

Machine-Tractor Stations

Work practice of our machine-tractor station in raising the qualifications for mechanization personnel. Dost. sel'khoz. No. 9, 1952.

Monthly List of Russian Accessions, Library of Congress
December 1952. UNCLASSIFIED.

ZHELEZNYAK, Ye. A

Epp
.R93391

Velika Volga (Great is the Volga) Kyiv, Vyd-vo Akademiyi Nauk Ukrayins'koyi RSR, 1956

46, (2) p. illus., diags., maps.

At head of title: Akademiya Nauk Ukrainskoy SSR, Rada Naukovo-Tekhnichnoyi Propahandy.

"Literatura": p. 48

ZHELEZHYAK, Y.A.

Joint session on problems of over-all use of the water resources
of the Ukrainian S.S.R. Visnyk AN URSR 25 no.11:66-69 N '54.
(Ukraine--Water-resources development)

SHESTAKOV, A.N.; ZHELEZNYAKOV, A.T.

Advice on the operation of transistory aluminum reactors of VL60 electric locomotives. Elek. i tepl.tiaga 7 no.11:18-20 N '63. (MIRA 17:2)

1. Rukovoditel' gruppy otдела transformatornogo oborudovaniya Novoche-
kasskogo elektvozostroitel'nogo zavoda (for Shestakov). 2. Rukovodi-
tel' gruppy Vsesoyuznogo nauchno-issledovatel'skogo instituta elektro-
vozostroyeniya (for Zheleznyakov).

ZHELEZNYAKOV, A.T.

Transition coil for N60 electric locomotives. Elek. i topl.
tiaga 6 no.2:40-42 F '62. (MIRA 15:2)

1. Rukovoditel' gruppy NovoCherkasskogo nauchno-issledovatel'skogo instituta elektrovostroyeniya.
(Electric locomotives—Electric equipment)

ZHELEZNYAKOV, A.T., inzh.

Expediency of using electric reactors with linear characteristics.
Vest. elektroprom. 33 no.8:39-43 Ag '62. (MIRA 15:7)
(Electric reactors)

ZHELEZNYAKOV, A.T.; SHESTAKOV, A.N.

Calculation of bridge reactors for N-60 electric locomotives. Sbor.
nauch. trud. E1NII 3:113-123 '63, (MIRA 17:4)

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Effect of cooling and heating cycles on the state of the contact
connections of aluminum busbars. Sbor. nauch. trud. EINI 3:
168-170 '63. (MIRA 17:4)

ZHELEZNYAKOV, Aleksandr Tikhonovich. inzh.

Small-sized bridging reactor for a.c. locomotives. Izv.vys.ucheb.
zav.; elektromekh. 7 no.10:1212-1219 '64.

(MIRA 18:1)

1. Rukovoditel' gruppy Vsesoyuznogo nauchno-issledovatel'skogo i
proyektno-konstruktorskogo instituta elektrovozostroyeniya.

ZHELEZNYAKOV, A.T.

Set of the PROM-1 bridging reactors. Biol. tekh.-ekon. inform.
Gos. nauch.-issl. inst. nauch. i tekh. inform. 17 no.12:37-38
D '64. (MIRA 18:3)

ZHELEZNYAKOV, A.T.

The PRA-1 conversion reactor, Biul.tekh.-ekon.inform.Gos.nauch.1
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(Electric locomotives--Equipment and supplies)

ZHELEZNYAKOV, D.F.

Biology of *Schizothorax intermedius* McClell, Uzb, biol. zhur, no.4:
83-85 '58. (MIRA 11:12)

1. Sredneaziatskiy gosudarstvennyy universitet imeni V.I. Lenina.
(Bash-Kysylsay River--Carp)

ZIDELEZNYAKOV, D.F.

New data on the markhor (*Capra falconeri* Wagner) in Central
Asia. Trudy SAGU no.32:27-33 '52. (MLRA 9:5)
(Soviet Central Asia--Markhor)

Bliznyak Ye. V. and Zheleznyakov G. K., "Study of Basins for the Calibration of Hydrological Instruments in the USSR", Tekhn. GGI, No 4 (58), 1948 (41-59)

SO: U-3039, 11 Mar 1953

ZHELEZNYAKOV, G. V.

Stream Measurements

New method for determining water discharges of a river. Met. i gidrol. No. 6, 1947

Monthly List of Russian Accessions, Library of Congress, December 1952. Unclassified.

Feb 49

USSR/Engineering
Hydraulics
Flow, Fluid

"Study of Natural Open Channel Streams," G. B. Zheleznyakov, Soc For Sci Solution of Problems of Water Econ, Acad Sci USSR, 15 pp

"Iz. Ak. Nauk SSSR, Otdel Tekh Nauk" No 2

Investigates influence of the form of the cross section of flow on liquid moving in open channels. Cross-section profile in which the wetted perimeter cannot be expressed by an equation is termed "natural." Uses the universal-flow constants to investigate this form, setting up its equation
33/4946
Feb 49

USSR/Engineering (Contd)
as a function of water level, Reynolds' number, Froude's number, etc. Submitted by Acad Y. N. Omraztsov, 1 Jul 48.

33/4946

ZHELEZNYAKOV, G. B. ✓

ZHELEZNYAKOV, G. V.

Doc Tech Sci

Dissertation: "Structure of Free and Backwater Flows and Methods for
Hydrometric Investigations." 25/11/50

All-Union Sci Res Inst of Water Supply, Sewage, Hydraulic Structures and
Engineering Hydrogeology - "VODGEO".

SO Vecheryaya Moskva
Sum 71

ZHRLEZNYAKOV, G.V., professor, doktor tekhnicheskikh nauk.

[Verification of hydrometric instruments] Issledovanie raboty gidrometricheskikh priborov. Moskva, Izd-vo Akademii nauk SSSR, 1952. 237 p.
(MLBA 6:?)

1. Akademiya nauk SSSR. Sektsiya po nauchnoy rasrabotki problem vodnogo khozyaystva.
(Fluid mechanics--Instruments)

ZHELEZNYAKOV, Georgiy Vasil'yevich, prof., doktor tekhn. nauk;
~~MEZENTSEV, V.S., prof., retsenzent; ROZHDESTVENSKIY,~~
G.L., inzh., retsenzent; KRAVTSOV, G.Ya., red.

[Hydrometry] Gidrometriia. Moskva, Kolos, 1964. 303 p.
(MIRA 18:2)

1. Kafedra gidrologii i vodosnabzheniya Omskogo sel'skokho-
zyaystvennogo instituta imeni S.M.Kirova (for Mezentsev).
2. Otdel inzhonerno-gidrologicheskikh izyskaniy Vse-
soyuznogo proyektno-izyskatel'skogo i nauchno-issledova-
tel'skogo instituta imeni S.Ya.Zhuka (for Rozhdestvenskiy).

ZHELEZNYAKOV, G.V., doktor tekhn. nauk

Relative deficit of the mean velocity of unsteady open
flow. Trudy MIIT no.176:5-14 '63.

Methods of calculating flood waves. Ibid.:15-25
(MIRA 17:6)

LE TKHAK-KAN, aspirant; ZHELEZNYAKOV, G.V., prof., doktor tekhn. nauk,
nauchnyy rukovoditel'

Determining the average speed of a stream. Izv. TSKHA no.1:
233-240 '63. (MIRA 16:7)

(Stream measurements)

ZHELEZNYAKOV, G.V., doktor tekhn. nauk, prof.; DANILEVICH, B.B., kand.
~~tekhn. nauk, dotsent~~

Calculating the runoff module of spring floods and the period before
sowing in designing drainage systems. Izv. TSKHA no. 5:183-194 '62.
(MIRA 16:7)

(Drainage)

ZVONKOV, V.V., *otv. red.*; ZHELEZNYAKOV, G.V., *doktor tekhn. nauk, red.*;
YUFIN, A.P., *doktor tekhn. nauk, red.*; CHERNOSKUTOV, K.A., *red.*;
DOHYSHEV, Yu.G., *red. izd-va*; DOROKHINA, I.N., *tekhn. red.*

[New methods for measurements and instruments for hydraulic surveys]
Novye metody izmerenii i pribory dlia gidravlicheskiikh issledovani.
Moskva, 1961. 287 p. (MIRA 14:11)

1. Akademiya nauk SSSR. Sovet po problemam vodnogo khozyaystva.
2. Moskovskiy institut inzhnerov vodnogo khozyaystva im V.R.Vil'yamsa
(for Zheleznyakov).
(Hydrodynamics) (Measuring instruments)

ZHELEZNYAKOV, G.V., prof.doktor tekhn.nauk; POTAPOV, V.M., kand.tekhn.nauk

"Studying winter conditions of rivers in conducting engineering research for hydroelectric power stations" by I.A.L.Gotlib and others. Reviewed by G.V.Zhelezniakov, V.M.Potapov. Gidr.stroi. (MIRA 13:8)
30:3 of cover Ag '60.
(Ice on rivers, lakes, etc)
(Hydraulics)

ZHELEZNYAKOV, G.V., professor, doktor tekhnicheskikh nauk

Effect of morphometric characteristics of the stream
bed on the free flow of liquids. Nauch.zap. MIVKH
21:295-300 '59. (MIRA 13:8)
(Hydraulics)

ZHELEZNYAKOV, G.V., prof., doktor tekhn.nauk; VASIL'YEV, A.V., kand.
tekhn.nauk

Effect of the kinetic parameters on current meter readings
in flow velocity measurements of limited duration. Nauch.
zap. MIIVKH 21:301-311 '59. (MIRA 13:8)
(Stream measurements)

YAKOBSON, Andrey Genrikhovich, inzh.; KARATAYEV, Vasilii Kus'mich, inzh.;
ZHELEZNYAKOV, Georgiy Vasil'yevich, prof., doktor tekhn.nauk;
VOLKOV, Petr Petrovich, inzh.; GRISHIN, M.M., retsenzent;
KRITSKIY, S.N., doktor tekhn.nauk, nauchnyy red.; PETROV, G.D.,
inzh., nauchnyy red.; SOKOL'SKIY, I.F., tekhn.red.

[Construction of cofferdams on the Volga River at the site of
the Stalingrad Hydroelectric Power Station; designing and studying
construction sites from the point of view of engineering geology]
Perekrytie rusla Volgi v stvore Stalingradskoi GES; opyt proekti-
rovaniia, inzhenerno-gidrologicheskikh issledovani i nabliudeni.
Moskva, 1959. 88 p. (MIRA 13:6)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury
SSSR (for Grishin).

(Stalingrad Hydroelectric Power Station) (Cofferdams)

SOV/115-59-6-22/33

28(2)

AUTHOR:

Zheleznyakov, G. V.

TITLE:

The Position of the Mean Velocity on the Vertical of a Pressureless Water Flow

PERIODICAL:

Izmeritel'naya tekhnika, 1959, Nr 6, pp 58-60 (USSR)

ABSTRACT:

In connection with the preparation of standardized materials for measuring water discharges in open channels by the "area-velocity" method at ISO/TK 30 (Subcommittee 1) and the VNII Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of Standards, Measures and Measuring Instruments), the author discusses in this paper the position of the mean velocity on the vertical of a pressureless water flow. The determination of point coordinates on the velocity vertical of a water flow, in which the velocity u is equal to the mean velocity on the vertical u_v , is of practical importance in two basic cases: at low working depths of the velocity vertical, especially from 0.10 to 0.35 m (Ref.1), and in case hydrometric work must be speeded up, for example, with unsteady motion of the water. In ref.1 it was assumed for a pressureless, turbulent flow that u_v

Card 1/3

SOV/115-59-6-22/33

The Position of the Mean Velocity on the Vertical of a Pressureless Water Flow

is located at a constant relative distance from the bottom of the flow $\eta = 0.4$. The generalization of data concerning the velocity distribution on the vertical provides a more accurate solution of this problem. The author starts his investigation with the exponential formula of the velocity distribution on the vertical (Ref. 2):

$\frac{u}{u_{\max}} = \eta^{\frac{1}{m}}$ where u_{\max} - maximum (surface) velocity in the vertical; $\eta = \frac{y}{h}$ - relative depth; y - distance to the bottom of the flow; h - depth of the flow in the vertical. In case $u = u_v$, then $\eta = \eta_v$ and consequently $\eta_v = \left(\frac{m}{1+m}\right)^m$

The author then presents two formulas for m which he derives from ref.2,3. The relative coordinate η_v of a point (counted from the bottom) in which the local velocity is equal to the mean velocity on the vertical of a pressureless turbulent flow, decreases with an increase of the multiplier C from the equation of steady motion in ref.4. This corresponds to an increase of η_v with an increase

Card 2/3

SOV/115-59-8-22/33

The Position of the Mean Velocity in the Vertical of a Pressureless Water Flow

of roughness and a decrease of depth. The latter was also stated by I.K. Nikitin (Ref.8) and M.F. Sribnyy (Ref.9). The norm in-struction of using a single-spot measuring method for the mean velocity on the vertical at $\eta_v = 0.40$ is justified, if

$$C > 25 \frac{m^{0.5}}{sec}$$

In case $C < 25 \frac{m^{0.5}}{sec}$ the author recommends the determination of η_v

according to Table 2 in dependence on n and h . In case the tolerance for installing the instrument at point $\Delta \eta_v = 1\%$ there arises the problem of changing to η_v and at great

$$C (C > 48 \frac{m^{0.5}}{sec})$$

The latter problem may be solved using the graph in fig.1. There are 2 graphs, 2 tables and 10 Soviet references.

ZHELEZNYAKOV, G. V.

PHASE I BOOK EXPLOITATION

SOV/2051

3(4)

Moscow. Universitet. Geograficheskiy fakul'tet

Voprosy gidrologii (Problems in Hydrology) [Moscow] Izd-vo Moskovskogo univ., 1957. 231 p. 2,400 copies printed.

Resp. Eds.: I. V. Samoylov and L. D. Kurdyumov; Tech Ed.: M.S. Yermakov.

PURPOSE: This book is intended for hydrologists and geographers.

COVERAGE: This collection of articles on the hydrology of the USSR is dedicated to Professor Ye. V. Bliznyak, Doctor of Technical Sciences. Among the topics discussed are: 1) the effect of air temperature on flow volume, 2) the calculation of shower runoff, 3) the speed of flood waters, 4) stream levels, 5) spring floods, 6) suspended sediments in running streams, 7) the

Card 1/6

Problems in Hydrology

SOV/2051

effect of agricultural practices on hydrology, and others. The discussions are accompanied by maps, graphs, and tables illustrating the present or long-term hydrology of the USSR. References accompany each article.

TABLE OF CONTENTS:

Samoylov, I. V. Yevgeniy Varfolomeyevich Bliznyak [Biographical Sketch]	5
Bliznyak, Ye, V. Problems and Prospects in the Study of the Waters of the USSR	10
Apollov, B. A. The Effect of Air Temperature on the Volume of Stream Runoff	19
Samoylov, I. V. The Discharge of Stream Currents Into a Water Reservoir	25
Sokolovskiy, D. L. Some Problems in the Theory and Practice	

Card 2/6

Problems in Hydrology

SOV/2051

of Computing Shower Runoff in Connection With the Characteristics of Drainage Net Structure	32
<u>Zheleznyakov, G.V.</u> Investigating the Speed of Movement of Flood Waters	43
Chebotaryev, N. P. Problems of Geographic Interpolation in Hydrology	56
Zolotaryev, T. L. Problems in Expanding Hydrological Series	64
Goncharov, V. N., and V. I. Poltavtsev. River Bed Deformations in the Region of Dam Foundations on Mountain Streams	69
Ivanov, P. V. Characteristics of Stream Level Status Regimes	79
Bydin, F. I. Maximum Flooding as Related to Snow Melting	88

Card 3/6

Problems in Hydrology

SOV/2051

- Shvets, G. I. Characteristics of Water Conditions of the Dnepr River Over a Thousand Year Period 93
- L'vovich, M. I. The Role of Agriculture in the Formation of the Water Regime of Streams 100
- Rutkovskiy, V. I. Dividing the USSR Into "Forest-Hydro-Climatic" Regions 111
- Lopatin, G. V. Map Showing the Modulus of Discharge of Suspended Sediments of Rivers of the USSR 126
- Bykov, V. D., and V. G. Khodakov. Basic Geographical Characteristics in the Distribution of Runoff in the Area of the Central Russian Plateau 130
- Kuznik, I. A. The Effect of Modern Agricultural Technology on the Hydrological Cycle of the Steppe Zone 137
- Kazantsev, B. P. The Time Melt Waters Reach Major River

Card 4/6

Problems in Hydrology

SOV/2051

Basins and Its Role in the Creation of Spring Floods	159
Konovalova, N. I. Attempt at a Hydrological Subdivision of the Northwestern Caspian Area	175
Zheleznyak, I. A. Runoff Water Distribution in the Annual Regimen of Rivers	186
Sokolov, A. A. The Relationship of the Water Balance of Lakes to the Dimensions of a Lake and Its Basin Under Various Geographical Conditions	195
Arkhangel'skiy, M. M. Some Prospects in the Application of Physical Methods in Hydrometry	205
Deyev, Yu. A. The Problem of the Methodology of the Quantitative Evaluation of the Heat Regime of Running Waters	211

Card 5/6

Problems in Hydrology

80V/2051

Oliferov, A. N. Investigating the Snow Cover of the Crimean Highlands in 1953-1954 218

Rogov, M. M. Some Problems in Hydrographic Investigations in River Deltas (Using the Amu-Darya River Delta as an Example) 222

Blinov, L. K., and M. A. Burkal'ta,va. The "Geographical Paradox" of Lake Balkhash 226

AVAILABLE: Library of Congress

MM/bg
7/17/59

Card 6/6

ZHELEZNYAKOV, K.; KOROSTIN, G.

Mechanized granaries of precast reinforced concrete with sunken sloping floors and grain drying and cleaning units of the Kazakh Division of the State Institut for Planning Flour and Feed Mills and Grain Elevators. Muk.-elev.prom. 25 no.9: 12-14 S '59. (MIRA 12:12)

1. Kazakhskoye otdeleniye Gosudarstvennogo instituta Prom-zernoprojekt.

(Granaries)

Zheleznyakov, L. R.
137-1957-12-24009

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 159 (USSR)

AUTHOR: Zheleznyakov, L. R.

TITLE: Precision Investment Casting (Tochnoye lit'ye po vyplavlyayemym modelyam)

PERIODICAL: Novoye v liteyn, proiz-ve. Nr 2. Gor'kiy, Knigoizdat, 1957, pp 233-241

ABSTRACT: The procedure of investment casting (IC) employed at the Gor'kiy automobile plant is described. Over 200 various types and sizes of tools and parts were converted to production by means of IC, including 20 units of basic production tools, 36 sizes of hexagonal and square sockets for socket wrenches, 5 sizes of nut wrenches, flat-nose pliers, special nuts, etc. Comparative data are presented on the work required for the manufacture of typical forged and cast parts; also stressed is the decrease of metal waste from 2-3 times and even up to 7-9 times when the IC method is employed.

S. Sh.

Card 1/1

1. Metals-Casting-Costs 2. Metals-Forging-Costs

ZHELEZNYAKOV, M.D., inzh.

Using electrothermal methods for stressing reinforcements
in making reinforced concrete panels. Bet. 1 zhel.-bet. no.2:
83-84 F '60. (MIRA 13:6)
(Prestressed concrete) (Electric heating)

Subject : USSR/Electricity AID P - 2825
Card 1/1 Pub. 27 - 14/30
Author : Zheleznyakov, P. S. Eng., Dnepropetrovsk
Title : Norms requiring a finish working
Periodical : Elektrichestvo, 6, 69-70, Je 1955
Abstract : Design of warehouses and storage depots for storing readily inflammable liquids was regulated according to the All-Union Standard (OST) 90039-39. On October 1953 this standard was replaced by "Norms and Technical Requirements for the Design of Storage Establishments for Storing Readily Inflammable Liquids" (N-108-53). The new norms, approved by the State Building Committee, have no requirements concerning protection from static electricity. The author considers as urgent a remedy for this deficiency.
Institution : None
Submitted : F 12, 1954

ZHELEZNYAKOV, V. V., Candidate Phs-Math Sci (diss) -- "The theory of sporadic radio radiation of the sun and planets". Gor'kiy, 1959. 13 pp (Min Higher Educ USSR, Gor'kiy State U in N. I. Lobachevskiy), 150 copies (KL, No 25, 1959, 126)

Category : USSR/Radiophysics - Application of radiophysical methods

I-12

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2021

Author : Zheleznyakov. V.V.

Inst : Physical Technical Inst. of the Gor'kiy University, Gor'kiy.

Title : Concerning Polarization of Radiation Due to Sunspots

Orig Pub : Astronom. Zh., 1955, 82, No 1, 33-44

Abstract : Detailed analysis of the mechanism of the sporadic solar electromagnetic radiation, due to bremsstrahlung of relativistic electrons moving in the magnetic field of the sun spots over strongly stretched spiral trajectories. The ratios of the intensities of "ordinary" and "extraordinary" types of radio waves are calculated for electrons having equal energies and for electrons with a power-law energy distribution which, move in the sunspot magnetic field that diminishes with altitude above the photosphere, and which radiate in the coronal electron-ion gas. Depending on the frequency of the radio waves, the author outlines the boundaries of the regions of the solar corona above the sunspots, where the relativistic electrons radiate effectively the "ordinary" and "extraordinary" waves. The intensity ratio of the "ordinary" and "extraordinary" waves depends on the value of the sunspot magnetic-field intensity and on its variation with increasing altitude above

Card : 1/2

the photosphere, on the frequency of the radiation, on the value of the energy on the type of the energy spectrum of the relativistic electrons, and on the other factors. For spots having diameters $\leq 5 \times 10^9$ cm, and for a magnetic field intensity $H \lesssim 3 \times 10^3$ gauss at decimeter and meter waves, the radio waves of the "ordinary" type have as a rule an intensity several times higher than the "extraordinary" waves. Bibliography, 10 titles.

Card : 2/2

~~SECRET~~ ZHELEZNYAKOV V.V.
Category : USSR/Radiophysics - Application of radiophysical methods

I-12

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1989

Author : Gershman, B.N., Zheleznyakov, V.V.

Title : On the Theory of Sporadic Radio Waves from the Sun

Orig Pub : Tr. 5-go soveshchaniya po vopr. kosmogonii. 1955, M., AN SSSR, 1956, 273-309, diskus. 309-311

Abstract : Experimental data indicate the existence of several types of radio waves: those radiated from the "quiet" sun (type I) and sporadic radiation which includes radiation due to sunspot (type II), short-duration flashes not related to the appearance of solar activity -- "isolated" (type III), and flashes due to chromospheric flares (type IV). Radiation of relativistic electrons, moving along the magnetic flux lines, may explain the properties of radiations of type II. To explain other types of sporadic radio waves from the sun, a plasma-mechanism hypothesis is proposed, by which electromagnetic disturbances may become reinforced under certain conditions in the electron plasma of the solar atmosphere. Various theories of this type, proposed by several authors, are analyzed. It is shown that in isolated plasma (without exciting agents) there can propagate only those plasma waves, for which $\omega \approx \omega_0 = \sqrt{\frac{4\pi e^2 N}{m}}$ (e and m are the charge and mass of the electron, and N is the concentration). If the corona contains electron-ion beams, the growth of longitudinal plasma

Card : 1/2

Category : USSR/Radiophysics - Application of radiophysical methods

I-12

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1989

waves in the corona is quite possible. The possibility of the longitudinal waves becoming transformed into transverse ones is considered, as are the conditions under which the radio waves can leave the corona. If waves propagate in plasma located in a magnetic field, the radiation may be "sucked out" from the corona region (taking into account the thermal motion of the electrons). If the plasma wave propagates at an angle to the direction of the gradient of the electron concentration, the radio waves may leave the corona also in the absence of magnetic fields. Such a wave may be produced under the influence of an external agent. If the action of the agent is of short duration, the radio waves will also last a short time (type III of radiation). Radiation of type IV is apparently produced by streams of fast particles, which excite plasma waves. The works in which the drift of plasma is believed to be the energy source causing the growth of the waves is critically reviewed. In the discussions, I.S. Shklovskiy emphasized that the results of the observations indicate that no one mechanism is capable of explaining all types of radio waves, although most phenomena are apparently due to plasma oscillations. V.L. Ginzburg indicated the difference between the mechanisms of radiation of relativistic electrons from the galaxy and from the sun; in the former case, the angle between the electron velocity and the magnetic field is large, and in the second case it is small. Bibliography, 52 titles.

Card : 2/2

ZHELEZNYAKOV, V.V.

Theory of sporadic solar radiation. Radiotekh. i elektron. 1 no.6:840-845 Ja '56. (MIRA 10:1)

1. Fiziko-tekhnicheskiy institut pri Ger'kovskom universitete. (Solar radiation)

ZHELEZNYAKOV, V.V.

Radiation of Jupiter. Priroda 45 no.3:78-80 Mr '56. (MLRA 9:7)

I.Ger'kovskiy gosudarstvennyy universitet.
(Radioastronomy) (Jupiter (Planet))

AUTHOR: Zheleznyakov, V. V. 53-1-5/8

TITLE: The Radiowave-Radiation of Sun and Planets
(Radioizlucheniye solntsa i planet)

PERIODICAL: Uspekhi Fizicheskikh Nauk, 1958, Vol. 64, Nr 1, pp. 113-154
(USSR)

ABSTRACT: This survey discusses the mainly from 1953 to 1957 published works on the theoretical and experimental examination of the radiowave-radiation of the sun and the planets. The first paragraph details the experimental data on the radiowave-radiation of the sun. First a report is made on the radiowave-radiation of the "quiet" sun. The measurements of the intensity of this radiation speak in favour of the existence of an lower limit of intensity, which usually is regarded as the level of the "quiet" undisturbed radiation. The intensification of the radiowave-radiation in general is connected with the occurrence of active zones on the sun. The "quiet" sun does not radiate with equal intensity on all frequencies. The radiowave-radiation in the meter-range, which is connected with the sunspots, correlates well with the area of the spots, which are situated near the central

Card 1/3

The Radiowave-Radiation of Sun and Planets

53-1-5/8

meridian (in case of shorter waves with the density of the spots, which are visible on the sun-disk). A great amount of experimental data is given and discussed. The intensity of the radiowave-radiation, which is intensified because of the perturbations on the sun, decreases with increasing frequency. On the background of the radarwave-radiation many splashes with different "life", intensity, and spectrum of frequency appear. Such a splash occupies at every moment a limited and in general quite narrow interval of frequency. Many details are given here additionally. The second paragraph deals with the theory of the radiowave-radiation of the sun, it reports on the theory of the thermal and sporadic radiowave-radiation of the sun. The third paragraph deals with the radiowave-radiation of Jupiter, Venus, and Mars. Here the author reports on the observations of the radiowave-Radiation of the planets, and on the hypotheses concerning the origin of the sporadic radiowave-radiation of Jupiter and Venus. The totality of facts, discussed in this work, does not give a sufficiently complete idea of this phenomenon yet, which can be said in particular of the radiowave-radiation of the planets. According to the opinion of the author particularly the

Card 2/3

The Radiowave-Radiation of Sun and Planets

53-1-5/8

the following is to be examined: The distribution of the "radiowave-brightness" on the disk of the sun at wave lengths of $\lambda \sim 1$ to 3 cm and at $\lambda \sim 1,5$ m; the polarization of the radiowave-radiation; the dissipation of "radio-spots" at various frequencies; the dynamic spectra of the "solar splashes"; the interrelation of the "insulated" splashes with the other phenomena of the sun-activity; the intensity of the thermal radiowave-radiation of Mars and Venus; the sporadic radiowave-radiation of Jupiter and Venus; radiowave observations of Saturn and Mercury. There are 15 figures and 158 references, 37 of which are Slavic.

AVAILABLE: Library of Congress

Card 3/3

ZHELEZNYAKOV, V.V.

Theory of the sporadic radio wave emission of Jupiter [with summary in English] Astron. zhur. 35 no.2:230-240 Mr-Apr '58. (MIRA 11:6)

1. Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta im. N.I. Lobachevskogo.
(Radio astronomy) (Jupiter (Planet))

ACCESSION NR: AP4039725

S/0141/64/007/002/0251/0261

AUTHORS: Andronov, A. A.; Zheleznyakov, V. V.; Petelin, M. I.

TITLE: On the kinetic instability of a homogeneous magnetoactive plasma

SOURCE: IVUZ. Radiofizika, v. 7, no. 2, 1964, 251-261

TOPIC TAGS: plasma instability, magnetoactive plasma, plasma distribution, Boltzmann equation, plasma electron oscillation, plasma wave absorption

ABSTRACT: Results previously obtained by one of the authors (V. V. Zheleznyakov, IVUZ Radiofizika v. 4, 619, 1961) are generalized and used for an analysis of the kinetic instability of a homogeneous magnetoactive plasma with a specified momentum distribution function, in which the electromagnetic waves propagate at an arbitrary angle to the magnetic field. Unlike the case of longitudinal propagation

Card: 1/2

ACCESSION NR: AP4039725

(zero angle), the maximum growth of the electromagnetic waves occurs in this case not only at frequencies close to the electron gyrofrequency, but also at frequencies close to its harmonics. An identical expression is derived for the increment of the electromagnetic waves by using the kinetic equation method and by a semi-quantum approach. The stability criteria derived for the plasma can be given a simple interpretation connected with the population densities of the quantum levels. An expression is derived for the coefficient of absorption of the electromagnetic wave near the first harmonic of the gyrofrequency in an equilibrium plasma. Orig. art. has: 24 formulas.

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

SUBMITTED: 15Apr63

DATE ACQ: 19Jun64

SUB CODE: ME

NR REF SOV: 015

ENCL: 00

OTHER: 000

Card 2/2

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In order to explain the observed counter...

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 UR/0033/65/042/004/0798/0809
 523.164.3

AUTHOR: Zheleznyakov, V. V.

TITLE: Radio emission generation of Jupiter

SOURCE: Astronomicheskii zhurnal, v. 42, no. 4, 1965, 798-809

TOPIC TAGS: radio emission, radio astronomy, plasma, magnetic wave, plasma frequency, plasma instability, electron density, recombination coefficient

ABSTRACT: To explain the origin of decameter radio emission from the planet Jupiter, the hypothesis is reviewed which attributes the Jovian bursts to excited plasma waves in the planet's ionosphere. One simple variance of this hypothesis neglects the effect of magnetic fields and describes the generation of radio waves at the plasma frequency ω_p . A careful analysis shows that this is possible only at very small values of the electron-ion, electron-neutral recombination coefficient ($\alpha < 10^{-13}$), which in turn calls for $N \sim 10^{17}$ electrons/cc. It is shown that the predominant recombination reaction in the Jovian ionosphere is due to radiative recombination which cannot be smaller than 10^{-12} cm³, which in turn leads to $N \sim 10^{16}$. It is further shown that inclusion of a magnetic field of several oersteds in the above hypothesis immediately accounts for this increase in α and

Card 1/2

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ACCESSION NR: AP5020680

3

the corresponding decrease in N. From this it is concluded that the decameter radio emission can be fully explained by $N \sim 5 \times 10^{15}$, $f \geq 15$ M cycle and $H = 2$ to 12 oersteds. The gyroresonance absorption (in the Jovian upper ionosphere) of extraordinary radio wave emission is postulated to explain the strong directivity of the radio bursts. This condition is satisfied if γ

$$\gamma \sim 1.3 \cdot 10^{-6} N T (1 \pm \cos \alpha)^2 \sin^2 \alpha$$

is of order unity, $\omega \approx 2\omega_H$, and $T = 5 \times 10^3$ K. The extraordinary wave emission is explained by the plasma wave transformation mechanism in shock-like regions of the planet's ionosphere where sharp drops in plasma density occur. In such magnetoactive plasmas it is obvious that one would expect two-stream instabilities as well as instabilities caused by temperature anisotropies. A brief discussion is added where it is shown that synchrotron radiation by relativistic electrons is a more favorable explanation of decameter wave emission than simple cyclotron radiation. Orig. art. has: 13 formulas.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gos. universiteta (Radiophysics Institute, Gorkiy State University) 44, 55

SUBMITTED: 02Sep64

ENCL: 00

SUB CODE: AA

NO REF SQW: 012

OTHER: 010

Card 2/2g

ZHELENYAKOV, V.V.; TRAKHTENGERTS, V.'u.

Effect of the medium on the generation of type IV radio-frequency radiation from the sun. Astron.zhur. 42 no.5:1005-1010 S-0 '65.

(MIRA 18:10)

1. Radiofizicheskiy institut Gorkovskogo gosudarstvennogo universiteta.

L 05781-67 EWT(1) LJP(e) AT

ACC NR: AP6031447 SOURCE CODE: UR/0056/66/051/002/0570/0578

AUTHOR: Zheleznyakov, V. V.

29
B

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

TITLE: Negative reabsorption of synchrotron radiation

SOURCE: Zh eksper i teor fiz, v. 51, no. 2, 1966, 570-578

TOPIC TAGS: synchrotron, reabsorption, electron spectrum, frequency characteristic, synchrotron radiation

ABSTRACT: The author shows that, in contrast to vacuum in which the reabsorption of synchrotron radiation of the system of relativistic electrons is always positive, the reabsorption may become negative in a medium with an appropriate selection of the relativistic electron spectrum. The frequency dependence on the degree of reabsorption is discussed for the case of monoenergetic and power-law spectra of the emitted electrons. The author thanks, A. A. Andronov, S. A. Kaplan, and V. Yu. Trakhtengerts for discussing the paper and comments. Orig. art. has: 2 figures and 4? formulas. [Based on author's abstract]

Card 1/1 *edit* SUB CODE: 20/ SUBM DATE: 26Feb66/ORIG REF: 003/ OTH REF: 002/

ACC NR: AP7001207

SOURCE CODE: UR/0141/66/009/006/1057/1064

AUTHOR: Zheleznyakov, V. V.

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

TITLE: Theory of radiation transfer in a nonuniform medium

SOURCE: IVUZ. Radiofizika, v. 9, no. 6, 1966, 1057-1064

TOPIC TAGS: radiation transfer, wave equation, coordinate system solar
radio emission

ABSTRACT: The conventional equation of radiation transfer in a nonuniform medium is derived from the equation of continuity for the density of radiation energy in the coordinate space and directions of group velocity. The theory of radiation transfer in a nonuniform medium, proposed by Oster (L. Oster, Astrophysics, J., 138, 761, 1963), is shown to be incorrect, especially, when it is used (L. Oster, S. Sofia, Astrophysics, J., 141, 1139, 1965) for investigating the radio emission of the "quiet" sun. Orig. art. has: 32 formulas.

[Author's abstract]

[NT]

SUB CODE: 20/SUBM DATE: 29Dec65/ORIG REF: 003/OTH REF: 006/

Card 1/1

UDC: 621.371.123

KORNIYENKO, A.M.; SHEL'MAKHOV, M.S.; GEYLER, Z.Sh.; TSYPUK'NIKOV, I.M.;
SHLEYFER, M.I.; PELIKS, A.Ya.; BRONSHEYN, V.S.; HERESNEV, V.A.;
KUZAKHMETOV, Sh.G.; STARKOV, V.T.; VARAKSA, A.P.; ZHELEZNIYAKOV,
V.V.; STEL'MAN, L.N.; SUKHANOV, V.B.

Authors' certificates and patents. Mashinostroenie no.6:101-102
N-D '65. (MIRA 18:12)

ZHELEZNYAKOV, V.V.

Generation of radio-frequency radiation on Jupiter. *Astron. zhur.*
42 no.4:798-809 J1-Ag '65. (MIRA 18:8)

1. Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo
universiteta.

TOPIC TAGS: solar radio emission, lunar radio emission

TABLE OF CONTENTS (abridged):

ANDRONOV, A.A.; ZHELEZNYAKOV, V.V.; PETELIN, M.I.

Kinetic instability of a homogeneous magnetoactive plasma.

Izv. vzb. ucheb. zav. radiofiz. 7 no.2:251-261 '64,

(MIRA 18:1)

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

ZHELEZNYAKOV, V.V.

Origin of solar radio emission bursts in the meter band. Astron.
zhur. 42 no.2:244-252 Mr-Apr '65. (MIRA 18:4)

1. Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo univer-
siteta.

ZHELEZNYAKOV, V.V.

Model of the lower chromosphere constructed on the basis of
radio data. Astron. zhur. 41 no.6:1021-1026 N-D '64
(MIRA 18:1)

1. Institut radiofiziki Gor'kovskogo gosudarstvennogo uni-
versiteta.

ZHELEZNYAKOV, V.V.

Configuration of Saturn's magnetic field. Vop. kosm. 10:61-69 '64.
(MIRA 17:10)

ZHELEZNYAKOV, V.V.

Configuration of the magnetic field of Saturn. *Astron. zh.*, 41
no. 5:955-962. 5-0 '64.

1. Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo
universiteta. (MIRA 17:10)

"APPROVED FOR RELEASE: 03/15/2001

CIA-RDP86-00513R002064710002-9

APPROVED FOR RELEASE: 03/15/2001

CIA-RDP86-00513R002064710002-9"

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ZHELEZNYAKOV, V.V.

Cyco-resonance radiation and absorption in an equilibrium
magnetoactive plasma. Izv. vys. ucheb. zav.; radiofiz. 7 no.1:
67-82 '64. (MIRA 17:3)

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

ACCESSION NR: AP3004318

S/0033/63/040/004/0633/0642

AUTHOR: Zheleznyakov, V. V.; Zlotnik, Ya. Ya.

TITLE: On the polarization of radio waves which have passed through a region of a transversal magnetic field within the solar corona

SOURCE: Astronomicheskiy zhurnal, v. 40, no. 4, 1963, 633-642

TOPIC TAGS: solar microwave circular polarization, polarization change, characteristic parameter, interaction, phase integral, transversal field, Stokes lines

ABSTRACT: Solar microwave radiation consists of a chaotically polarized component and a circularly polarized component. The circular component is subject to change. The authors discuss Cohen's investigation of the polarization changes in which it was found that the characteristic parameter Q of the interaction of ordinary waves changes when Q is approximately equal to one. The authors study the interaction of ordinary waves in the plasma in a magnetic field by the method of phase integrals. The coordinate system is chosen in such a way that the transversal component does not depend upon the coordinates

Card 1/2

ACCESSION NR: AP3004318

and the longitudinal component depends only upon the z-axis. The electric field is a combination of real and imaginary parts, and the study is performed with a function which is expressed in phase integrals. The solution of the function shows that a strong interaction between ordinary and extraordinary waves can take place under the action of a transversal magnetic field only in a rarefied plasma. The solution of the function depends upon two constants in the phase integrals. These constants are invariable in regions limited by Stokes lines. The regions of Stokes lines are analyzed. Experimental measurements detected that the circular polarization amounts to only 40% for frequencies at which one wave transits totally into the other. Orig. art. has: 6 figures and 35 formulas.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gos. universiteta im. N. I. Lobachevskogo (Institute of Radio Physics, Gor'kiy State University)

SUBMITTED: 05Jul62

DATE ACQ: 20Aug63

ENCL: 00

SUB CODE: AS

NO REF SOV: 003

OTHER: 008

Card 2/2

ZHELEZNYAKOV, V.V.

Frequency spectrum of the slowly varying component of solar
radio emission. Astron. zhur. 40 no.5:829-841 S-O '63.
(MIRA 16:11)
Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo
universiteta.

ACCESSION NR: AP4024469

S/0141/64/007/001/0067/0082

AUTHOR: Zheleznyakov, V. V.

TITLE: On gyroresonant radiation and absorption in an equilibrium magnetoactive plasma

SOURCE: IVUZ. Radiofizika, v. 7, no. 1, 1964, 67-82

TOPIC TAGS: plasma, equilibrium plasma, magnetoactive plasma, gyroresonant absorption, gyroresonant emission, weakly relativistic plasma, Einstein coefficients, Kirchhoff's law, cyclotron radiation intensity, resonant absorption coefficient, plasma optical thickness, sporadic radio emission, sporadic solar radio emission

ABSTRACT: An approach simpler than the use of kinetic equations, namely the use of the Einstein coefficients and Kirchhoff's law, is used to determine the resonant absorption in a weakly relativistic magnetoactive plasma at an arbitrary angle. A similar analysis was

Card 1/3

ACCESSION NR: AP4024469

made by the author earlier (Ivz. VUZ'ov -- Radiofizika, v. 2, 14, 1959) for propagation along the magnetic field only. Relations are derived for the cyclotron radiation intensity of a weakly relativistic electron moving along a helix in a magnetoactive plasma. The coefficient of resonant absorption of the electromagnetic waves at frequencies that are close to integral multiples of the electron gyrofrequency is determined; this absorption is connected with the cyclotron radiation of the weakly relativistic plasma electrons. The results are compared with similar equations obtained by the kinetic-equation approach and the reasons for some discrepancies are pointed out. It is also pointed out that the absorption coefficient can be used to calculate the optical thickness of the layers in which resonant absorption takes place in an inhomogeneous magnetic field, and also under conditions which are of interest to the theory of the sporadic radio emission from the sun. Ye. Ya. Zlotnik participated in some of the calculations. Orig. art. has: 2 figures and 39 formulas.

Card 2/3

ACCESSION NR: AP4024469

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

SUBMITTED: 15May63

DATE ACQ: 15Apr64

ENCL: 00

SUB CODE: PH

NO REF SOV: 016

OTHER: 003

ZHEIE ZNYAKOV, V.V.; ZLOTNIK, Ye.Ya.

Polarization of radio waves passing through the region of a
transverse magnetic field in the solar corona. Astron.zhur. 40
no.4:631-642 J1-Ag '63. (MIRA 16:8)

1. Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo
universiteta im. N.I.Lobachevskogo.
(Magnetic fields (Cosmic physics)) (Radio waves)

SOURCE: IVUZ. Radiofizika, v. 6, no. 3, 1963, 634-636

TOPIC TAGS: plasma, electrostatic

ABSTRACT: This is a further development of a paper in which the asymptotic approximation was used to analyze the interaction of electromagnetic and plasma waves in a plane-lamellar plasma. The new elements of the theory are the effect of an external static electric field. Modified Maxwell and electron motion equations are set up and investigated. As applied to the solar corona, the allowance for the static field does not change the nature and magnitude of interaction.

Card 1/8

ZHELEZNYAKOV, V.V.; ZLOTNIK, Ye.Ya.

Transition of plasma waves into electromagnetic ones in nonhomogeneous isotropic plasma. Izv. vys. ucheb. zav.; radiofiz. 5 no.4: 644-657 '62. (MIRA 16:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Plasma (Ionized gases)) (Electromagnetic waves)

ZHELEZNYAKOV, V.V.

Origin of the slowly varying component of solar radio emission.
Astron.zhur. 39 no.1:5-14 Ja-F '62. (MIRA 15:2)

1. Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo universiteta im. N.I.Lobachevskogo.
(Solar radiation)
(Radio astronomy)

9.9845

3320B
S/141/61/004/005/003/021
E120/E135

AUTHOR: Zheleznyakov, V.V.

TITLE: On the instability of magnetoactive plasma relative to high-frequency electromagnetic perturbations, IV.

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.4, no.5, 1961, 849-860

TEXT: Using the expression for Im γ (the growth or damping coefficient of electron waves propagating in the direction of H_0) obtained in a previous article (Ref. 1; V.V. Zheleznyakov, Izv. vyssh. uch. zav. Radiofizika, v.4, 519 (1961) :

$$\gamma \frac{\partial(\Omega^2 \phi)}{\partial \Omega} = \sum_i \frac{\sqrt{\pi}}{g_0} \int_0^\infty \xi^2 e^{-(\xi - \xi_0)^2} \sum_{\xi} \delta \xi \left[\pm \frac{\xi - \xi_0}{a_{||}} \frac{a H_0}{c} - k \xi \xi_0 \frac{a^2}{a_{||}^2} \right] \times$$

$$\times \frac{\Omega_0^2 (\xi \xi_0 \cdot \xi)}{k - \Omega p_{||} \xi / mc^2} e^{-\xi^2} d\xi, \quad (1)$$

Card 1/5

33201

On the instability of magnetoactive... S/141/61/004/005/003/021
E120/E135

where $\delta_p = \text{sign}(k - \Omega p_{\parallel} / mc^2)$ and

$$\xi_p = \frac{\Omega m(\xi_p, \zeta) - kp_{\parallel}^0 \pm eH_0/c}{ka_{\parallel}} \quad (2) \quad \text{T}$$

it is shown, in particular, that in the isotropic equilibrium plasma (where $\omega_H = 0$) the absorption of transverse electromagnetic waves, not connected with collisions, is absent. Considering systems slightly removed from equilibrium, assuming that the distribution function $\Phi(\Omega, \underline{k})$ is not very different from the equilibrium distribution, the condition

$$\partial(\Omega^2 \Phi) / \partial \Omega > 0$$

follows from the demand of positive definite electrical energy in the equilibrium system. This is used to obtain the sign of $\text{Im } \gamma$ from the integral in Eq.(1). Two limiting assumptions are considered:

A) Assuming that ξ_p changes little in the region $(\xi - \xi_0)^2 \ll 1$

Card 2/5

33201

On the instability of magnetoactive... S/141/61/004/005/003/021
E120/E135

B) Assuming that $(\xi - \xi_0)$ changes little in the region $\xi_i^2 \ll 1$.

Case A corresponds to such a distribution $f_0(p)$ that the wave of frequency Ω is radiated mainly by particles with nearly equal values of the longitudinal momenta (p_{\parallel}). Case B, on the other hand, corresponds to a distribution where the wave of frequency Ω is radiated mainly by particles with nearly equal transverse momenta (p_{\perp}). Case A is found to correspond to the assumption that the mass of the particles varies little in that part of the interval $(\xi - \xi_0)^2 \ll 1$ which contributes most to $\text{Im } \gamma$.

It then follows that case A is realised for both relativistic as well as non-relativistic momenta provided the dispersion in the transverse momenta (a_{\perp}) is sufficiently small. By considering the location of poles in the integrand, the integral is evaluated in the approximation of case A, and on the assumption that the contribution of the ions is negligible for sufficiently high frequencies. It is found that the sign of $\text{Im } \gamma$ is determined by:

Card 3/5

33201

On the instability of magnetoactive... S/141/61/004/005/003/021
E120/E135

$$- \Omega_{\tilde{m}} + kp_{\parallel}^0 + \frac{eH_0}{c} \left(1 - \frac{a_{\parallel}^2 G_0}{a_{\perp}^2 G_3} \right); \quad (33)$$

+

and if this is positive, then the system under consideration becomes unstable. In the non-relativistic limit, the electromagnetic waves propagate along \underline{H}_0 and are unstable when

$$\Omega - kv_{\parallel}^0 + \omega_H \left(1 - a_{\parallel}^2 G_0 / a_{\perp}^2 G_3 \right) < 0. \quad (35)$$

In case B, it is found that the necessary conditions can be satisfied both for relativistic as well as non-relativistic momenta provided the dispersion in the longitudinal momenta (a_{\parallel}) is small enough. In this case, the criterion of instability is found to be;

$$+ (\tilde{\zeta}_1 - \zeta_0) > 0 \quad (50)$$

Card 4/5

33201

On the instability of magnetoactive... S/141/61/004/005/003/021
E120/E135

where $\xi_0 = p_{\perp}^0 / a_{\perp}$; $\tilde{\xi}_e = \tilde{p}_{\perp e} / a_{\perp}$ and the \sim sign means that the value of the function is to be taken at $\xi = \xi_0 \sim$. From this it follows that the instability takes place when $\tilde{\xi}_e > \xi_0$ for the ordinary waves and $\tilde{\xi}_e < \xi_0$ for extraordinary waves; which means that in the former case, when $\xi_0 = 0$, instability is also present, although the extraordinary wave is damped. The results obtained are found to be essential from the quantum point of view. There are 13 Soviet-bloc references.

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

SUBMITTED: February 6, 1961

Card 5/5



33420

S/033/62/039/001/001/013
E032/E114

3.1720 (1041, 1126, 1127)

AUTHOR: Zheleznyakov, V.V.

TITLE: On the origin of the slowly varying component of solar radio emission

PERIODICAL: Astronomicheskii zhurnal, v.39, no.1, 1962, 5-14

TEXT: The author is concerned with the origin of the slowly varying component of solar radio emission which is observed mainly in the wavelength range 1 - 30 cm. A detailed survey of published information is given and it is concluded that it is now established that the slowly varying component in the above wavelength range with $T_{eff} < 10^6$ °K can be looked upon as thermal radio emission of coronal regions with $T \sim 10^6$ °K, located above groups of sunspots and plages. On this point of view, the observed upper limit of the effective temperature, namely 1.5×10^6 °K is naturally explained by assuming that the effective temperature cannot be greater than the kinetic temperature in the emitting layer. It is pointed out that

Card 1/4

33420

On the origin of the slowly varying... S/033/62/039/001/001/013
E032/E114

according to W.N. Christiansen, J.A. Warburton and R.D. Davies (Ref.2: Austral. J. Phys., v.10, 491, 1957) the effective temperature of thermal radiation from a layer heated to a temperature T depends only on the optical thickness of the layer. In the corona and in the chromosphere the optical thickness is determined by absorption due to close collisions between charged particles and also resonance (synchrotron) absorption during the accelerated motion of particles in a magnetic field. Therefore, the optical thickness consists of two terms, i.e. a collision term and a resonance term. It is shown in the present paper that the properties of the slowly varying component can be explained by the resonance (synchrotron) mechanism immediately above sunspots and by the collisional mechanism at larger distances from the sunspots. This approach leads to the correct results for the effective temperature, the radio brightness distribution, the directed nature of the emission, the sign of the polarization, and the dependence of the degree of polarization on frequency. The synchrotron absorption occurs at simple multiples of the Larmor precession frequency.

Card 2/4

33420

On the origin of the slowly

S/033/62/039/001/001/013
EO32/E114

Under certain conditions, namely, large values of the electron density and large wavelengths (of the order of 20 cm), the collisional mechanism of emission by electrons may be appreciable, or even predominate, in the radio emission of active coronal regions. However, it is emphasised that this scheme, which involves both the collisional and synchrotron mechanisms, must be regarded as preliminary and further theoretical and experimental studies are necessary. For example, there is no reliable evidence for any correlation between the height of the emitting region and the intensity of the magnetic field in sunspots. This correlation should, clearly, exist if the present theory is correct. A further correlation which is of interest in the present context is that between the magnetic field and the effective temperature, and between the observed radio brightness and electron density in the corona. There are 1 figure, 1 table and 23 references; 11 Soviet-bloc and 12 non-Soviet-bloc. The four most recent English language references read as follows;

Card 3/4

33420

On the origin of the slowly ...

S/033/62/039/001/001/013
E032/E114

- Ref. 3: W.N. Christiansen and D.S. Mathewson,
Paris Symposium on Radio Astronomy,
Stanford Univ. Press, 1959, p.108.
- Ref. 9: M. Gutman and J.L. Steinberg,
Paris Symposium on Radio Astronomy,
Stanford Univ. Press, 1959, p.123.
- Ref.20: B. Vauquois,
Paris Symposium on Radio Astronomy,
Stanford Univ. Press, 1959, p.143.
- Ref.21: G. Newkirk,
Paris Symposium on Radio Astronomy,
Stanford Univ. Press, 1959, p.149.
- ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gos.
universiteta im. N.I. Lobachevskogo
(Radiophysics Institute of the Gor'kiy State
University imeni N.I. Lobachevskiy)

SUBMITTED: January 31, 1961

Card 4/4

S/141/61/004/004/005/024
E032/E514

9.9060

AUTHOR: Zheleznyakov, V.V.

TITLE: On the instability of magneto-active plasma subjected to high frequency electromagnetic disturbances. III

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol.4, No.4, pp.619-629

TEXT: This is a continuation of work reported by the present author in Refs.1 and 2 (Izv.vyssh.uch.zav. Radiofizika, 3,57, 1960; 3,180, 1960). In Ref.1 the present author considered the propagation of electromagnetic waves in homogeneous unbounded plasma in the direction of the magnetic field H_0 and obtained the corresponding dispersion relation through a simultaneous solution of the relativistic transport equation and the Maxwell equations. The dispersion relation can be solved fairly simply by the perturbation method if the growth (attenuation) coefficient for the wave is much smaller than the frequency. When this conditions is not satisfied, the problem becomes exceedingly difficult and hence both in Refs. 1 and 2 and in the present paper it is assumed that this inequality holds. In the present paper the author considers the Card 1/2

On the instability of magneto-active ... S/141/61/004/005/024
E032/E514

propagation of electromagnetic waves through a non-equilibrium plasma in the case where the wave propagation vector is parallel to the magnetic field and the instability is due to negative Landau damping. Explicit, though involved, expressions are derived for the growth (attenuation) coefficient as a function of time. The paper is entirely theoretical. There are 4 figures and 5 references: all Soviet.

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

SUBMITTED: February 6, 1961

Card 2/2

GINZBURG, V.L.; ZHELEZNYAKOV, V.V.

Noncoherent mechanisms of sporadic solar radio emission in case
of magnetoactive coronal plasma. Astron. zhur. 38 no.1:3-20 Ja-F
'61. (MIRA 1/2)

1. Radiofizicheskiy institut Ser'kovskogo gosudarstvennogo universiteta
im. N.I. Lobachevskogo.
(SUN) (Radio astronomy)

ZHELEZNYAKOV, V.Y.

Instability of magnetoactive plasma in respect to high-frequency
electromagnetic perturbances. Part 1. Izv. vys. ucheb. zav.;
radiofiz. 3 no.1:57-66 '60. (MIRA 13:12)

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

(Plasma)

(Electromagnetic waves)

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3,1720(1041,1126,1127)

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E032/E514

AUTHORS: Ginzburg, V.L. and Zheleznyakov, V.V.

TITLE: Noncoherent Mechanisms of Sporadic Solar Radio Emission in the Case of a Magnetoactive Coronal Plasma
PERIODICAL: Astronomicheskii zhurnal, 1961, Vol. 38, No. 1, pp. 3 - 20

TEXT: Noncoherent mechanisms of sporadic solar radio emission are reviewed, taking into account the influence of the magnetic field. The emission is conventionally described as noncoherent when it is possible to sum the emission intensities due to separate particles (taking re-absorption into account) but the intensification of the waves in the system itself can be ignored (for example, in a stream of particles). It is shown that noncoherent mechanisms can be responsible for the intensified radio emission above sunspots and for bursts of types IV and V. Bursts of types I, II and III cannot be connected with noncoherent radio emission of either the bremsstrahlung or the Cherenkov type. It is also shown that types II and III bursts cannot be connected with noncoherent emission of plasma waves in isotropic plasma.

Card 1/2

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Noncoherent Mechanisms of Sporadic Solar Radio Emission in the
Case of a Magnetoactive Coronal Plasma LX

There are 47 references: 20 Soviet and 27 non-Soviet.

ASSOCIATION: Radiofizicheskiy in-t Gor'kovskogo gos.
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University imeni N.I. Lobachevskiy)

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Card 2/2

ZHELEZHYAKOV, V.V.

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radiofiz. 3 no.2:180-191 '60. (MIRA 13:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri
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(Magnetic fields)
(Plasma (Ionized gases))
(Electromagnetic waves)