t. In the case of the first approximation (or the geometrical optics approximation) the solution is given by

$$u = u^{(0)}(z,t)\exp\left[i\psi(z,t)\right] \quad (21)$$

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The Geometric-optics ....

S/141/61/004/002/009/017
E192/E382

In this case, for TE-waves Eqs. (1) and (2) can be written as:

$$E \quad i \frac{\omega}{c} u A \quad H \quad \frac{i}{\omega} k u [z_0 A_{\perp}], \quad H_z \quad \frac{1}{\omega} u \operatorname{rot} A, \tag{22}$$

and the amplitudes of the fields at a fixed group front $\delta = \delta_o$ are related to ω and k by:

$$\left(\frac{d}{dt} \ln \frac{k}{\omega} u \right) = \frac{k_t}{k} \; [illegible] \tag{23}$$

Similar equations can be obtained for the waves in plasma. In the case of TE-waves in a waveguide containing a medium whose parameters ε, μ and σ are functions of time, the approximate solution is given by:

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$$u = u_0 \left[\frac{\varepsilon(0)\,\mu(t)}{\mu(0)\,\varepsilon(t)} \right]^{1/4} \exp\left(-2\pi i \int_0^t \nu\, dt\right) \times$$

$$\exp\left[i k_0 \left(z - c \int_0^t \left(1 + \frac{\nu^2}{k^2} \dots \right) \frac{dt}{\sqrt{\varepsilon\mu}} \right) \right] \qquad (29)$$

from which it is seen that the frequency of the wave increases when ε and μ decrease in time. Eq. (29) is valid for an infinitely long waveguide. For a wave propagatin in a non-uniform plasma, moving with a constant velocity V , the frequency and the wave number are shown to be in the form of:

$$\omega = \omega_0 \frac{1 - V_z v_{\varphi 0}}{1 - \varepsilon_0 \beta^2} \left[1 - \beta \sqrt{\varepsilon_0 - \frac{\omega_p^2(t_0)}{\omega_0^2} \frac{1 - \beta^2 \varepsilon_0}{(1 - V_z v_{\varphi 0})^2}} \right]; \qquad (41)$$

$$k = \frac{1}{V_z} \left[\omega - \omega_0 (1 - V_z v_{\varphi 0}) \right]. \qquad (41a)$$

where $v_{\partial 0}$ is a constant. The above geometric-optics approximation is based on the assumption that a wave consists of a sequence of group fronts. This assumption is justified provided that the distortion of the wave envelope due to the losses is small as compared with the wave modulation caused by the parameter changes. The author expresses acknowledgment to A.V. Gaponov for advice and discussion of the manuscript. There are 3 figures and 9 references: 7 Soviet and 2 non-Soviet. The two English-language references quoted are: Ref. 1 (quoted in text) and Ref. 3 - F.R. Morgenthaler. IRE Trans. MTT 6, 167, 1958.

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

SUBMITTED: October 24, 1960

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238510018-2"

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33209
S/141/61/004/005/014/021
E032/E114

AUTHOR: Ostrovskiy, L.A.

TITLE: Electromagnetic waves in a nonhomogeneous nonlinear medium with small losses

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.4, no.5, 1961, 955-963

TEXT: The author considers the propagation of a plane electromagnetic wave in a nonlinear dissipative medium which is nonhomogeneous in the direction of propagation. The parameters of the medium are assumed to vary slowly compared with the variation in the wave field itself. It is assumed further that while B is a nonlinear function of H, the relation between the induction D and the electric field E is linear and that the variation in the dielectric constant and the magnetic permeability is of the form

$$\varepsilon = \varepsilon\,(mz), \quad \mu = \mu\,(H,\ mz)$$

where m is a small constant parameter and the propagation takes place along the z axis. It is shown that if terms of the

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order of m^2 can be neglected, the problem is equivalent to the solution of the following differential equations:

$$\frac{dt}{dz} = \pm \frac{\sqrt{\varepsilon\mu}}{c}, \qquad \frac{dH}{dz} = -\mu^{-1/4} \int_0^H \mu^{1/4}\, Q dH \qquad (9)$$

where

$$Q(H, \eta) = \frac{1}{2} \frac{\partial}{\partial \eta} \ln \rho \pm \frac{4\pi}{c} (\sigma\rho + \varkappa/\rho) \quad , \quad \rho = \sqrt{\mu/\varepsilon}$$

$\varkappa$ represents magnetic losses, σ is the conductivity and $\eta = mz$. Both σ and $\varkappa$ are assumed to be of the order of m. It is demonstrated that the corresponding solutions have the form of travelling waves. The theory is then applied to investigate two special cases, namely, 1) lossless medium, and 2) wave impedance of the medium independent of z. The formation of shock waves is also discussed and it is shown that the presence of dissipation impedes the formation of shock waves. Thus, if the nonlinearity is small, e.g.

$$\varepsilon = \varepsilon(z), \qquad \mu = \mu_o(z)\,(1 - \gamma H) \qquad (17)$$

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E032/E114

Electromagnetic waves in a ....

where γ is a constant and $\gamma H \ll 1$, it may be shown that the shock-wave solution of Eq.(9) is:

$$t - \frac{1}{c}\int_0^z \sqrt{\varepsilon\mu_o}\, dz + \frac{\gamma H}{2c}\rho_o^{1/2} e^{\psi(z)} \int_0^z \sqrt{\varepsilon\mu_o}\, \rho_o^{-1/2} e^{-\psi(z)}\, dz = t_o\left[H\rho_o^{1/2} e^{\psi(z)}\right] \quad (18)$$

where

$\rho_o(z) = \sqrt{\mu_o/\varepsilon}$, $\psi(z) = (2\pi/c)\int_0^z (\sigma\rho_o + \varkappa/\rho_o)\, dz$, and

t_o is an arbitrary function determined from the condition on the $z = 0$ plane. The paper is concluded with a discussion of the application of the above theory to the propagation of pulses along an artificial delay line with nonlinear inductive elements.
Acknowledgments are expressed to A.V. Gaponov for his assistance.
There are 1 figure and 6 Soviet-bloc references.

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33209

Electromagnetic waves in a S/141/61/004/005/014/021
E032/E114

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

SUBMITTED: March 4, 1961

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9,1400

S/141/62/005/001/022/024
E140/E435

AUTHORS: Belyantsev, A.M., Ostrovskiy, L.A.

TITLE: Propagation of impulses in transmission lines with semiconductor junction capacitances

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika, v.5, no.1, 1962, 183-187

TEXT: The formation of discontinuities in the flanks of pulses transmitted down nonlinear transmission lines has been explained in terms of evolution of simple waves and the formation of shock waves. The study of powerful waves in lines containing ferrite shows however that relaxation processes must also be taken into account. The study of the phenomena in lines containing semiconductor junction capacitances was undertaken since here relaxation effects occur at much higher frequencies than with ferrites, and the power levels required for the experiment are far less than for ferrites. The expected risetime shortening was observed and the lower limit of risetime, of the order of 2 to 5 ns, was found to be due to dispersion of the junction capacitances. No appreciable relaxation effects were detected.

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S/141/62/005/001/022/024
E140/E435

Propagation of impulses ...

A related phenomenon was also studied and briefly reported, namely the more than doubling of amplitude in reflection from an open-circuited end of such a transmission line. Factors up to 2.5 were obtained in a line loaded by collector-emitter capacitance. There are 5 figures.

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

SUBMITTED: July 10, 1961

S/141/62/005/005/007/016
E140/E135

AUTHOR: Ostrovskiy, L.A.

TITLE: Oscillations of coupled systems with slowly varying parameters

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.5, no.5, 1962, 984-988

TEXT: The condition of slowly varying parameters must be defined both with respect to the normal oscillations and their difference frequencies in the system considered. When this latter condition is violated, some special effects can occur, one of which is analysed in this article for the case of a system with two degrees of freedom. The method used is based on the assumption that the kinetic and potential energies are positive quadratic functions with slowly varying coefficients. The formal solution indicates that at the difference frequencies occurring in the system small variations of the parameters can lead to large variations of the energy at the partial frequencies. Resonances at partial frequencies are investigated and it is found that the total energy

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Oscillations of coupled systems ... S/141/62/005/005/007/016
E140/E135

of the system remains constant, parametric variation leading only to interactions between the normal modes. The behaviour is similar to that of travelling waves in transmission lines with parameters varying in space and time, for instance, in the transformation of the ordinary wave into the extraordinary in an inhomogeneous ionosphere layer.

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

SUBMITTED: February 20, 1962

Card 2/2

Z/019/63/020/002/001/006
E073/E335

AUTHORS: Ostrovskiy, L.A. and Meyklyar M.V.

TITLE: Features of the supercritical pressure boiler TPP-110

PERIODICAL: Energetika a elektrotechnika Přehled technické a hospodářské literatury, v. 20, no. 2, 1963, 63, abstract E63-819 (Elektricheskiye stantsii, 33, no. 6, 1962, 8 - 14)

TEXT: Discusses the design of large boilers for supercritical pressures, then describes development work on the 950 t/h forced circulation boiler for operation at 255 atm., 585 °C with a 300 MW set. Despite the higher pressure, due to the higher output, this boiler was more efficient than units with lower steam pressures. Its layout is also described.
6 figures, 2 tables, 2 references.
[Abstracter's note: complete translation.]

Card 1/1

ACCESSION NR: AP4007673 S/0214/63/000/006/0053/0059

AUTHORS: Kaplan, S. A.; Ostrovskiy, L. A.

TITLE: Theory of shock wave formation in chromosphere and corona

SOURCE: Solnechny*ye danny*ye, no. 6, 1963, 53-59

TOPIC TAGS: acoustical theory, sound wave, sound velocity, magnetic force tube, energy dissipation, shock wave, coronal shock wave, supersonic flow, gas flow, corona, chromosphere, wave formation

ABSTRACT: The authors have examined the conditions for converting sound waves to shock waves in an inhomogeneous atmosphere within a gravitational field. This consideration is associated with determination of magnetic turbulence. The authors describe the application of a method that permits investigation of conditions for converting sound waves to shock waves in any distribution of density and temperature, under conditions that the wave length of the sound is much less than the equivalent height and that self-excitation is small. The method has been discussed elsewhere by K. Ye. Gubkin (Sb. "Nekotory*ye problemy* matematiki i mekhaniki" AN SSSR, Novosibirsk, 1961, str. 69) and O. S. Ry*zhov (Zh. prikl. mekh. i tekh. fiz.,

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238510018-2"

ACCESSION NR: AP4007673

no. 2, 15, 1961). The authors consider velocity of the gas, the effect of gravity, and energy flux. From the relationship that shock waves form when the steepness of the sound-wave front approaches infinity, they find expressions for the distance a sound wave must travel before rupture occurs (that is, before a shock wave is generated). This distance is found to be on the order of 10^9 cm. The distance a sound wave will travel before half its energy is dissipated is on the order of $2 \cdot 10^8$ cm. It is concluded that a substantial part of the kinetic energy of the wave is dissipated in a very short distance as compared with the dimensions of the chromosphere. It is possible that this circumstance explains the sharp rise in temperature at the inner boundary of the corona. Further dissipation of energy occurs in the corona, but this extends over a great distance, and does not lead to a high temperature gradient. Orig. art. has: 30 formulas.

ASSOCIATION: Gor'kovskiy nauchno-issledovatel'skiy radiofizicheskiy institut (Gorkiy Scientific Research Radio Physics Institute)

SUBMITTED: 00 DATE ACQ: 21Jan64 ENCL: 00

SUB CODE: AS NO REF SOV: 003 OTHER: 006

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238510018-2"

OSTROVSKIY, L.A.

Reflection of electromagnetic shock waves from the short-circuited end of a transmission line containing ferrite. Izv. vys. ucheb. zav.; radiofiz. 6 no.2:413-416 '63. (MIRA 16:6)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Radio lines) (Wave guides) (Microwaves)

OSTROVSKIY, L.A.

Modulation of signals in transmission lines with periodically varying parameters. Izv. vys. ucheb. zav.; radiofiz. 6 no.4: 752-763 '63. (MIRA 16:12)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

ACCESSION NR: AP4007187 S/0141/63/006/005/0973/0984

AUTHOR: Bogaty*rev, Yu. K.; Ostrovskiy, L. A.

TITLE: Propagation of electromagnetic waves in nonlinear transmission lines with lumped parameters. I. Nonstationary processes

SOURCE: IVUZ. Radiofizika, v. 6, no. 5, 1963, 973-984

TOPIC TAGS: electromagnetic wave propagation, transmission line element, wave propagation nonlinear transmission line, unsaturated ferrite element, electromagnetic shock wave, shock wave, shockwave formation, unsaturated ferrite line

ABSTRACT: A numerical solution is obtained for the equation of propagation of a pulse in a transmission line with lumped parameters, comprising a concatenation of identical two-ports with ferrite-core coils as the nonlinear elements. This article is the first of two parts and deals with the transient behavior and in particular with the shock-wave formation. Both quasi-static and incoherent reversal of the ferrite magnetization are considered. The solutions

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ACCESSION NR: AP4007187

are obtained with an electronic computer by the Runge-Kutta and by the Euler method. It follows from the calculations that in both cases the structure of the shock wave front and the values of the quantities on both sides of the front vary little over a sufficiently long time (compared with the shock wave duration). The results are compared with an approximate theoretical solution. Although the theory shows that in the incoherent variant the line remains essentially nonlinear behind the shock wave and reflections must be taken into account, the calculations do not bear this out. Orig. art. has: 9 figures, 14 formulas, and 2 tables.

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

SUBMITTED: 29Jan63 DATE ACQ: 20Jan64 ENCL: 00

SUB CODE: CO, GE NO REF SOV: 015 OTHER: 001

S/0141/63/006/005/0985/0991

ACCESSION NR: AP4007188

AUTHOR: Bogaty*rev, Yu. K.; Ostrovskiy, L. A.

TITLE: Propagation of electromagnetic waves in nonlinear transmission lines with lumped parameters II. Structure of the shock wave front

SOURCE: IVUZ. Radiofizika, v. 6, no. 5, 1963, 985-991

TOPIC TAGS: electromagnetic wave propagation, wave propagation, nonlinear transmission line, shock wave structure, quasistationary shock wave, stationary wave

ABSTRACT: This the second of two articles and is devoted to a discussion of the numerical results of the first part (Izv. vuzov, Radiofizika, v. 6, 973, 1963) dealing with the structure of the stationary-wave front (duration of initial section, period and amplitude of the oscillations behind the front). For nonquasistatic reversal of ferrite magnetization the rise time agrees for the most part with the linear approximation. The period of the oscillations behind the shock wave remains approximately constant at a value close to the pi-mode critical frequency, and the amplitude in-

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ACCESSION NR: AP4007188

creases rapidly. In the quasistatic case the rise time agrees well with the dispersion-equation data, and the oscillation amplitude and frequency have approximately the same behavior as for the nonquasistatic case. The results in general agree well with the theoretical calculations (Izv. Vuzov, Radiofizika, v. 6, 661 and 561, 1963). The computational difficulties involved in the case of lines with a large number of elements are briefly discussed. 'In conclusion, the authors are deeply grateful to A. V. Gaponov, A. M. Belyantsev, and G.I. Freydman for valuable remarks, and also V. P. Aleshin, T. N. Alkeksandrovskaya and S. F. Morozov for programming the problems.' Orig. art. has: 4 figures and 5 formulas.

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

SUBMITTED: 29Jan63 DATE ACQ: 20Jan64 ENCL: 00

SUB CODE: CO, GE NO REF SOV: 005 OTHER: 000

Card 2/2

ACCESSION NR: AP4015979 S/0040/63/027/005/0924/0929

AUTHOR: Ostrovskiy, L. A. (Gor'kiy)

TITLE: Theory of waves in nonstationary compressible media

SOURCE: Prikl. matem. i mekhan., v. 27, no. 5, 1963, 924-929

TOPIC TAGS: method of characteristics, successive integration, partial differential equation, first order equation, Riemann wave, geometric acoustics, nonstationary medium, sound wave, gas dynamics

ABSTRACT: The author studies waves in a medium whose parameters depend on the x coordinate and on time t, i.e., the medium moves in an arbitrarily given manner in the direction of the x axis. His method, somewhat different from the usual method of characteristics, allows him, under certain conditions, to reduce the problem to successive integration of first order partial differential equations. He treats the case where the unperturbed (relative to the wave) motion is presented as a simple (Riemann) wave, and he obtains a general solution describing sonic perturbation of arbitrary form. For arbitrary initial motion he finds solutions generalizing the approximation of geometrical acoustics to the case of waves in

ACCESSION NR: AP4015979

in nonstationary media, including waves of finite amplitude. "The author is very grateful to A. V. Gaponov, S. A. Kaplan and O. S. Ryzhov for their interest in this work and discussions of the results." Orig. art. has: 23 formulas.

ASSOCIATION: none

SUBMITTED: 13Sep62 DATE ACQ: 21Nov63 ENCL: 00

SUB CODE: AI NO REF SOV: 007 OTHER: 002

Cord 2/2

OSTROVSKIY, L.A.

Electromagnetic waves in nonlinear media with dispersion. Zhur. tekh. fiz. 33 no.8:905-908 Ag '63. (MIRA 16:11)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut, Gor'kiy.

OSTROVSKIY, L.A.

Generation and development of electromagnetic shock waves in transmission lines containing unsaturated ferrite. Zhur. tekh. fiz. 33 no.9:1080-1092 S '63. (MIRA 16:11)

L 10207-63 EPA(b)/EWT(l)/EPF(n)-2/EWO(k)/BDS/T-2/ES(w)-2--
AFFTC/ASD/AFWL/SSD--Pd-4/Pu-4/Pz-4/Pab-4/Po-4--AT/RB/IJP(C)/EH
ACCESSION NR: AP3000053 S/0056/63/044/005/1587/1589

87
84

AUTHOR: Ostrovskiy, L. A.

TITLE: On a certain type of magnetohydrodynamic waves

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1587-1589

TOPIC TAGS: magnetohydrodynamic waves, arbitrary rotation of vectors, nonlinear solutions

ABSTRACT: Some solutions of the magnetohydrodynamic nonlinear equations are found in which both the moduli and the orientations in the transverse plane of the magnetic field and the velocity vectors can vary, so that initial and general boundary conditions of a more general type can be considered. Relations are obtained for simple cases, such as for waves having a transverse magnetic field. A significant simplification as compared with problems of one-dimensional non-isentropic motion arises from the fact that the resultant expressions can be treated independently. An analogy between the propagation of magnetohydrodynamic and electromagnetic wave is indicated. "The author is

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