FREYDLIS, A.

Improvement in image sharpness. Radio no.5:46 My '54. (MLRA 7:5)
(Television--Receivers and reception)

FREYDLIS, A.

Automatic sound block-system for radio reception and rediffusion centers. Radio no.10:42 O '54. (MLRA 7:11)
(Radio--Transmitters and transmission)

Freydlis, A.

USSR/ Electronics

Card 1/1 Pub. 89 - 30/40

Authors : Freydlis, A.; Kotel'nikov, N.; Pavlenko, V.; Tyushnikov, E.; Trapeznikov, A.; Vorob'yev, V.; Tkachenko, L.; and Nechay, V.

Title : Exchange of experiences

Periodical : Radio 10, 42-43, Oct 1954

Abstract : Several small articles, sent in by local radio operators, are featured under the above title. Each author offers, for the benefit of the others, the results of his experience in the field of electronics. The following equipment and subjects are dealt with: an automatic safety device for the protection of rural radio-center personnel against electric shock; a miniature signal generator; an "interference-free" receiving antenna; a radio-relay station of the Urozhay type; a piezoelectric pickup for an electric guitar, and others. Diagrams; drawings.

Institution: .....

Submitted: .....

VEKSLER, V.I.; KHZNICHENKO, M.S.; FREYMAN, A.A.

Determining C-terminal groups of vegetable proteins by the thiohydantoin method. Biokhimiia 25 no.1:124-128 Ja-F '60. (MIRA 13:6)

1. Chair of Chemistry, Institute of Soviet Trade, Leningrad.
(PROTEINS chem.)
(HYDANTOINS chem.)

FREYDMAN, G.I.

The possible mechanism of martensitic transformation at low temperatures. G. I. Freidman and M. Ya Shirobokov (Phys.-Tech. Inst., Gorki State Univ., Gorki). *Fiz. Metall. i Metalloved., Akad. Nauk S.S.S.R., Ural. Filial* 1, 45(-7(1935).—The quantum "tunnel effect" is shown to account for the crystal growth during martensitic transformation even at temps. close to 0°K. C. H. P.

83801
S/035/59/000/003/007/039
A001/A001

3.1800

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, No. 3, p. 31, # 1903

AUTHORS: Dorman, L. I., Freydman, G. I.

TITLE: A Burst of Cosmic Ray Intensity on February 23, 1956, and Its Interpretation

PERIODICAL: Tr. Yakutskogo fil. AN SSSR, 1958, No. 2, pp. 129-169

TEXT: Experimental data on the burst of cosmic ray intensity which took place on February 23, 1956, are systematized and studied. The data from 37 stations located in geomagnetic latitudes from 83° n.lat. to 73° s.lat. were processed. The distribution of the burst effect over the globe at different instants from 3^h50^m to 0^h00^m universal time was investigated. It was discovered that in the first period of the burst a sharp anisotropy was observed with an additional flux of particles from the Sun; half-an-hour later, the flux of solar particles was "broadened" and approximated an isotropic one. The energy spectrum of solar particles was found for individual time instants. The results obtained were interpreted and the possibility of generation of relativistic

Card 1/3

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A Burst of Cosmic Ray Intensity on February 23, 1956, and Its Interpretation

particles on the Sun is discussed according to the following hypothesis: acceleration of particles on the Sun in the chromospheric flare is mainly brought about by a statistic mechanism on account of the energy of magnetic fields and kinetic motions in the flare. Only in the first moment a more rapid acceleration mechanism should be in operation, similar to acceleration of particles in the pinch-effect. The mean life time of particles in a flare is 10^2 sec, the range for scattering $\gtrsim 2\times10^7$ cm, and disorderly speed of magnetic field heterogeneities $\gtrsim 3\times10^7$ cm/sec. Going beyond the limits of a chromospheric flare, accelerated particles diffuse in the "supercorona" of the Sun with the mean life time of $\sim10^3$ sec and the mean scattering range of $\gtrsim10^{12}$ cm. The dimensions of the corona then proved to be $\geq 7\times10^{12}$ cm. The particles abandon the "supercorona" symmetrically to all sides. A fraction of the particles, moving along a straight line, hit the Earth immediately after the ejection (anisotropic flux in the first period after the flare beginning), the rest of the particles, ejected along other directions than to the Earth, may hit the Earth only after scattering in the interplanetary space by the magnetized clouds, corpuscular fluxes with frozen-in magnetic fields, or by other formations. The authors discuss the

Card 2/3

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A Burst of Cosmic Ray Intensity on February 23, 1956, and Its Interpretation

problem of injecting the particles and energy losses and show that relativistic electrons should be absent in the fluxes of solar cosmic rays. There are 29 references.

L. I. Dorman

Translator's note: This is the full translation of the original Russian abstract.

Card 3/3

FREYDMAN, G. I.

12 [illegible]

(с 10 до 16 часов)

А. В. Гапонов,
Л. А. Островский,
Г. И. Фрейдман

К теории ударных электромагнитных волн в нелинейных средах

В. Я. Антоньянц

Новый метод измерения ширины кривой поглощения в ферритах.

Я. А. Моносов

К теории нелинейных явлений в ферритах на СВЧ

Я. А. Моносов,
А. В. Вашковский

Исследование нелинейных явлений в ферритах на СВЧ.

12 [illegible]

(с 18 до 22 часов)

А. К. [illegible],
А. Л. [illegible]

Резонансные ферритовые вентили

70

[illegible]

Резонансные явления в волноводах сложной формы поперечного сечения, содержащих поперечно намагниченную ферритовую пластинку

[illegible],
[illegible]

Исследование управляемых фазовых сдвигов в волноводной линии с ферритом

[illegible]

Электродинамика [illegible]

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

FREYDMAN, G. I.

PHASE I BOOK EXPLOITATION SOV/3762

Konferentsiya po magnitnoy gidrodinamike. Riga, 1958.

Voprosy magnitnoy gidrodinamiki i dinamiki plazmy; trudy Konferentsii. (Problems of Magnetohydrodynamics and Plasma Dynamics; Transactions of a Conference) Riga, Izd-vo AN Latviyskoy SSR, 1959. 343 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Latviyskoy SSR. Institut fiziki.

Editorial Board: D.A. Frank-Kamenetskiy, Doctor of Physics and Mathematics, Professor; A.I. Vol'dek, Doctor of Technical Sciences, Professor; I.M. Kirko, Doctor of Physics and Mathematics; V.Ya. Veldre, Candidate of Physics and Mathematics; V.G. Vital, Candidate of Physics and Mathematics; Yu.M. Krumin'; and V.Ya. Kravchenko.

Ed.: A. Teytel'baum; Tech. Ed.: A. Klyavinya

PURPOSE: This book is intended for physicists working in the field of magnetohydrodynamics and plasma dynamics.

COVERAGE: This volume contains the transactions of a conference held in Riga, June 1958, on problems in applied and theoretical magnetohydrodynamics. The objects of the conference were the investigation of the basic trends in theoretical and applied magnetohydrodynamics, establishing contact between the people doing research in different branches of magnetohydrodynamics, and promoting the participation of theoretical physicists in problems in applied magnetohydrodynamics. More than 160 persons from different parts of the Soviet Union took part in the conference, and 55 papers were read. Similar conferences are to be held regularly in the future; the next such conference is scheduled to be held in Riga in June 1960. In this present collection of the transactions of the conference, most of the papers and comments on papers are presented by the authors themselves in an abridged form. The book is divided into two parts: the first part deals with problems in theoretical magnetohydrodynamics and plasma dynamics, and consists of 35 articles on such aspects of the problem as the application of magnetohydrodynamics in astrophysics (D.A. Frank-Kamenetskiy), magnetohydrodynamics and the investigation of cosmic-ray variations (L.I. Dorman), acceleration of plasma in a magnetic field (G.V. Gordeyev and A.I. Gubanov), stability of shock waves and magnetohydrodynamics (A.I. Akhiyezer). The second part, consisting of 33 articles, deals with problems of experimental magnetohydrodynamics, including the application of physical simulation for investigation of electromagnetic processes in liquid metals (I.M. Kirko) and the development of electromagnetic pumps (P.G. Kirillov), at the Institute of Physics of the Academy of Sciences, Latvian SSR. Several articles are devoted to induction pumps, electromagnetic crucibles, electromagnetic stirrers for molten metals, and their application in the metallurgical industry including schematic diagrams of their power-supply systems. References are given at the end of most of the articles.

Velikhov, Ye.P. The Influence of a Magnetic Field on the Flow Stability of a Conducting Fluid 49

Terletskiy, Ya.P. Certain Problems of the Movement of Rarefied Plasma in a Magnetic Field 59

Sagdeyev, R.Z. On Nonlinear Steady Flow of Rarefied Plasma in a Magnetic Field 63

Braginskiy, S.I. One Criterion for the Applicability of Magnetohydrodynamic Equations to Plasma 67

Polovin, R.V. Comments on the Paper 71

Gordeyev, G.V., and A.I. Gubanov. The Problem of Plasma Acceleration in a Magnetic Field 73

Gordeyev, G.V. Comments on the Paper 74

Dorman, L.I., and G.I. Freydman. On the Possibility of Charged-Particle Acceleration by Shock Waves in Magnetized Plasma 77

Card 4/12

SOV/56-36-3-65/71

21(3)

AUTHORS: Gaponov, A. V., Freydman, G. I.

TITLE: On Electromagnetic Shock Waves in Ferrites (Ob udarnykh elektromagnitnykh volnakh v ferritakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3, pp 957 - 958 (USSR)

ABSTRACT: In the present "Letter to the Editor" the authors investigate the propagation of plane homogeneous electromagnetic waves in a medium for the case in which induction $\vec{B}$ and field strength $\vec{H}$ of the magnetic field are in nonlinear connection. The medium is assumed to be isotropic and that $B=B(H)$, $\mu(H) = \partial B/\partial H$. Basing upon the Maxwell (Maksvell)equation and its partial solutions, the authors in the following investigate the boundary conditions holding for the field on both sides of the discontinuity, and subject the front of the electromagnetic shock wave to a thorough theoretical investigation extending, for the time being, to the simple case of a plane homogeneous wave in ferrite which is magnetized up to saturation point by a homogeneous magnetic field $\vec{H}_0$, which is longitudinal with respect to the direction

Card 1/3

of propagation of the wave. For the connection of $\vec{M}$ (magnetization) and $\vec{H}$ (z,t) it holds that

$$\partial\vec{M}/\partial t = \gamma[\vec{M},\vec{H} + \vec{H}_o] - \lambda M^{-2}[\vec{M}[\vec{M}, \vec{H} + H_o]] \quad (3)$$

(γ = magnetomechanical ratio for the electron spin, $\lambda = 1/\tau_o$ = relaxation frequency). Further, the case $T \gg \tau_o$ is subjected to a short investigation. As it is found impossible to write down a general solution of the Maxwell equation in consideration of (3), the authors confine themselves to dealing with the case of a steady plane shock wave. For this case it is easy to integrate the equation. The result shows that $\vec{M}$ rotates round the direction of propagation of the wave z (precision angle φ) with the velocity $\omega = \partial\varphi/\partial t$, $\omega = \gamma\{H'_y \cos\theta/\sin\theta' - (H_o - 4\pi M \cos\theta)\}$ (θ = the angle between M and z, the primed quantities denote values at a great distance from the wave front, i.e. at $z \longrightarrow -\infty$). Expressions are further given for the time width of the shock wave front and the special cases of strong and weak shock waves are described in short. There are 4 Soviet references.

Card 2/3

On Electromagnetic Shock Waves in Ferrites SOV/56-36-3-65/71

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta (Radiophysical Institute of Gor'kiy State University)

SUBMITTED: December 18, 1958

Card 3/3

FREYDMAN, G.I.; SHAFER, G.V.

Some results of the comparison of the variations in the neutron and hard components during September - October 1957. Trudy IAFAN SSSR. Ser. fiz. no.3:116-120 '60. (MIRA 13:11)
(Cosmic rays)

S/141/60/003/01/008/020
E032/E414

24.7900

AUTHORS: Gaponov, A.V. and Freydman, G.I.

TITLE: On the Theory of Electromagnetic Shock Waves in Non-Linear Media

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 1, pp 79-88 (USSR)

ABSTRACT: The propagation of electromagnetic waves in ferrites and ferroelectrics is usually discussed in terms of the linear approximation. The present paper gives a detailed discussion of the propagation of plane uniform electromagnetic waves in non-linear media, ie media in which the magnetic induction B depends non-linearly on H. The paper is divided into the following sections.
1. Simple waves in a non-linear isotropic uniform medium. Production of discontinuities.
2. Conditions on the Discontinuity Surface.
3. Structure of the shock wave front.
4. Effect of the finite conductivity of the medium.
The Maxwell equations are written down in the form given by Eq (1) and (2); the relation between D and ε is

On the Theory of Electromagnetic Shock Waves in Non-Linear Media

assumed to be linear. Special solutions of these equations can then be shown to be given by Eq (3) where c is the velocity of light in vacuum, $\mu(H) = dB/dH$ and $f(\xi)$ and $f_1(\xi)$ are arbitrary functions determined by the boundary conditions. Eq (3) describes travelling waves such that each point on the wave profile moves with a velocity which depends on the magnetic field at that point. If the permeability decreases with the magnetic field, then those points on the profile at which the numerical magnitude of the magnetic field is large will move with a large velocity. Consequently, whenever the magnetic field increases (in its absolute magnitude) in a direction opposite to the direction of propagation, the slope of the front will increase until the continuity of the field vector breaks down (Fig 1). If μ is not a monotonic function of H, the situation is much more complicated. The boundary conditions on the moving shock wave-front are obtained by assuming that its

Card 2/5

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On the Theory of Electromagnetic Shock Waves in Non-Linear Media

velocity changes slowly in the case of a plane wave. The boundary conditions are given by Eq (6) and (6a). It is shown that if the discontinuity in the travelling wave is a weak one, then the behaviour of the travelling wave can be discussed in terms of the special solution given by Eq (3) and the boundary conditions given by Eq (6a). The problem is thus reduced to the determination of the position of the discontinuity in a simple wave. Weak shock waves can only exist for a limited time. In order to discuss the structure of the front of an electromagnetic shock wave, the relation between B and H and D and E must be known. In the present paper a simple case of a plane uniform wave propagated in ferrite magnetized to saturation by longitudinal uniform magnetic field is considered. If one neglects internal fields, then the connection between the

Card 3/5

On the Theory of Electromagnetic Shock Waves in Non-Linear Media

magnetization and the magnetic field strength is given by Eq (14) (Ref 7). The structure of the front of the electromagnetic shock wave, ie the solution of Maxwell's equations subject to Eq (14), cannot be carried out in a general form. However, the present paper succeeds in deriving the corresponding solutions for a stationary plane shock wave. It is shown that the frequency of field components in the region of the front of the shock wave depends mainly on the magnitude of the magnetic field in the wave. The length of the front is reduced as the magnetic field increases. The character of the structure of the front of the shock wave is determined only by the properties of the medium. There are 4 figures and 12 references, 10 of which are Soviet, 1 English and 1 French.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research

69416

S/141/60/003/01/008/020
E032/E414

On the Theory of Electromagnetic Shock Waves in Non-Linear Media

Radio-Physical Institute of the Gor'kiy University)

SUBMITTED: October 21, 1959

Card 5/5

S/141/60/003/02/012/025
E192/E382

AUTHOR: Freydman, G.I.

TITLE: Electromagnetic Shock Waves in a Strip Waveguide Filled With Ferrite

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 2, pp 276 - 284 (USSR)

ABSTRACT: The propagation of certain types of electromagnetic waves in a strip waveguide, which is filled with ferrite magnetised to the point of saturation, is investigated. In the case of slow channels, when the magnetic field can be regarded as being independent of the magnetisation, it is possible to determine a whole class of partial solutions which are in the form of unidimensional travelling waves. The equation of motion for the magnetisation is:

$$\frac{\partial M}{\partial t} = -\gamma \left[MH\right] - \lambda M^{-2}\left[M \left[MH\right]\right] \qquad (1.1)$$

where γ is the absolute value of the magnetomechanical ratio for the electron spin,
λ is the relaxation frequency,
M is the modulus of the magnetisation vector.

Card1/7

Electromagnetic Shock Waves in a Strip Waveguide Filled with Ferrite

In the case of slow changes, the derivative of the magnetisation M with respect to time is zero. From Eq (1.1) it follows, therefore, that:

$$[MH] = 0 \; ; \; |M| = M \qquad (1.2) .$$

For this case, the solution of the Maxwell equations is in the form of Eqs (1.3), where c is the velocity of light in free space, ε is the permittivity of the medium, f is the arbitrary function and H_o is the initial intensity of the magnetic field, which is directed along the axis z . The solution represented by Eqs (1.3) satisfies the boundary conditions on any ideally-conducting surface which is perpendicular to the axis y . Consequently, this is the solution not only for an infinitely extensive space but also for a ferrite plate which is bounded by ideally-conducting planes (Figure 1). In the case of fast magnetisation changes, it is not possible to give an exact solution of the problem.

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Electromagnetic Shock Waves in a Strip Waveguide Filled with Ferrite

A stationary shock wave is now encountered. A wave whose field is independent of the transverse coordinate and which satisfies the boundary conditions on the ideally-conducting surfaces can be taken as the fundamental approximation for the shock wave. The field components in this case satisfy Equations (2.1), where $B_o = H_o + 4\pi M$, this being the initial value of the z-component of the magnetic induction. For this approximation, the equation of motion of the magnetisation can be written as Eq (2.2). The first approximation can be determined by solving the system of linear equations containing partial derivatives; these are represented by Eqs (2.3) and (2.3a). Eq (2.2), which gives the fundamental approximation, can be solved approximately. If the relaxation frequency λ is comparatively low, it is possible to employ the method of the slowly-changing amplitudes for this purpose. By introducing coefficients γ_1 and K (defined on p 278), Eq (2.2) can be expressed as Eqs (3.1). The parameter K/c

Card3/7

Electromagnetic Shock Waves in a Strip Waveguide Filled with Ferrite

can be determined from Eq (3.2), where Θ_2 is the angle of inclination of the magnetisation vector to the axis z . The solution of Eqs (3.1) is in the form of Eqs (3.4), where q is a certain constant. The magnetisation vector undergoes periodic motion, whose period is represented by Eq (3.6), where F is the elliptical integral of the first kind. Since Eqs (3.4) represent the integral of Eq (2.2), it is possible to derive Eqs (3.7). For the case of weak shock waves, it is possible to neglect the second term in the righthand-side portion of Eq (3.7). By solving Eqs (3.7) and 3.7a), it is found that the amplitude of the M_x component of the magnetisation is given by Eq (3.8). From this it is seen that the damping time of the oscillations appearing at the front of the shock wave is given by:

$$\tau \simeq M/\lambda B_o \qquad (3.9),$$

Card4/7 while the period of revolution of the magnetisation

Electromagnetic Shock Waves in a Strip Waveguide Filled with Ferrite

vector is expressed by:

$$T \simeq \frac{2\pi\gamma}{\gamma B_o} \frac{H_o}{H_{2x}} \qquad (3.10) .$$

The above analysis is not valid for the region where the magnetisation vector only just begins to be deflected from its initial position. This process can be characterised by time interval T_o, during which the magnetisation vector completes one-half of the first revolution. This time interval is expressed by Eq (3.11). From the above results it is seen that the structure of the front of the shock wave in a strip waveguide differs considerably from the structure of the front of a shock wave in an infinite space. The difference is observed not only in the dependence of the field components on the longitudinal coordinate and time but also in the

Card5/7

Electromagnetic Shock Waves in a Strip Waveguide Filled with Ferrite

relationship between the characteristic time intervals and the amplitude of the wave. This situation is illustrated in Figure 3, where the 'dashed' curve represents the dependence of the M_x component on z in a strip waveguide, while the 'solid' line represents the same function for the case of infinite space. Eqs (2.3), which represent the first approximation, are linear non-homogeneous equations with variable coefficients. An exact solution of these equations is not possible. However, it is possible to give an approximate estimate of the magnitude of the field components if it is assumed that: 1) the variable coefficients in Eq (2.3a) can be neglected; 2) the method of the slowly-changing amplitudes is valid; 3) only weak shock waves are considered. The field components for the first approximation are therefore expressed by Eqs (4.2) (p 283). From these equations it is seen that all the field components of this approximation are proportional to a small parameter $a\omega_M/c$. Consequently, the principal approximation, in which

Card6/7

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Electromagnetic Shock Waves in a Strip Waveguide Filled with Ferrite

the wave is described by Eqs (2.1) and (2.2) can be considered as being valid. Secondly, if $a\omega_M/c \ll 1$, it can be assumed that the principal approximation describes fairly accurately the structure of the shock wave. The author expresses his gratitude to A.V. Gaponov for valuable advice and his constant interest in this work. There are 3 figures and 6 references, 3 of which are Soviet and 3 English.

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

SUBMITTED: October 30, 1959

Card 7/7

S/056/60/039/002/043/044
B006/B070

AUTHORS: Bulayevskiy, L. N., Fayn, V. M., Freydman, G. I.

TITLE: Instability of Uniform Precession of Magnetization

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol 39, No. 2(8), pp. 516 - 517

TEXT: The appearance of non-homogeneous magnetization in magnetic systems, placed in a constant external magnetic field, causes a perturbation of the uniform precession. In this "Letter to the Editor", the authors study the stability of uniform precession of ferro- and ferrimagnetic systems (the uniform precession is considered unstable if small fluctuations result in a building-up of magnetization waves). A ferromagnetic is considered first. The change of the magnetization obeys the equation: $\dot{\vec{M}} = -\gamma[\vec{M}\vec{H}_{eff}]$, $\vec{H}_{eff} = \vec{H}_o + \lambda\vec{M} + H_{ex}(l^2/M)\nabla^2\vec{M} + \vec{H}_d$, ($\vec{H}_o$ - the external magnetic field, λ - molecular field constant, H_{ex} - molecular field strength, l - the interatomic distance, H_d - the demagnetizing

Card 1/3

field). For a solution of this equation in the linear approximation in the form of magnetization waves (spin waves) with frequency ω_k and wave vector $\vec{k}$, the dispersion relation (2) holds true. The condition for the instability of the state of the system (build-up of the spin waves) is: $-4\pi M < H_i + H_{ex} l^2 k^2 < 0$; $H_i = H_o - 4\pi M N_z$, N_z - demagnetization factor. Instability always appears when the angle between $\vec{H}_o$ and $\vec{M}$ is larger than $\pi/2$. It is impossible to have stable uniform precession of magnetization if the angle between $\vec{H}$ and $\vec{M}$ is obtuse. Analogous considerations are made for the ferrimagnetic. The condition obtained for instability is: $2\omega_{ex} K + K^2 + \omega_{ex}^2 l^2 k^2 < 0$. Here $K = \frac{1}{2}(\gamma_1 - \gamma_2)H_o + \frac{1}{2}(\gamma_1 + \gamma_2)H_a$; $\omega_{ex} \approx \gamma H_{ex}$; γ_1 and γ_2 are the gyromagnetic ratios of the first and the second sublattices; H_a is the effective field of anisotropy (equal for both sublattices). The results show that in the region of the compensation point in the linear approximations considered here, uniform precession dominates. There are 5 references: 2 Soviet and 2 US.

Card 2/3

Instability of Uniform Precession of Magnetization

S/056/60/039/002/043/044
B006/B070

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta (Institute of Radio Physics of the Gor'kiy State University)

SUBMITTED: May 25, 1960 (initially) and July 25, 1960 (after revision)

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26421
S/056/61/041/001/016/021
B102/B214

AUT. Freydman, G. I.

TITLE: Reflection of electromagnetic waves in gyrotropic media by the waves of a magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 1(7), 1961, 226-233

TEXT: Investigations of M. A. Lampert (Phys.Rev.[illegible]). Ya. B. Faynberg, V. S. Tkalich (ZhTF, 39, 491,1959), and [illegible].Zagorodnov et al. (ZhETF, 38, 7,1960) have shown that by reflection of electromagnetic waves from a plasma moving in a medium with $\varepsilon > 1$, the frequency and amplitude of these waves are increased. An analogous effect is obtained if use is made of the dependence on the magnetic field strength of ε or the magnetic permeability of certain types of electromagnetic waves propagating in a plasma or a ferrite. The effective dielectric constant for a righthand polarized plane wave propagating in a plasma in the H-direction can become negative not only in the region of large electron densities but also when the H values are large. These regions are

Card 1/7

Reflection of electromagnetic waves ...

reflectors for the righthand polarized waves in the plasma. Analogously, the magnetization can act as a reflector for certain types of waves propagating in a ferrite with large field strength. For example, the regions, where $0<\omega-4\pi M\gamma<\gamma H_0$, reflect quasi-transverse waves in a two-dimensional waveguide (Fig. 1) consisting of two ideally conducting plates (1) having between them a ferrite (2), and also righthand polarized waves in an infinite homogeneous medium, because for these regions the effective magnetic permeability becomes negative (γ is the absolute gyromagnetic ratio for the electron spin and M the saturation magnetization of the ferrite). The present paper deals with the investigations of reflection from travelling waves of the longitudinal magnetic field of quasitransverse waves in a two-dimensional waveguide filled by ferrite, and of righthand polarized waves in an unbounded plasma. For comparison, the reflection of electromagnetic waves by a plasma moving in a medium with $\varepsilon>1$, and by ionization waves produced in a stationary plasma is studied. First the reflection is investigated in a wave guide whose ferrite has saturation magnetization. The problem can be approximately considered as one-dimensional (the quasi-transverse waves do not depend on the transverse coordinates) and one has:

Card 2/ 7

Reflection of electromagnetic waves ...

$$\frac{\partial^2 h_x}{\partial z^2} = \frac{\varepsilon}{c^2}\left[\frac{\partial^2 h_x}{\partial t^2} - \omega_M\omega_B h_x + \omega_0\omega_B m_x + \frac{1}{\omega_B}\frac{\partial\omega_B}{\partial t}\frac{\partial m_x}{\partial t}\right],$$

$$h_y = -m_y, \quad e_x = e_z = 0, \quad \frac{\partial e_y}{\partial t} = \frac{c}{\varepsilon}\frac{\partial h_x}{\partial z}; \qquad (2)$$

$$\frac{\partial m_x}{\partial t} = -\omega_B m_y, \quad \frac{\partial m_y}{\partial t} = -\omega_M h_x + \omega_0 m_x.$$

Further, the relations $m_x = 4\pi M_x$, $m_y = 4\pi M_y$, $\omega_0 = \gamma H_0$, $\omega_M = \gamma 4\pi M$, and $\omega_B = \omega_0 + \omega_M$ are introduced; $\vec{M}$ is the magnetization vector. If $H_0(t,z)$ is a sufficiently slow function, the propagation of quasi-transverse waves can be studied by the method of geometrical optics. The solution has the form

$$h_x = (h_0 + h_1 + \ldots)\,e^{i\psi}, \quad m = (m_0 + m_1 + \ldots)\,e^{i\psi}, \qquad (3)$$
$$e_y = (e_0 + e_1 + \ldots)\,e^{i\psi},$$

where $h_0 \gg h_1 \gg \ldots$; $|\vec{m}_0| \gg |\vec{m}_1| \gg \ldots$; $e_0 \gg e_1 \gg \ldots$; and $\frac{\partial\psi}{\partial t}, \frac{\partial\psi}{\partial z}$ are slowly varying functions in comparison to the eikonal ψ. If $H_0(t,z)$ is only a function of $\xi = Vt - z$, one obtains

Card 3/7

Reflection of electromagnetic waves ...

$$\psi_z^2 = \frac{e}{c^2}\psi_t^2\frac{\psi_t^2-\omega_B^2}{\psi_t^2-\omega_0\omega_B}, \quad \psi_z = \frac{\psi_{t0}-\psi_t}{V}, \tag{5}$$

$$\psi = -\int_{\xi_0}^{\xi}\psi_z(\xi)\,d\xi + \psi_{t0}t. \tag{6}$$

where ψ_{to} is an integration constant equal to the frequency at the point $\psi_z = 0$, and ξ_0 is an arbitrary constant. If $\alpha V \ll \bar{\psi}_t$, the solution of (2) must be sought in the form:

$$\begin{aligned} h_x(t,z) &= [h_0(\xi) + h_1(\xi) + \ldots]\exp[i(\bar{\psi}_t t + \bar{\psi}_z z)], \\ m(t,z) &= [m_0(\xi) + m_1(\xi) + \ldots]\exp[i(\bar{\psi}_t t + \bar{\psi}_z z)], \\ e_y(t,z) &= [e_0(\xi) + e_1(\xi) + \ldots]\exp[i(\bar{\psi}_t t + \bar{\psi}_z z)]. \end{aligned} \tag{9}$$

$$|h_0| \gg |h_1| \gg \ldots; \quad |m_0| \gg |m_1| \gg \ldots; \quad |e_0| \gg |e_1| \gg \ldots$$

Then if $\omega_0 \ll \psi_t$, one obtains approximately:

Card 4/7

Reflection of electromagnetic waves ...

$$\psi_{l;1,2} = \frac{1}{1-\beta^2}\left\{\psi_{l0} \mp \beta\left[\psi_{l0}^2 - (1-\beta^2)\,\omega_B^2\left(1-\frac{\omega_0}{\omega_B}\left(1-\frac{\omega_B^2}{\chi_{l;1,2}^2}\right)\right)\right]^{1/2}\right\},$$

$$\psi_{z;1,2} = \frac{\sqrt{\varepsilon}}{c(1-\beta^2)}\left\{-\beta\psi_{l0} \pm \left[\psi_{l0}^2 - (1-\beta^2)\,\omega_B^2\left(1-\frac{\omega_0}{\omega_B}\left(1-\frac{\omega_B^2}{\psi_{l;1,2}}\right)\right)\right]^{1/2}\right\}. \qquad (14)$$

The ratio of reflected to total energy is equal to

$$\frac{W_2}{W_1} = \left(\frac{k_2}{k_1}\right)^2 \frac{\psi_{l;1}^2(-\infty)\,|\psi_{z;2}(-\infty)|}{\psi_{l;2}^2(-\infty)\,|\psi_{z;1}(-\infty)|}. \qquad (15)$$

and is larger than 1. In the following the reflections of plane electromagnetic waves in an unbounded plasma by the waves of a magnetic field, by a uniformly moving inhomogeneous plasma, and by the ionization waves of a plasma at rest, are analogously investigated. Reflection by the (nonrelativistic) moving plasma is given by

$$\psi_{l;1,2} = \frac{1}{1-\beta^2}\left(\psi_{l0}' \mp \beta\left[\psi_{l0}^2 - (1-\beta^2)\,\omega_{n,a}^2 - \psi_{l0}\omega_H\right]^{1/2}\right),$$

$$\psi_{z;1,2} = \frac{\sqrt{\varepsilon}}{c(1-\beta^2)}\left(-\beta\psi_{l0} \pm \left[\psi_{l0}^2 - (1-\beta^2)\,\omega_{n,a}^2 - \psi_{l0}\omega_H\right]^{1/2}\right). \qquad (20),$$

which is compared with (14). The amplitudes of the incident waves and that of the waves reflected by the magnetic waves obey the law:

Card 5/7

$$e_{x;\,1,2} = e_{1,2}\left\{\left[\psi_{x;\,1,2} + \frac{\sqrt{\varepsilon}}{c}\beta(\psi_{t;\,1,2} + \omega_{n,a}^2\omega_H)/(\psi_t - \omega_H)^2\right]_{-\infty} \times \right.$$
$$\left. \times \left[\psi_{x;\,1,2} + \frac{\sqrt{\varepsilon}}{c}\beta\,(\psi_{t;\,1,2} + \omega_{n,a}^2\omega_H/(\psi_t - \omega_H)^2)\right]_{\xi}^{-1}\right\}^{1/4} \times$$
$$\times \exp\left\{\beta\frac{\sqrt{\varepsilon}}{c}\frac{\omega_{n,a}^2}{4}\int_{-\infty}^{\xi}\frac{d\omega_H}{d\xi}\times\right. \qquad (21)$$
$$\left.\times\left[(\psi_{t;\,1,2} - \omega_H)^2\left[\psi_{x;\,1,2} + \frac{\sqrt{\varepsilon}}{c}\beta\left(\psi_{t;\,1,2} + \frac{\omega_{n,a}^2\omega_H}{(\psi_t - \omega_H)^2}\right)\right]\right]^{-1} d\xi\right\}.$$

The amplitudes on reflection by a moving plasma (a) and by ionization waves (b) are:

$$e_{0;\,1,2} = e_{1,2}^{i}\,([\psi_{t0}^2 - (1-\beta^2)\,\omega_{n,a}^2\,(-\infty)]/[\psi_{t0}^2 - (1-\beta^2)\,\omega_{n,a}^2(\xi)])^{1/4}\varphi(\xi);$$
$$\text{(a)}\quad e_2/e_1 = \psi_{t;\,2}(-\infty)/\psi_{t;\,1}(-\infty), \qquad \varphi = \psi_{t;\,1,2}(\xi)/\psi_{t;\,1,2}(-\infty); \qquad (22)$$
$$\text{(б)}\quad e_2/e_1 = 1, \qquad \varphi = 1.$$

In all cases considered the frequency, amplitude, and total energy of the wave packet increase on reflection. The author thanks A.V. Gaponov for advice and discussions. There are 2 figures and 11 references: 10 Soviet-bloc and 1 non-Soviet-bloc.

26421
S/056/61/041/001/016/021
B102/B214

Reflection of electromagnetic waves ...

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta (Institute of Radio Physics of Gor'kiy State University)

SUBMITTED: February 6, 1961

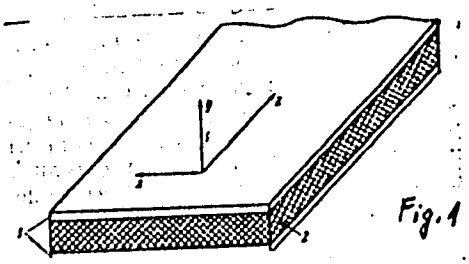

Fig. 1.

Card 7/7

S/056/62/043/003/053/063
B104/B102

9,2571

AUTHORS: Daume, E. Ya., Freydman, G. I.

TITLE: Doppler effect in the reflection of an electromagnetic wave from a magnetization wave in a ferrite

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 1102-1104

TEXT: The reflection of electromagnetic waves from magnetizing waves was studied in a coaxial cable filled with AM-1 (AM-1) ferrite (Fig. 1). Susceptibility of the ferrite was varied spatially and with time ($\mu = f(z-v_0 t)$) by means of spiral conductors wound on the coaxial cable. The velocity v_0 of the magnetization waves was 10^9 cm/sec, the frequency of the incident waves was 3200 Mcps, the frequency maximum of the reflected waves was at about 3400 Mcps. The coefficient of power reflection was about 10^{-4}. When the intensity of the constant magnetic field along the coaxial cable is 25-40 oe, electromagnetic waves are not reflected if the

Card 1/2

field strength of the magnetization waves is less than 200 oe. There are 3 figures.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta (Radiophysical Institute of the Gor'kiy State University)

SUBMITTED: June 2, 1962

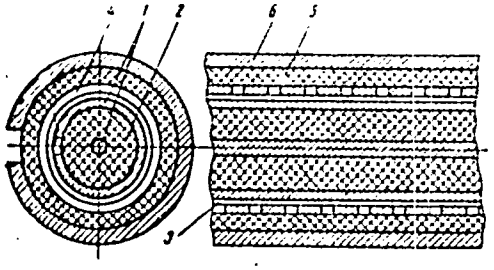

Fig. 1. Section across the coaxial cable.
Legend: (1) Coaxial cable, (2) ferrite, (3) dielectric, (4) spiral, (5) dielectric, (6) metal sheath.

L 10127-63 EDS
ACCESSION NR: AP3000156 S/0141/63/006/002/0324/0337

47

AUTHOR: Freydman, G. I.

TITLE: Shock waves in a transmission line with a thin ferrite coating -- 1

SOURCE: Izvestiya vysshikh uchebnykh zavedeniy, radiofizika, v. 6, no. 2, 1963, 324-337

TOPIC TAGS: ferrite-coated transmission line, shock wave

ABSTRACT: The possibility is considered for studying the field of an electromagnetic shock wave propagating over a two-conductor ferrite-containing line by means of ordinary differential equations. By using a simple example of a perfect-conductance-wall waveguide, it is pointed out that the problem can be reduced to an analysis of telegraph-type equations coupled with nonlinear finite-order differential equations only for these cases: (a) a small cross-section of the line and quasistatic nonlinear relations between the magnetic field strength and the magnetization intensity and (b) a nonquasistatic magnetization and the simplest line cross-section configuration. For ferrite-coated transmission lines,

Card 1/2

L 10127-63
ACCESSION NR: AP3000156

ordinary linear differential equations are developed; they are derived from the Maxwell equations and, jointly with a nonlinear equation for magnetization intensity, can approximately describe the shock-wave structure. Orig. art. has: 25 equations.

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

SUBMITTED: 13Jun62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: CO NR REF SOV: 006 OTHER: 002

Card 2/2

FREYDMAN, G.I.

Shock waves in transmission lines with a thin layer of ferrite. Part 1. Izv. vys. ucheb. zav.; radiofiz. 6 no.2:324-337 '63. (MIRA 16:6)

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

L 10277-63 EPA(b)/EPR/EDS/EWT(1)--AFFTC/
ASD--Pd-4/Ps-4--WW
ACCESSION NR: AP3000157 S/0141/63/006/002/0338/0347

63
61

AUTHOR: Freydman, G. I.

TITLE: Shock waves in a transmission line with a thin ferrite coating -- 2

SOURCE: Izvestiya vysshikh uchebnykh zavedeniy, radiofizika, v. 6, no. 2, 1963, 338-347

TOPIC TAGS: ferrite-coated transmission line, shock wave

ABSTRACT: It is pointed out that the necessary condition for the uniqueness of the shock-wave leading edge coincides with the condition of its stability in the quasistatic approximation. The nonstatic field around the shock wave propagating in a coaxial line can materially affect (with sufficiently large cross-section of the line) the parameters that determine the shock-wave structure. However, with strong shock waves, these parameters differ but little from those determined for the static approximation even in the cases when the leading edge width is shorter than the separation between the line walls. Dispersion of the dominant mode in delay systems has a different influence upon the shock-wave structure.

Card 1/2

L 10277-63
ACCESSION NR: AP3000157

2

With the increasing wave amplitude, the leading-edge duration in a comb-type delay system approaches a finite value which depends on the dispersion characteristics of the line. In addition, the dispersion results in oscillations which follow the shock wave; the amplitude and period of these oscillations grow with the amplitude of the shock wave. "In conclusion, I am using this opportunity to express my gratitude to A. V. Gaponov for his attention to this work and his valuable advices." Orig. art. has: 19 equations and 2 figures.

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

SUBMITTED: 13Jun62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: CO , NR REF SOV: 007 OTHER: 000

Card 2/2

BELYANTSEV, A.M.; FREYDMAN, G.I.

Electromagnetic waves of final amplitude in coupled transmission lines with nonlinear parameters. Izv. vys. ucheb. zav.; radiofiz. 7 no.3:514-523 '64. (MIRA 17:11)

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

L 15615-63 EPR/EPA(b)/EWT(1)/BDS/EEC-2/EEC(b)-2 AFFTC/ASD/ESD-3
Ps-4/Pd-4/Ph-4 WW
ACCESSION NR: AP3004840 S/0141/63/006/003/0536/0550

AUTHOR: Freydman, G. I.

TITLE: Effect of the linearly-approximated dispersion characteristic upon the structure of shock electromagnetic waves in a two-wire transmission line

SOURCE: IVUZ. Radiofizika, v. 6, no. 3, 1963, 536-550

TOPIC TAGS: dispersion, transmission line, shock wave, electromagnetic wave

ABSTRACT: If shock-wave processes occur so rapidly that they cannot be described by the static nonlinear relation M = M(H) or P = P(E), M being the intensity of magnetization, P - polarization, H and E - magnetic and electric field strengths; and if the field permeating the nonlinear medium is essentially nonhomogeneous, the shock-wave structure cannot be described by ordinary derivatives. However, the article clarifies some points regarding the shock-wave-front duration and the changes in the electromagnetic field before and

Card 1/2

L 15615-63
ACCESSION NR: AP3004840

beyond the wave. It is pointed out that the shock wave whose front duration is shorter than a certain value determined from the linearly-approximated dispersion characteristic of the system is absolutely unstable with respect to the waves whose phase velocity is close to that of the shock wave. As the condition of shock-wave stability with respect to low-frequency waves is supposed to be binding, the above value (except for some specific cases) roughly determines the shock-wave front duration and some peculiarities of its structure. Fundamental types of dispersion characteristics and the corresponding front structures are investigated. The front structure is also investigated for a specific case of a coaxial-helical waveguide thinly coated with saturated ferrite; the waveguide dispersion characteristics are analyzed. "In conclusion, I am using this opportunity to thank A. V. Gaponov for his attention to the work and a useful discussion of the results." Orig. art. has: 3 figures and 30 formulas.

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

SUBMITTED: 19 Jul 62 DATE ACQ: 27 Aug 63 ENCL: 00
SUB CODE: GO, PH NO REF SOV: 010 OTHER: 001

Card 2/2

L 55103-65 EWA(k)/FBD/EWG(r)/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/EWP(1)/EEC(t)/T/
EEC(b)-2/EWP(k)/EWA(m)-2/EWA(h) Pm-4/Pn-4/Po-4/Pf-4/Peb/P1-4/P1-4 SCTB/IJP(c)
ACCESSION NR: AP5014504 WG/WH UR/0141/65/008/002/0272/0284

AUTHOR: Freydman, G. I.

TITLE: Effect of fine splitting of the lower level of Cr^{3+} in ruby on some characteristics of coherent emission

SOURCE: IVUZ. Radiofizika, v. 8, no. 2, 1965, 272-284

TOPIC TAGS: ruby laser, coherent emission, level splitting, fine splitting

ABSTRACT: To determine the cause of the frequency deviation of a ruby laser (red shift) the author derives simplified equations describing the coherent emission of the excited chromium ions in a ruby placed in a traveling-wave cavity. An analysis of the transient response of the laser, based on a solution of these equations, shows that the fine splitting of the lower level of the chromium ion in the crystalline field of the ruby produces a change in the average frequency of radiation during the time of the transients, in a direction opposite to that produced by the change in temperature (violet shift). It is shown that the level lifetimes and the dipole moments are highly sensitive to the Q of the cavity in which the ruby is

Card 1/2

L 55103-65
ACCESSION NR: AP5014504

located, and this governs the frequency variation during the start of the laser action. The analytical results explain the experimental data of A. M. Kubarev and V. I. Piskarev (ZhETF v. 46, 508, 1964 and v. 48, 1233, 1965). Although the analysis is made for a traveling-wave laser, it holds equally well for systems of cavities of the Fabry-Perot type. Orig. art. has: 3 figures and 22 formulas. [02]

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

SUBMITTED: 05Aug64 ENCL: 00 SUB CODE: EC

NO REF SOV: 009 OTHER: 003 ATD PRESS: 4024

Card 2/2

L 15710-65 EWT(1)/EEC-4/EEC(t)/EEC(b)-2/EWA(h) Peb ASD-3/ESD-3/RADC/APGC/SSD/ESD(t)/ESD(c)/AEDC(a)/BSD/SSD(b)/AFWL/ASD(a)-5/ASD(f)-2/ASD(p)-3/AFETR/RAEM(a)

ACCESSION NR: AP5000317 S/0056/64/047/005/1699/1710 B

AUTHOR: Belyantsev, A. M.; Gaponov, A. V.; Daume, E. Ya.; Freydman, G. I.

TITLE: Experimental investigation of propagation of finite amplitude electromagnetic waves in ferrite-filled waveguides 25

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 5, 1964, 1699-1710

TOPIC TAGS: waveguide, waveguide wave propagation, ferrite filled waveguide, electromagnetic shock wave

ABSTRACT: Propagation of shock waves in a coaxial ferrite-filled waveguide composed of two sections 90 and 80 cm long was investigated. A high-resistance voltage divider connected to the junction of the sections furnished the controlling voltage to a high-speed oscillograph. The passband of the system permitted measurements of wavefront durations of 1 nsec and more. The sections of the waveguide were contained in two solenoids with a longitudinal field component up to 300 oe. The azimuthal component was formed by current flowing

Card 1/4

in the inner conductor of the coaxial waveguide. Tubes of F-1000 ferrite (with a dielectric constant between 16 and 20) with inner and outer diameters of 8 and 16 mm enclosed the inner conductor. The formation and propagation of shock waves were investigated first with two patterns of permanent ferrite magnetization; longitudinal field only and a field having both longitudinal and azimuthal components. Then, the same investigation was carried out with nonmagnetized ferrite. Furthermore, the structure of shock wave fronts was studied under various conditions of ferrite magnetization. In the case of a longitudinal field, the shock waves were found to result from the evolution of simple waves. Thus, the input pulse would tend toward increasing the rise rate at its front, and flatten the trailing edge as it propagates within the waveguide until (after a time lapse of about 200 nsec) a shock wave ensues. The amplitude dependence of the velocity of the shock wave was measured and plotted for different longitudinal components of the constant field. In the case of a permanently magnetized ferrite filling having the azimuthal field component combined with the longitudinal, disruptions developed under certain conditions at the front as well as at the trailing edge

L 15710-65
ACCESSION NR: AP5000317

and within a certain time interval, after which the jumps began to diminish. The phenomenon, however, was not ascribed to evolution of a simple wave; the discontinuities appeared at the very entrance to the waveguide at certain values of the current in the axial conductor of the waveguide due to an irreversible change of magnetization caused by increasing amplitudes of spin waves. The experiments with non-magnetized ferrite confirmed the earlier results obtained by Ostrovskiy (Zhurnal teknicheskoy fiziki, v. 33, 1963, 1080) who assumed that changes in the mean azimuthal magnetization are caused by non-coherent rotation. After a certain time interval, a steepening of the wave front sets in, due to dissipation. The ensuing shock wave is structurally similar to a stationary shock wave. The shock wave front structure is discussed at length under various experimental conditions and with reference to earlier works on the problem. Orig. art. has: 9 figures.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta (Institute of Radiophysics, Gor'kiy State University)

Card 3/4

L 15710-65
ACCESSION NR: AP5000317 0

SUBMITTED: 03Jun64 ENCL: 00 SUB CODE: ME, EM

NO REF SOV: 016 OTHER: 000 ATD PRESS: 3144

Card 4/4

BREYDMAN, G.I.

Effect of the fine splitting of the lower level of 0^{+5} in ruby on some characteristics of coherent radiation. Izv. vyss. ucheb. zav.; radiofiz. 8 no.2:372-384 '65. (MIRA 18:6)

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

L 49248-65 EWT(1)/EWP(m)/EWA(d)/EPR/FCS(k)/EWA(h)/EWA(c) Pd-1/Pi-4 WW

ACCESSION NR: AP5010806 UR/0057/65/035/004/0677/0689

AUTHOR: Belyantsev, A.M.; Gaponov, A.V.; Freydman, G.I.

TITLE: On the structure of electromagnetic shock fronts in nonlinear transmission lines

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 4, 1965, 677-689

TOPIC TAGS: shock wave, shock front structure, electromagnetic wave, nonlinearity, transmission line

ABSTRACT: Stationary solutions of the telegraphic equation with nonlinear parameters are discussed in general terms. The system is specified by a pair of nonlinear functionals giving the linear densities of charge and flux in terms of the current and potential. Most attention is given to stationary shock waves, i.e., to disturbances that propagate at constant velocity with unchanged form but with different asymptotic values of the current far in front and far behind. Conditions are derived for the existence of shock waves in two-conductor transmission lines. Several simple specific cases, representative of general types of transmission line,

Card 1/2

L 49248-65

ACCESSION NR: AP5010806

are discussed in more detail and the solutions are obtained. These include transmission lines with space dispersion (i.e., for which the defining functionals contain derivatives with respect to the coordinate measured along the transmission line), and lines exhibiting certain peculiarities that can be realized by the use of ferrites. Orig. art. has: 40 formulas and 8 figures.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete im. N.I.Lobachevskogo (Radiophysics Scientific Research Institute at Gorkiy University)

SUBMITTED: 22Jul63 ENCL: 00 SUB CODE: EM

NR REF SOV: 010 OTHER: 002

Card 2/2

L 49247-65 EWT(1)/EWP(m)/EWA(d)/EPR/FCS(k)/EWA(h)/EWA(c) Pd-1/Pi-4 MW

ACCESSION NR: AP5010807 UR/0057/65/035/004/0690/0704

46
45
B

AUTHOR: Belyantsev,A.M.; Gaponov,A.V.; Freydman,G.I.

TITLE: On the structure of shock waves in nonlinear transmission lines with delayed excitation of internal degrees of freedom

SOURCE: Zhurnal tekhnicheskoy fiziki, vol.35, no. 4, 1965, 690-704

TOPIC TAGS: shock wave, shock front structure, electromagnetic wave, transmission line, nonlinearity, nonlinear differential equation

ABSTRACT: This paper is a sequal to the preceding paper (ZhTF, 34, 577, 1965 /see abstract AP5010806/) in which the authors discussed solutions of the telegraphic equation with nonlinear parameters. In the present paper the authors discuss transmission lines for which the nonlinear functionals giving the charge and flux densities in flux densities in terms of the current and potential involve two very different time constants. Methods are developed for the approximate separate treatment of the slow and fast processes. It is shown that the approximate equations containing only the slow processes have discontinuous solutions corresponding to shock waves when and only when the phase space contains

Card 1/2

L 49247-65

ACCESSION NR: AP5010807

singular surfaces of a certain type. The important features of the discontinuous solutions can be determined from these singular surfaces, and the structure of the continuous shock wave can be subsequently calculated by including the fast processes. Several special cases are discussed in considerable detail. An oscillogram is presented of the shock front in a transmission line involving a saturating ferrite inductance and two RC shunt circuits with 1 and 20 μsec time constants; this oscillogram illustrates features of the calculated shock front structure. Orig. art. has: 29 formulas and 12 figures.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete im. N.I.Lobachevskogo (Radiophysics Scientific Research Institute, Gor'kiy University)

SUBMITTED: 03Jan64 ENCL: 00 SUB CODE: EM

NR REF SOV: 006 OTHER: 002

Card 2/2

L 04616-67 EWT(1)/EEC(k)-2/T/EWP(k) IJP(c) WG

ACC NR: AP6033285 SOURCE CODE: UR/0141/66/009/005/0919/0922

41
B

AUTHOR: Sushchik, M. M.; Freydman, G. I.

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

TITLE: The width of angular and frequency spectra of radiation from a laser with a nonlinear absorber

25

SOURCE: IVUZ. Radiofizika, v. 9, no. 5, 1966, 919-922

TOPIC TAGS: nonlinear optics, laser output, Q switching, nonlinear switch, laser radiation spectrum, Q factor, laser emission

ABSTRACT: Field build-up time of a laser with a nonlinear absorber as a Q-switch is a function of the spontaneous emission over a certain finite interval. Unless thus considered, errors are introduced in the determination of the width of the angular and frequency spectra of a laser and the dependence of these on, say, pumping energy, Q-factor, etc., as was the case elsewhere (W. R. Sooy, Appl. Phys. Lett., 7, 37, 1965). The problem is limited to a case of homogeneously pumped two-level molecules of the active medium and nonlinear filter. Conditions for excitation of one type of cavity mode are derived for a laser with a nonlinear absorber and plane-mirror cavity. The assumption that in the course of a giant pulse, differences in populations of an inactive medium and nonlinear filter are independent of coordinates, is shown to be invalid. The results are valid only for $\tau \ll \tau_3$ (where $\tau = +T_1^{-1}$, T_1 being the effective

Card 1/2 UDC: 621.378.325.001

L 04616-67

ACC NR: AP6033285 O

lifetime of an excited state of the active medium) and define initial conditions for the subsequent analysis of a giant pulse. Orig. art. has: 8 formulas.

SUB CODE: 20/ SUBM DATE: 09Feb66/ ORIG REF: 002/ OTH REF: 002/ ATD PRESS: 5100

Card 2/2 LC

ACC NR: AP6022077 SOURCE CODE: UR/0141/66/009/003/0513/0524

AUTHOR: Bespalov, V. I.; Freydman, G. I.

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

TITLE: Spectral and energy characteristics of giant pulses

SOURCE: IVUZ. Radiofizika, v. 9, no. 3, 1966, 513-524

TOPIC TAGS: giant pulse, laser pulse, laser R and D, light pulse

ABSTRACT: Although an examination of laser multimode processes describable by nonlinear equations in the general case is extremely difficult, the spectral characteristics of giant pulses and pulse delay time (from the moment of completion of self-excitation conditions) can be calculated with sufficient accuracy in a linear approximation. The development of the giant pulse, when the nonlinearity is essential, can be approximately described by equations reminiscent of those of a single-mode laser, which permits evaluating the effect of multimode structure on the energy and power of the giant pulse. It is found that the frequency spectrum of the pulse emitted as a

Card 1/2 UDC: 621.378.325

ACC NR: AP6022077

result of Q-switching is much wider than the spectrum of a single pulse emitted under ordinary conditions. The maximum width of the angular and frequency spectra and minimum delay time correspond to an instantaneous Q-switching. A theoretical plot of $\Delta\omega$ vs. n_0 is in good agreement with experimental points obtained from a Nd-glass laser (12-cm long, 1-cm diameter rod). A typical numerical example shows that two lasers — ruby and Nd-glass — have about the same parameters: pulse delay time, 24 nsec; angular spectrum, 5'; relative width of frequency spectrum, 0.3. The effect of the number of modes on the giant-pulse height was determined on a digital computer; a difference of only 10% was detected between the multimode and single-mode cases. Orig. art. has: 6 figures and 37 formulas.

SUB CODE: 20 / SUBM DATE: 31Aug65 / ORIG REF: 006 / OTH REF: 003

Card 2/2

ACC NR: AP6022081 SOURCE CODE: UR/0141/66/009/003/0550/0560

AUTHOR: Freydman, G. N.

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

TITLE: Frequency doubling in convergent partially coherent light beams

SOURCE: IVUZ. Radiofizika, v. 9, no. 3, 1966, 550-560

TOPIC TAGS: frequency doubling, coherent light

ABSTRACT: The geometrical-optics approximation used by D. A. Kleinman (Phys. Rev., 128, 1761, 1962) in analyzing the process of light-beam frequency doubling does not permit evaluating the accuracy of results and is inadequate for examination of the frequency conversion in the lens focus. Hence, the approximation of specified first-harmonic field is used for obtaining exact integral formulas (similar to those developed by D. U. McMahon et al., J. Appl. Phys., 6, 14, 1965). By evaluating the integrals with a certain accuracy, simple formulas are derived for the conversion factor, directional pattern, and frequency spectrum of the secondary radiation. It is

 UDC: 621.378.001

ACC NR: AP6022081

found that: (1) The effect of finite angular divergence of the primary beam on the conversion factor is practically independent of whether the divergence is due to partial beam noncoherence or to spherical waveshape of a coherent beam; (2) By selecting an optimal focus length of the lens used for focusing a coherent beam (spherical waves), the conversion factor can be raised by a few orders of magnitude; in focusing a partially coherent beam, the conversion factor may even fall off; (3) Under practical conditions, the finite width of the primary-beam frequency spectrum often has a substantial effect on the conversion factor. "In conclusion, the author wishes to thank V. I. Bespalov, A. V. Gaponov, and V. I. Talanov for useful discussions." Orig. art. has: 1 figure and 50 formulas.

SUB CODE: 20 09/ SUBM DATE: 06Aug65 / ORIG REF: 007 / OTH REF: 003

Card 2/2

FREYMAN, I.; RATANOVA, V.; BELYKH, Ye.; SOSEDOV, N.

Using methyl bromide for disinfecting cereal products and grain in storage. Muk.-elev.prom. 26 no.7:12-14 Jl '60. (MIRA 13:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zerna i produktov yego pererabotki.

(Methane) (Grain--Storage)

AUTHOR: Freydman, P.A.

SOV/140-58-3-29/34

TITLE: On the Theory of the Radical of an Associative Ring (K teorii radikala assotsiativnogo kol'tsa)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 3, pp 225-232 (USSR)

ABSTRACT: The present paper deals with a general theory of radicals of associative rings. The main result is the following fact obviously suggested by Plotkin: In an associative ring K let the S-radical R(K) be defined in the sense of Kurosh [Ref 1] , whereby some additional demands are assumed to be satisfied. Then in K there exists a radical $\tilde{R}(K)$ [also in the sense of Kurosh] containing all bilateral S-ideals and all commutative ideals of K, while the factor ring $K/\tilde{R}(K)$ contains neither S-ideals nor commutative ideals different from zero.
The paper consists of four paragraphs and contains 20 definitions, lemmata, theorems and conclusions.
There are 9 references, 4 of which are Soviet, and 5 American.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Ural State University imeni A.M.Gor'kiy)

Card 1/2

On the Theory of the Radical of an Associative Ring SOV/140-58-3-29/34

SUBMITTED: October 14, 1957

Card 2/2

AUTHOR: Freydman, P.A. (Sverdlovsk) SOV/42-13-3-22/41

TITLE: On the Theory of the Radical of an Associative Ring (K teorii radikala assotsiativnogo kol'tsa)

PERIODICAL: Uspekhi matematicheskikh nauk, 1958, Vol 13, Nr 3, pp 234-235 (USSR)

ABSTRACT: In the associative ring K let be defined a certain s-radical R(K) in the sense of Kurosh, where the property s has to satisfy the following additional conditions:
a) let every two-sided ideal of the s-ring be an s-ring;
b) every ring, the square of which equals zero is an s-ring;
c) let s be a local property.
The series

$$0 = A_0 \subset A_1 \subset A_2 \subset \ldots \subset A_\alpha \subset A_{\alpha+1} \subset \ldots A_\sigma = K,$$

where the subrings A_α are two-sided ideals in $A_{\alpha+1}$ and $A_{\alpha+1}/A_\alpha$ is either s-radical or commutative, is called an s-solvable series.
Theorem: If K has an s-solvable series, then its commutator K' is s-radical.
Theorem: If K has an increasing series of ideals with commutative factors, then the commutator of K has an increasing series of

Card 1/2

ideals with factors being zero rings. Some further results are given.

FREYDMAN, P. A., Cand Phys-Math Sci -- (diss) "Rings of a solvable type." Sverdlovsk, 1960. 8 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Ural'skiy State Univ im A. M. Gor'kiy); 150 copies; price not given; bibliography at end of text (15 entries); (KL, 17-60, 140)

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AUTHOR: Freydman, P.A.

TITLE: On Rings With the Idealizer Condition

PERIODICAL: Referativnyy zhurnal. Matematika, 1960, No.9, p.33, Abstract No.10080. Uch.zap.Ural'skogo un-ta, 1959, vyp.23, No.1, pp.35-48

TEXT: The author investigates rings with the idealizer condition, i.e. rings in which every proper subring is different from its idealizer (the idealizer of a subring Q in the ring K is the greatest subring of K in which Q is a two-sided ideal). In a certain sense, the rings with the idealizer condition or briefly U-rings are a ringtheoretical analogue of the groups with the normalizer condition. Basic results: 1) A ring K is a U-ring generated by one element if K is a direct sum $K = P+K_1$, where $P = C/(m)$ (C - ring of integers, $m \neq 0$), while K_1 is a ring generated by a single element b so that $b^{s+1} - \gamma b^s = 0$ for a certain integral γ, where m divides a certain power γ^{-1} of the number γ.
2) The ring K is a U-ring with minimal condition for two-sided ideals then and only then if K is a direct sum $K = P+R$, where $P = C/(m)$ ($m \neq 0$), while R is a nilpotent ring with minimal condition for two-sided ideals.

Card 1/2

89033
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On Rings With the Idealizer Condition

3) The ring K is a U-ring without nilpotent elements being different from zero then and only then if K is isomorphic either to the discrete direct sum of the fields $C/(p_i)$ (p_i - different prime numbers) or to a ring generated by an integer $\gamma \neq 0$, or to the direct sum $P+K_1$, where $P = C/(m)$ ($m \neq 0, \pm 1$ and free of squares of prime numbers) and K_1 is a ring generated by the integer $\gamma \neq 0$, where m divides the number γ. From the last theorem it follows that in a U-ring without nilpotent elements being different from zero every subring is a two-sided ideal.

[Abstracter's note: The above text is a full translation of the original Soviet abstract.]

Card 2/2

FREYDMAN, P.A. (Sverdlovsk)

Rings, all subrings of which are metaideals of a finite index.
Mat. sbor. 65 no.3:313-323 N '64 (MIRA 18:1)

FREYDMAN, P.A.

Some finiteness conditions in associative rings. Mat. zap. Ural. mat. ob-va UrGu 3 no.1:77-84 '61. (MIRA 19:1)

FREYDMAN, S.L.; SHMELEV, K.A., professor, zaveduyushchiy.

Effect of prolonged sleep upon the development of adipose dystrophy in rabbits poisoned by phosphorus. Farm.i toks. 16 no.1:22-24 Ja-F '53. (MLRA 6:6)

1. Laboratoriya kafedry farmakologii Saratovskogo meditsinskogo instituta (for Freydman). 2. Kafedra farmakologii Saratovskogo meditsinskogo instituta (for Shmelev). (Sleep) (Dystrophy) (Phosphorus--Physiological effect)

Prolonged uninterrupted sleep produced by barbamyl sodium amytal is capable of reducing considerably disturbances of metabolism which arise in rabbits as a result of P poisoning. These disturbances lead to accumulation of fat and water in organs.

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SHERISHORINA, S.I., PONOMAREVA, O.I., FREYDMAN, S.L.

Isolation of Leptospira in thick media. Lab.delo 4 no.3:46-47 My-Je '58 (MIRA 11:5)

1. Iz kafedry mikrobiologii (zav. - prof. S.I. Sherishorina) Saratovskogo meditsinskogo instituta.
(LEPTOSPIRA)

BYKHOVSKIY, P.A., prof.; VAKSHAMOV, L.A., prof.; VOLYNSKIY, B.G., dotsent; GERASIMOV, N.V., dotsent; GUREVICH, L.I., dotsent; ZHELYABOVSKIY, G.M., prof.; KARTASHOV, P.P., prof.; KOCHETOV, K.P., dotsent; KRUGLOV, A.N., prof.; KUTANIN, M.P., prof.; LARINA, V.S., dotsent; LOBKO, I.S., doktor [deceased]; LUKOVA, A.I., prof.; MAKHLIN, Ye.Yu., prof.; NAUMOV, A.I., kand.med.nauk; POPOV'YAN, I.M., prof.; SOLUN, N.S., kand.med.nauk; TARABUKHIN, M.M., dotsent; TRET'YAKOV, K.N., prof.; TRISHINA, A.A., kand.med.nauk; UL'YANOVA, A.V., dotsent; FAYN, A.E., kand.med.nauk; FAKTOROVICH, A.M., dotsent; FRANKFURT, A.I., prof.; FISHER, L.I., dotsent; CHASOVNIKOVA, Ye.P., kand.med. nauk; SHAMARIN, P.I., prof.; SHAPIRO, M.Ya., dotsent; SHVARTS, L.S., prof.; SHUSTERMAN, I.B., dotsent; FOY, A.M., prof.; FREYDMAN, S.L., kand.med.nauk; NIKITIN, B.A., dotsent, red.; AFANAS'YEV, I.A., red.; LUKASHEVICH, V., tekhn.red.

[Concise medical reference book] Kratkii terapevticheskii spravochnik. Izd.3., ispr. i dop. Saratov, Saratovskoe knizhnoe izd-vo, 1959. 919 p. (MIRA 13:7)

1. Chlen-korrespondent AMN SSSR (for Tret'yakov).
(MEDICINE--HANDBOOKS, MANUALS, ETC.)

VOLYNSKIY, B.G.; FREYDMAN, S.L.; GLAZYRINA, G.A.; KUZ'MINA, K.A.; KUZNETSOVA, S.G.; GVOZDKOV, A.V.

Use of vitamins in some toxications under experimental conditions. Trudy Sar. gos. med. inst. 26:119-121 '59. (MIRA 14:2)

1. Saratovskiy meditsinskiy institut, kafedra farmakologii (zav. - dotsent B.G. Volynskiy).
(POISONS—PHYSIOLOGICAL EFFECT)
(VITAMIN THERAPY)

VOLYNSKIY, V.G.; FREYDMAN, S.L.; KUZNETSOVA, S.G.; KUZ'MINA, K.A.; GVOZDKOV, A.V.

Influence of vitamin B12 on the course of experimental phosphorus intoxication. Trudy Sar. gos. med. inst. 26:122-125 '59. (MIRA 14:2)

1. Saratovskiy meditsinskiy institut, kafedra farmakologii (zav.- dotsent B.G. Volynskiy).
(CYANOCOBALAMINE) (PHOSPHORUS—TOXICOLOGY)

FREYDMAN, S.L.

Metabolism of nucleic acids and nucleoproteins in infectious hepatitis and in experimental phosphorus intoxication. Trudy Sar. gos. med. inst. 26:132-134 '59. (MIRA 14:2)

1. Saratovskiy meditsinskiy institut, kafedra biokhimii (zav.- prof. N.N. Ivanovskiy) i kafedra farmakologii (zav. - dotsent B.G. Volynskiy).
(NUCLEIC ACIDS) (NUCLEOPROTEINS) (HEPATITIS, INFECTIOUS)
(PHOSPHORUS—TOXICOLOGY)

FOY, A.M.; VOLYNSKIY, B.G.; IVANOVA, V.V.; FREYDMAN, S.L.

Antiemetic action of some derivatives of the phenothiazine series. Trudy Sar. gos. med. inst. 26:167-174 '59.
(MIRA 14:2)

1. Saratovskiy meditsinskiy institut, akusherske-ginekologicheskaya klinika lechfaka (zav.prof.A.M. Foy) i kafedra farmakologii (zav. dost. B.G. Volynskiy).
(PHENOTHIAZINE) (VOMITING)

ANDRYUSHECHKINA, A.V.; NIKOLAYEVA, L.P.; FREYDMAN, S.L.

Colorimetric method for the determination of desoxyribonucleic acid in the tissues of animals and in the cells of microorganisms. Lab. delo 7 no.1:7-8 Ja '61. (MIRA 14:1)

1. Kafedra biologicheskoy khimii (zav. - prof. N.N. Ivanovskiy) i Kafedra farmakologii (zav. - dotsent B.G. Volynskiy) Saratovskogo meditsinskogo instituta.
(NUCLEIC ACIDS) (COLORIMETRY)

SHERISHORINA, S.I.; VOLYNSKIY, B.G.; MOROV, N.N.; FREYDMAN, S.L.; PONOMAREVA, O.I.

Furacillin and levomycetin therapy for patients with cystitis. Urologiia 26 no.2:27-32 '61. (MIRA 14:3)
(BLADDER—DISEASES) (OMYCETIN) (FURAN)

VOLYNSKIYY B.G.; FREYDMAN, S.L.; BENDER, K.I.; KUZ'MINA, K.A.; KUZNETSOVA, S.G.; MARTYNOV, L.A. (Saratov)

Prevention and treatment of radiation sickness in an experiment. Med.rad. no.9:81 '61. (MIRA 15:1)
(RADIATION SICKNESS)

FURSAYEV, A.D., zasl. deyatel' nauki RSFSR, doktor biol. nauk [deceased]; VORONINA, K.V.; VOLYNSKIY, B.G., kand. med. nauk; FREYDMAN, S.L.; BENDER, K.I.; KUZ'MINA, K.A.; MARTYNOV, L.A.; KUZNETSOVA, S.G.; VINNIKOVA, I.A., red.; ZENIN, V.V., tekhn. red.

[Medical plants and their utilization in medicine] Lekarstvennye rasteniia i ikh primenenie v meditsine. [n.p.] Izd-vo Saratovskogo univ., 1962. 202 p. (MIRA 16:6)
(BOTANY, MEDICAL)

VOLYNSKIY, B.G.; BENDER, K.I.; FREYDMAN, S.L.; VINNIKOVA, L.A., red.

[Prescription manual; textbook for physicians and students] Retsepturnyi spravochnik; posobie dlia vrachei i studentov. Izd.2., dop. i perer. Saratov, Izd-vo Saratovskogo univ., 1964. 206 p. (MIRA 16:1)

ACC NR: AR7000600 (N) SOURCE CODE: UR/0417/66/000/010/0002/0002

AUTHOR: Volynskiy, B. G.; Bender, K. I.; Freydman, S. L.; Kuznetsova, S. G.; Martynov, L. A.; Bogoslovskaya, S. I.

TITLE: Reaction of the organism to drugs during hypothermia

SOURCE: Ref. zh. Farmakol, khimioterapevt sredst, toksikol, Abs. 10.54.4

REF SOURCE: Tr. Saratovsk. med. in-ta, no. 49(66), 1966, 104-107

TOPIC TAGS: hypothermia, drug, respiratory drug, rabbit, reaction rate, blood, cardiac activity, tissue metabolism

ABSTRACT: The effects of some drugs on hemodynamics, respiration and tissue metabolism was studied in mice, rats and rabbits cooled to 19—20C. Caffeine (10 mg per kg) and euphyllin (4.8 mg per kg) have caused a stable decrease of AD and have depressed the tissue metabolism levels (the quantity of glycogen, ATP and electrolytes). Cordiamin (25 mg per kg) has also depressed the AD and interfered with the respiratory and cardiac activity. Lobeline did not affect the respiration. Bemegride and KCl have lowered the AD and sharply inhibited

Card 1/2 UDC: 615.1

ACC NR: AR7000600

respiration. The effect of adrenaline and mesaton (0.1 mg per kg) on respiration and AD did not vary. Morphine (1 mg per kg) did not contribute to an increase of inhibiting effect of hypothermia on respiration and blood circulation. Hypoglycemic effect of insulin and spastic effect of strychnine and camphor was found to be weaker during hypothermia. A. Novik. [Translation of abstract] [AM]

SUB CODE: 06/

Card 2/2

FREYDMAN, S.M.; KALASHNIKOVA, V.S., redaktor; TERESHCHENKO, N.I., redaktor; VESKOVA, Ye.I., tekhnicheskiy redaktor

[Collective farm director's manual] V pomoshch' predsedateliu kolkhoza. Moskva, Gos. izd-vo selkhoz. lit-ry, 1956. 411 p. (Kolkhoznaia ekonomicheskaia bibliotechka, no.2) (MLRA 10:1)
(Collective farms)

FREYDMAN, S.M.

BELYAVSKIY, A.V.; BANNIKOV, N.A., red.; FREYDMAN, S.M., red.; SOKOLOVA, N.N., tekhn.red.

[Heroes of socialist fields] Geroi sotsialisticheskikh polei (1917-1957). [Moskva] Gos.izd-vo sel'khoz.lit-ry, 1957. 630 p. (Agriculture)

KORSAKOV, Ivan Yefimovich; FRMYDMAN, S.M., red.; SMIRNOVA, Ye., tekhn.red.

[Economic calculations on a collective farm] Ekonomicheskie raschety v kolkhoze. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1958. 73 p. (MIRA 12:9)

(Collective farms--Accounting)

TSYBENKO, Konstantin Yevstaf'yevich, Geroy Sotsialisticheskogo Truda; FREYDMAN, S.M., red.; DMYEVA, V.M., tekhn. red.

[Second year without the workday system; practices of the "Bolshevik" Collective Farm, Sumy Province, Ukraine] Vtoroi god bez trudodnia; opyt kolkhoza "Bol'shevik" Sumskoi oblasti Ukrainskoi SSR. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1958. 160 p. (MIRA 11:10)
(Collective farms) (Wages)

SAPIL'NIKOV, Nikolay Georgiyevich, kand.ekonom.nauk; FREYDMAN, S.M., red.; BACHURINA, A.M., tekhn.red.; PROKOF'YEVA, L.N., tekhn.red.

[Economics of cotton growing on collective farms] Ekonomika khlopkovodstva v kolkhozakh. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1959. 335 p. (MIRA 13:4)
(Cotton growing--Costs)

KARNAUKHOVA, Ye.S., doktor ekonom.nauk, red.; KOTOV, G.G., red.; OBOLENSKIY, K.P., red.; ZASLAVSKAYA, T.I., red.; FREYDMAN, S.M., red.; FEDOTOVA, A.F., tekhn.red.

[Labor productivity in socialist agriculture] Proizvoditel'nost' truda v sotsialisticheskom sel'skom khoziaistve; voprosy metodologii i metodiki. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1959. 422 p. (MIRA 13:3)

1. Akademiya nauk SSSR. Institut ekonomiki. 2. Institut ekonomiki AN SSSR (for Karnaukhova).
(Agriculture--Labor productivity)

KROKHALEV, Fedor Sergeyevich, doktor ekonom.nauk; KANTOROVICH, A.V., red.; FREYDMAN, S.M., red.; PEVZNER, V.I., tekhn.red.

[Outline history of farming systems] O sistemakh zemledeliia; istoricheskii ocherk. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1960. 430 p. (MIRA 13:12)

(Agriculture)

BELOUSOV, Yu.A.; KORCHAMOV, A.T.; RUDINSKIY, Ye.Ya.; STEPNOVA, Ye.V.; BANNIKOV, N.A., red.; ZAPIVAKHIN, A.I., red.; LAPIDUS, M.A., red.; RAKITINA, Ye.D., red.; TERESHCHENKO, N.I., red.; FREYDMAN, S.M., red.; BALLOD, A.I., tekhn.red.

[Manual on rural subsidiary enterprises] Spravochnik po sel'skim podsobnym predpriiatiiam. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1960. 798 p. (MIRA 13:12)
(Manufactures) (Farm produce)

CHESHKOV, Aleksandr Fedorovich, kand. ekonom. nauk, starshiy nauchnyy sotr.; FREYDMAN, S.M., red.; TRUKHINA, O.N., tekhn. red.

[Integrated mechanized brigades and teams] Kompleksnye mekhanizirovannye brigady i zven'ia. Moskva, Izd-vo sel'khoz. lit-ry, zhurnalov i plakatov, 1961. 133 p. (MIRA 15:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut ekonomiki sel'skogo khozyaystva (for Cheshkov).
(Farm management)

MEL'NIKOV, Ivan Gerasimovich; FREYDMAN, S.M., red.; SOKOLOVA, N.N., tekhn. red.

[Possibilities for improving the quality of agricultural production] Rezervy povysheniia kachestva sel'skokhoziaistvennoi produktsii. Moskva, Izd-vo sel'khoz. lit-ry, zhurnalov i plakatov, 1961. 166 p. (MIRA 14:11)

(Farm produce)

RASKIN, G.F., kand. sel'khoz. nauk; VAYNER, M.G., kand. sel'khoz. nauk; YEREMEYEV, K.I., kand. ekon. nauk; AL'FER'YEV, V.P., kand. ekon. nauk; GOLENKO, M.V., mlad. nauchn. sotr.; GANZHA, N.M., mlad. nauchn. sotr.; FREYDMAN, S.M., red.; MAKHOVA, N.N., tekhn. red.; TRUKHINA, O.N., tekhn. red.

[Efficiency of capital investments in agriculture] Effektivnost' kapital'nykh vlozhenii v sel'skoe khoziaistvo. Moskva, Sel'khozizdat, 1963. 294 p. (MIRA 17:1)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut ekonomiki sel'skogo khozyaystva. 2. Nauchnyye sotrudniki Vsesoyuznogo nauchno-issledovatel'skogo instituta ekonomiki sel'skogo khozyaystva (for Raskin, Vayner, Yeremeyev, Al'fer'yev, Golenko, Ganzha).
(Agriculture--Finance)

FREYDMAN, S.N., red.

[Efficient use of the land] Ratsional'noe ispol'zovanie zemli. Moskva, Sel'khozizdat, 1962. 262 p. (MIRA 18:5)

PEREMYKIN, Vasiliy Il'ich, kand. sel'khoz. nauk; DVORYADKIN, Nikolay Ivanovich, kand. ekon. nauk; FEYLMAN, S.M., red.; DOZLOVSKAYA, M.D., tekhn. red.; OKOLELOVA, Z.P., tekhn.red.

[Economics of oilseed plant production] Ekonomika proizvodstva maslichnykh kul'tur. Moskva, Sel'khozizdat, 1963. 346 p. (MIRA 16:12)
(Oilseed plants--Economic aspects)