

L 3336-66 ENT(1)/T IJP(c) GG

UR/0181/65/007/007/2180/2185

ACCESSION NR: AP5017316

AUTHORS: Men' A. N.; Muftakhova, F. I.; Nikolayev, A. P.;
Cherepanov, V. I.

44, 55
58
55
B

TITLE: On the account of the 'interaction' of the terms in the calculation of the EPR spectra of the iron-group ions

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2180-2185

TOPIC TAGS: electron paramagnetic resonance, EPR spectrum, cubic crystal, crystal lattice structure, ion

ABSTRACT: General expressions are obtained for the parameters of the spin Hamiltonian of the iron-group ions in a crystalline field of cubic symmetry with account of the interaction between the terms. The influence of the terms on the spin-Hamiltonian constants is analyzed for ions with configuration d^n ($n = 1-9$) in octahedral and tetrahedral lattice points with cubic island symmetry. It is shown that it is sufficient to confine the calculations to the cases d^2 and

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d^7 (octahedral lattice point) and d^3 (tetrahedral lattice point). Tables are presented for the splitting of the ground levels of the ions with configurations d^2 , d^3 , and d^7 under the influence of the spin-orbit interaction and of an external magnetic field, and for constants of the EPR spectrum for the same ions. It is shown that the term interaction can become significant in the calculation of the spin-Hamiltonian constants. Orig. art. has: 1 figure, 2 formulas and 2 tables.

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

SUBMITTED: 23Nov64

44.55
ENCL: 00

SUB CODE: NP, OP

NR REF SOV: 002

OTHER: 006

Card 2/2 DP

L 2209-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JW

ACCESSION NR: AP5017343

UR/0181/65/007/007/2256/2258

AUTHOR: Potorcha, V. I.; Men', A. N. 44.55 43B 21.44.55

TITLE: Concerning the calculation of the paramagnetic susceptibility of Cr³⁺ in MgAl₂O₄.

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2256-2258

TOPIC TAGS: chromium, magnesium compound, paramagnetic susceptibility

ABSTRACT: The authors show that the dependence of the magnetic susceptibility on the temperature and on the magnetic field can be calculated even if the explicit form of the energy spectrum of the impurity paramagnetic ion is not known. This is done by expanding the exponential functions contained in the thermodynamic potential in a series, and retaining terms of third order of smallness and larger. The susceptibility and the parameters of the Curie-Weiss law are calculated, by way of an example, for Cr³⁺ in MgAl₂O₄. Orig. art. has: 10 formulas and 1 table.

ASSOCIATION: Institut metallurgii AN SSSR, Sverdlovsk (Institute of Metallurgy, AN SSSR)

SUBMITTED: 03Mar65 44.95

ENCL: 00

SUB CODE: SS

NR REF SOV: 003

OTHER: 003

Card 1/1 SP

L 14624-66 EWT(1)

ACC NR: AP5025303

SOURCE CODE: UR/0051/65/019/004/0586/0596

AUTHOR: Men', A.N.; Sokolov, A.V.; Zvezdina, N.A.; Kurushin, Yu. N.;
Nekoshnov, B.M.; Chudakov, V.S.

ORG: none

TITLE: Determination of the energy spectrum of an impurity ion with an unfilled d-shell
in a crystal

SOURCE: Optika i spektroskopiya, v. 19, no. 4, 1965, 586-596

TOPIC TAGS: crystal impurity, EPR spectrum, line splitting

ABSTRACT: The interpretation of energy spectra and EPR spectra of ions in various crystals requires the solution of a secular equation which takes into account the configuration of the ion and the symmetry of the intracrystalline field. In this paper, tables of matrix elements have been compiled which make it possible to write a secular equation at once for any term of any configuration in the case of an impurity ion with an unfilled d-shell. These tables can also be used in studying EPR spectra if the field of lower symmetry produces a splitting comparable in order of magnitude to other perturbations (spin-orbital and exchange perturbations, etc.). As an example, the splitting of the principal card 1/2

UDC: 539.184.2:548.0.001.1

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B

L 11621-66
ACC NR: AP5025303

terms D and F in fields of variable symmetry was analyzed. Data on the optical spectra of Cr³⁺ in MgAl₂O₄ make it possible to determine local distortions caused by Cr³⁺ ion which replaces Al³⁺ ion at the octahedral sites of spinel. The data obtained are in good agreement with the experiment. Orig. art. has: 7 tables and 6 formulas.

SUB CODE: 20 / SUBM DATE: 28May64 / ORIG: 005 / OTH REF: 004

TS
card 2/2

L 14621-66
ACC NR: AP5025303

terms D and F in fields of variable symmetry was analyzed. Data on the optical spectra of Cr^{3+} in MgAl_2O_4 make it possible to determine local distortions caused by Cr^{3+} ion which replaces Al^{3+} ion at the octahedral sites of spinel. The data obtained are in good agreement with the experiment. Orig. art. has: 7 tables and 6 formulas.

SUB CODE: 20 / SUBM DATE: 28May64 / ORIG: 005 / OTH REF: 004

TS
card 2/2

KORNEYEV, Yu.A.; BALAKIREV, V.F.; MEN'KOV, A.N.; CHUFAROV, G.I.

Letters to the editors. Zhur.fiz.khim. 39 no.10:2225-2227, 1965.

(MIRA 1-112)

1. Sverdlovskiy institut metallurgii. Submitted March 11, 1965.

L 63763-65 EWT(m) JD/JW

ACCESSION NR: AP5018088

UR/0020/65/163/001/0144/0146

AUTHOR: Zhuravleva, M. G.; Men¹, A. N.; Chufarev, G. I. (Corresponding member AN SSSR)

TITLE: Investigation of spinel type solid solutions from the standpoint of statistical thermodynamics.

SOURCE: AN SSSR. Doklady, v. 163, no. 1, 1965, 144-146

TOPIC TAGS: statistical thermodynamics, spinel type solid solution, phase composition, effective equilibrium oxygen pressure, component activity, solid phase composition, configurational mixing entropy, internal mixing energy

ABSTRACT: This work is a continuation of a previous investigation with the difference that the statistical method of calculating the activities of components in MeO type solid solutions, which was found to be in satisfactory agreement with experiment, is now extended to the case of spinel type solid solutions in an equilibrium with a phase of variable composition. On the basis of the expression for the configurational mixing entropy and internal mixing energy:

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$$\Delta S = -R\{\lambda_1 \ln \lambda_1 + \lambda_2 \ln \lambda_2 + (1 - \lambda_1 - \lambda_2) \ln (1 - \lambda_1 - \lambda_2) + (c_1 - \lambda_1) \ln (c_1 - \lambda_1) + (c_2 - \lambda_2) \ln (c_2 - \lambda_2) + (1 + \lambda_1 + \lambda_2) \ln (1 + \lambda_1 + \lambda_2) - c_1[\lambda_1^0 \ln \lambda_1^0 + 2(1 - \lambda_1^0) \ln (1 - \lambda_1^0) + (1 + \lambda_1^0) \ln (1 + \lambda_1^0)] - c_2[\lambda_2^0 \ln \lambda_2^0 + 2(1 - \lambda_2^0) \ln (1 - \lambda_2^0) + (1 + \lambda_2^0) \ln (1 + \lambda_2^0)]\};$$

$$\Delta U = Nc_1c_2\alpha,$$

where $\alpha = v/kT$, N is the Avogadro number, and v is the algebraic sum of the energies of paired interactions between cations spaced at distances not exceeding the distance between tetranodes of the spinel, the authors derive a formula for the activities of components in the solid solution and apply it, by way of an example, to a solid solution of manganese ferrite with magnetite. The relation of $\log P_{O_2}$ (effective equilibrium oxygen pressure in the system) to ferrite concentration c_f is experimentally determined and found to be in satisfactory agreement with theory, and, on this basis, the activities of ferrite and magnetite are separately determined. The sublattice distribution of the cations is a major factor in the activity of ferrite. The system of formulas presented for the calculation of component activities is applicable for any solid solutions for which experimental data are available regarding the relation of $\log P_{O_2}$ to the composi-

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L 63763-65

ACCESSION NR: AP5018088

tion of the solid phases in an equilibrium. Orig. art. has: 3 figures, 9 formulas.

ASSOCIATION: Institut metallurgii, Sverdlovsk (Metallurgy Institute)

SUBMITTED: 28Dec64

ENCL: 00

SUB CODE: SS, TD

NO REF SOV: 004

OTHER: 002

Card 3/3

L 21232-66 EWT(1)/EWT(m)/EWP(t) IJP(c) JD/AT

ACC NR: AP6003802 SOURCE CODE: UR/0181/66/008/001/0251/0253

AUTHORS: Anishchenko, R. I.; Nikolayev, A. P.; Men², A. N.

ORG: Institute of Metallurgy, Sverdlovsk (Institut metallurgii) 57
56

TITLE: On the calculation of the diamagnetic susceptibility in B
the statistical model

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 251-253

TOPIC TAGS: diamagnetism, magnetic susceptibility, statistic
physics, crystal lattice structure, ion interaction, paramagnetism,
conduction electron

ABSTRACT: The authors used (the Thomas-Fermi-Dirac (TFD) (statistical
model to calculate the electron density and from it the diamagnetic
susceptibility. It is assumed that for each atom (ion) the distri-
bution of the charge is spherically-symmetrical within a sphere of
radius R_0 , and that the potential satisfies certain relations. The
diamagnetic susceptibility calculations are presented for Cu, Zn,
Ag, Mg, and O and some of their ions. The results show that the

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ACC NR: AP6003802

susceptibility depends not only on the type of the ion but also on the position in the crystal. The experimental values of the susceptibility for pure metals differ from those calculated because of the paramagnetism of the ionic core. Satisfactory agreement with experiment is obtained if it is assumed that the diamagnetic susceptibility of the conduction electrons amounts to about one-third of the paramagnetic susceptibility. The diamagnetic susceptibility of compounds is calculated in the additive approximation and is found to be in fair agreement with the experimental data. Orig. art. has: 5 formulas and 2 tables.

SUB CODE: 20/ SUBM DATE: 23Jul65/ ORIG REF: 005/ OTH REF: 005

Card 2/2 *da*

~~Braude, S.Ya.~~ *MEU, H. V.*
BRAUDE, S.Ya.; MEN', A.V.; LEBEDEVA, O.M.

Experimental study of tuning-fork filters and some aspects of
their theory [in Ukrainian with summaries in Russian and English].
Ukr.fiz.zhur. 2 no.3:274-291 J1-S '57. (MIRA 10:10)

1. Institut radiofiziki ta elektroniki AN URSR.
(Electric filters)

SOV/142-58-4-5/30

AUTHOR: Braude, S.Ya., Men', A.V., Ostrovskiy, I.Ye.

TITLE: A Travelling Wave Antenna with Variable Zero reception Bearings (Antenna begushchey volny s reguliruyemyimi napravleniyami nulevogo priyema)

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

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

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SOV/142-58-4-5/30

A Travelling Wave Antenna with Variable Zero Reception Bearings

dependence of the ground wave and wire axis of the antenna) on the path of the corresponding search for angle α ψ with the help of a phase rotator. This characteristic of the antenna system can be used both for investigating radio disturbance and for direction finding. Regarding (α) , this allows two disturbances from different directions to be suppressed. Clearly, the principle on which the 4-antenna system is based (α) , can also be utilized to suppress 4 disturbances, requiring 2 four-wire antennae in series. The experimental tests of the qualities of this antenna were made on 2- and 4-wire antennae. The author gives technical data for the goniometer and the phase rotator. The latter allows - in the wave range 0.75-1.3 - phase rotations of high frequency oscillations within the range zero-360° with transmission factors of 0.3-0.7. The relation between the rotation angle of the phase rotator rotor and the displacement of the high frequency phases was practically linear. Experience in using a four-wire antenna showed that during

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A Travelling Wave Antenna with Variable Zero Reception Bearings

the day this antenna ensures stable suppression of the two disturbances. At night it is more difficult to locate the direction of a disturbance and even when this was possible, suppression was not stable. An antenna was tested experimentally with one or two adjustable zero points. The qualities described are effective for the reception of "surface" waves and non-effective for space waves. There are 2 graphs, 1 circuit diagram, 1 diagram and 2 references, 2 of which are Soviet and 1 American.

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

SUBMITTED: January 20, 1958

Card 3/3

MEN' A.V.

К. В. Баланцов

Анализ спектров излучения преобразователя частоты

II. СЕКЦИЯ РАСПРОСТРАНЕНИЯ РАДИОВОЛН
Руководитель И. А. Жуков

9 часов
(с 10 до 12 часов)

Совместное заседание с секцией общей радиотехники

А. В. Прохор,
В. Ф. Губский

Некоторые вопросы теории радиотехнического приема при распространении радиоволн УКВ

А. В. Прохор,
Г. М. Сидоров,
И. П. Лещинин

Экспериментальные исследования радиотехнического приема при дальней трансформации радиоволн УКВ

12

(с 12 до 16 часов)

В. А. Водосвист,
И. А. Арсиза

О механизме потерь энергии при распространении волн при дальней трансформации радиоволн ультравысокой частоты

А. В. Шабалин

К вопросу о практических методах измерения при излучении волн ультравысокой частоты и его связь со структурой дифракционных решеток

В. А. Кошар,
Ф. Г. Бак

К теории распространения радиоволн в среде со случайными неоднородностями при дальней трансформации волн

9 часов
(с 16 до 22 часов)

А. В. Мам,
С. И. Брун,

В. И. Герман
Фактурная функция фронта при распространении несферических радиоволн над изогнутой поверхностью

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report submitted for the Confidential Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications Dr. A. S. Popov (VRSKH), Moscow, 6-12 June, 1959

67531

9.9000

SOV/141-2-3-8/26

AUTHORS: Men', A.V., Gorbach, V.I. and Braude, S.Ya.

TITLE: The Effect of the Separation Boundary on the Fluctuations of Radio Waves Propagated in a Non-homogeneous Medium

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 3, pp 388 - 394 (USSR)

ABSTRACT: The authors consider, on the geometrical optics approximation (Ref 8), amplitude and phase fluctuations of radio waves propagated in a turbulent medium in the presence of a plane separation boundary. In this case, the resultant field at the detector e is given by the sum of the direct wave and the wave reflected from the separation boundary (Figure 1). The two fields are given by Eq (1) in which R and θ are the modulus and the phase of the Fresnel reflection coefficient, respectively. The amplitudes and phases of the signals can be written in the form given by Eq (2), where the quantities with subscript "0" are mean values and ΔE_i and $\Delta \Psi_i$ are the fluctuation components of the corresponding quantities. For the case $r_1 \approx r_2$ (Figure 1), Eq (1) may be rewritten

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The Effect of the Separation Boundary on the Fluctuations of Radio Waves Propagated in a Non-homogeneous Medium

in the form given by Eq (5), where the symbols are defined by Eqs (3) and (4). In the case of small fluctuations, one has the approximate relations given by Eqs (6) and (7) and the phase of the resultant signal is given by Eqs (8) and (9). Assuming that the medium is isotropic, and using Eq (9a), one obtains Eq (10), where R_E and R_ψ are the correlation coefficients for amplitude and phase fluctuations. Eq (10) was obtained by neglecting the small quantities given by Eq (11). When $\varphi_1 \approx 2\pi m$, E and ψ are given by Eq (12). In order to carry out numerical calculations, it is assumed, as a first approximation, that the amplitude and phase fluctuations of the separate components e_1 and e_2 of the resultant field (Eq 9a) are the same as in the absence of the boundary. In that case one obtains Eq (14), where l is the scale of irregularities. Using Eqs (15) and (14'), Eq (10) may be written in the form given by Eq (16)

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SOV/141-2-3-8/26

The Effect of the Separation Boundary on the Fluctuations of Radio Waves Propagated in a Non-homogeneous Medium

It is clear from Eq (16) that, under the above assumptions, the amplitude and phase fluctuations in the resultant signal are equal in the distant zone. However, the dependence of the intensity of fluctuations on the wavelength, the parameter l , and the distance r_1 (Figure 1) may be quite different from that in an infinite medium. A comparison of this theory with experiment shows good agreement and hence it is clear that in practice it is necessary to take into account the effect of the boundary on the fluctuations. The above solution was obtained for the plane problem. It would be desirable to obtain a solution for a spherical Earth, particularly in the regions where geometrical optics approximation does not hold. There are 4 figures and 10 references, 7 of which are Soviet and 3 English.

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Khar'kov Inst Radiophysics & Electronics, AS Ukr SSR

67532

9.9000

AUTHOR: Men', A.V.

SOV/141-2-3-9/26

TITLE: On the Correlation of Fluctuations of UHF Radio Waves in the Case of Propagation in a Non-homogeneous Medium

PERIODICAL: Izvestiya vyssikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 3, pp 395 - 399 (USSR)

ABSTRACT: The propagation of waves in a non-homogeneous turbulent medium $m = n(r, t)$ is accompanied by amplitude and phase fluctuations whose statistical properties are characterized both by their intensity and correlation at various points in space. Most of the papers in the literature (Refs 1-7) have been concerned with the determination of the intensity of the fluctuations and their correlation along special directions and along the direction of propagation. The present paper is concerned with the case of an arbitrary disposition of the points under consideration A and B (Figure 1), relative to the source of radiation O. Formulae are derived for the coefficients of longitudinal and transverse correlation of phase and amplitude fluctuations. It is shown that by measuring the

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On the Correlation of Fluctuations of UHF Radio Waves in the Case
of Propagation in a Non-homogeneous Medium

fluctuation correlation coefficient for different orientations of the base relative to the source, it is possible to determine experimentally the "scale of irregularities" which on the average characterise the non-homogeneous medium.

There are 3 figures and 7 references, of which 2 are English and 5 Soviet.

ASSOCIATION: Khar'kovskiy institut radiofiziki i elektroniki
AN UkrSSR (Khar'kov Institute of Radiophysics and
Electronics of the Ac.Sc., Ukrainian SSR)

SUBMITTED: February 21, 1959

Card 2/2

MEN', A.V.; BRAUDE, S. Ya.; GORRACH, V.I.

Experimental investigation of phase fluctuations in centimeter radio waves propagated over water. Izv. vys. ucheb. zav.; radiofiz. 2 no.6:848-857 '59. (MIRA 13:6)

1. Institut radiofiziki i elektroniki AN USSR.
(Microwaves)

7(7), 9(9)

SOV/21-59-7-10/25

AUTHOR: Men', A.V., Braude, S.Ya. Corresponding Member of the AS UkrSSR and Gorbach, V.I.

TITLE: Action of the Boundary on the Fluctuation of Radio Waves in Non-homogeneous Medium

PERIODICAL: Dopovidi Akademii Nauk Ukrain's'koi RSR, 1959, Nr 7, pp 740-744 (UkrSSR)

ABSTRACT: Equations are derived for the fluctuation of amplitudes and phases of radio waves propagated along a plane surface in a non-homogeneous medium. It is shown that the fluctuation increases when the amplitude of the mean field drops to zero. There are 3 diagrams, 11 mathematic formulas and 10 references, 7 of which are Soviet and 3 English

ASSOCIATION: Instytut radiofizyky i elektroniky AN URSR (Institute of Radiophysics and Electronics AS UkrSSR)

SUBMITTED: March 6, 1959

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80121

S/141/59/002/06/002/024

9.9000

AUTHORS: Men', A.V., Braude, S.Ya. and ^{E192/E382}Gorbach, V.I.

TITLE: Experimental Investigation of the Phase Fluctuations of the Centimetre Waves Propagated Over the Sea Surface

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 6, pp 848 - 857 (USSR)

ABSTRACT: The results of an experimental measurement of the fluctuation of the phase fronts during the propagation^o of vertically polarized radio waves^o over the sea surface are reported. The frequency employed was 3 000 Mc/s and the experiments were carried out under various meteorological conditions during July-September and October-December over a sea route having a length of 33 km. The differential method of measurement was employed, in which the fluctuations of the phase differences of the signals received by diversity antennae were employed to determine the intensity and the decorrelation of the phase fluctuations at various points of the wave front. In order to reduce the effect of the boundary refraction, the receiving systems were situated at distances of 2, 5, 10, 30 and 100 m from the

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S/141/59/002/06/002/024

E192/E382

Experimental Investigation of the Phase Fluctuations of the Centimetre Waves Propagated Over the Sea Surface

first (the standard) antenna. Altogether six antennae were employed. The antennae were situated about 4 m above the sea surface. The error in the measurement of the phase-difference fluctuations was less than $\pm 1^\circ$, even if the amplitude of the received signals varied as much as 60 db. The measurement showed that as a rule the deviations φ of the phase differences with respect to the average value obey the normal law for all the transmitter heights h_1 and the distances between the antennae.

The results of the measurements are indicated in Figures 1 to 11. Figure 1 gives the overall distribution of the phase-difference fluctuation for various distances between the receiving antennae. Figure 2 shows the normalized energy spectrum of the "slow" phase fluctuations for various distances between the antennae. Figure 3 shows the dependence of the effective value of the phase fluctuation on the distance between the receiving antennae and the height of the transmitter. The dependence of the

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Experimental Investigation of the Phase Fluctuations of the Centimetre Waves Propagated Over the Sea Surface

effective value of the "slow" and "fast" fluctuations on the distance and height h_1 are illustrated in Figure 4. The characteristic of "slow" phase fluctuations for the case of an anomalous dependence on the height h_1 are shown in Figure 5. The characteristics of the "complex" fluctuations are illustrated in Figure 6. The change of the intensity of the "slow" fluctuations for the July-September period are shown in Figure 7. Figure 8 illustrates the intensity of the phase fluctuations as a function of the wind velocity (for the July-September period). The effect of the sea waves on the intensity of the phase fluctuations is illustrated in Figure 9. The effect of the radio refractions on the phase fluctuations is shown in Figure 10. The dependence of the normalized mean-square fluctuations of the phase fluctuation on the distance between the receiving antennae is illustrated in Figure 11. The authors

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E192/E382

Experimental Investigation of the Phase Fluctuations of the
Centimetre Waves Propagated Over the Sea Surface

express their gratitude to V.F. Shul'ge, O.M. Lebedeva
and B.F. Veber for their participation in carrying out
the measurements.

There are 11 figures and 14 references, 7 of which are
English and 7 Soviet.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR
(Institute of Radio-physics and Electronics of the
Ac.Sc., Ukrainian SSR)

SUBMITTED: June 26, 1959

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9 (9)

AUTHORS:

Men', A. V., Braude, S. Ya.,
Gorbach, V. I.

SOV/20-125-5-18/61

TITLE:

The Fluctuations of the Phase Fronts in the Propagation of
Decimeter-radiowaves Over the Surface of the Sea
(Fluktuatsii fazovykh frontov pri rasprostraneni
desyatisantimetrovykh radiovoln nad poverkhnost'yu morya)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5,
pp 1019-1022 (USSR)

ABSTRACT:

Earlier papers dealing with this subject mainly take the
amplitude fluctuations of radio signals into account. The
phase fluctuations were investigated only in the zone of
direct visibility (mainly over the mainland). The present
paper deals with the least investigated problem, namely the
experimental investigation of phase-front fluctuations over
the sea. Measurements were carried out on the wave $\lambda = 10$ cm
in the case of vertical polarization during the period of from
July to September and October to December along a line of
33 km length leading exclusively over the sea within the
boundaries of the "illuminated zone". the "half-shade" and
"shade". In these investigations the differential method was

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The Fluctuations of the Phase Fronts in the Propagation of Decimeter-radiowaves Over the Surface of the Sea SOV/20-125-5-18/61

used, which (by measurement of the pulsation of the phase difference of the electromotive force in some reception antennas) make determination of the amount and the degree of decorrelation of wave front fluctuations in distributedly arranged measuring points. The arrangement of 6 measuring antennas along a straight line for this purpose is described. In this way it was possible to measure phase fluctuations within the frequency range of from 0.01 to 100 cycles. Besides, provision was made for the possibility of filtering and separate indication of low-frequency (< 0.3 cycles) and high-frequency (> 0.3 cycles) (i.e. of the so-called "slow" and "fast") fluctuations. According to the results obtained by these measurements the fluctuations of phase differences were, with rare exceptions, distributed in accordance with the normal law. However, the fluctuations observed can be coordinated to the steady random processes only with certain reservations, for various cases of phase difference fluctuations of signals were detected. The dependence of fluctuation intensity on the intervals between the measuring points remained qualitatively equal in the case of all

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The Fluctuations of the Phase Fronts in the
Propagation of Decimeter-radiowaves Over the Surface of the Sea

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experiments. The character of the height-dependence of intensity was considerably more manifold, and therefore it also served as a basis for the classification of experiments. All measurements may be subdivided into 4 main groups: 1) Quasisteady standard type of phase-fluctuations. Most experiments belong to this group which is characterized by a monotonous reduction of fluctuation intensity with an increasing height of the transmitter. Such a dependence is found with propagation within a local isotropic troposphere over a plane separating surface. These measurements have a high degree of steadiness and good reproducibility of the intensity and spectral composition of fluctuations. 2) The nonsteady standard type of fluctuations is characterized by a considerable non-steadiness of the fluctuations. 3) The anomalous type of phase-fluctuations: in measurements of this group the height-dependence differs considerably from that of the standard type. 4) The "flaring up" of fluctuations. This state usually did not last longer than a few dozen minutes, after which the usual state of the fluctuations was restored. There are 4 figures and 10 references, 3 of which

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Inst. Radiophysics and Electronics AS USSR

9.1400

82967
S/142/60/003/002/007/022
E192/E382AUTHOR: Men', A.V.TITLE: Wideband Balancing Devices (Baluns)PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy.
Radiotekhnika. 1960. Vol. 5, No. 2, pp 227-232

TEXT: The transition from a non-symmetrical line to a symmetrical one in antenna feeders is accomplished by means of two-conductor or coaxial stubs which are short-circuited at the end; these are shown in Figs. 1. In these systems, a shunting impedance $Z_{\text{ш}} = jW_1 \text{tg } \Theta$, where W_1 is the wave impedance of the stub, is connected in parallel to the load R_H ; Θ is the electrical length of the stub. The input impedance of such a symmetrical system is given by:

$$Z_{\text{BX}} = R_H \left[\frac{1}{1 + \xi^2 \text{ctg}^2 \Theta} + j \frac{\xi \text{ctg } \Theta}{1 + \xi^2 \text{ctg}^2 \Theta} \right] \quad (1)$$

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S/142/60/005/002/007/022

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Wideband Balancing Devices (Baluns)

where:

$$\xi = R_H/W_{LJ} \quad (2) .$$

From Eq. (1), it follows that in order to match the balancing junction with the feeder over a wide frequency band, it is necessary to reduce the parameter ξ . However, this does not permit the elimination of the reactive components. It is possible to compensate this reactance by means of an additional quarter-wave open-ended line section or by short-circuited quarter-wave loops of coaxial lines having a comparatively high wave impedance; these devices are illustrated in Figs. 2. This compensation does not affect the resistive component of the input impedance of the junction, while the input reactance becomes:

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Wideband Balancing Devices (Baluns)

$$X_{BX} = R_H \left(\frac{\xi \operatorname{ctg} \theta}{1 + \xi^2 \operatorname{ctg}^2 \theta} - \beta \cdot \operatorname{ctg} \theta \right) \quad (3)$$

$$\beta = W_K / R_H$$

where W_K and θ_K are the wave impedance and the electrical length of the compensating line. The above formulae are analysed graphically. Figs. 5 show the reactive component as a function of θ for $\xi = 1$ and $\xi = \beta$ for various values of β . It is seen that the perfect compensation of the reactive component for $\xi = 1$ is possible at three points only, while in the case of $\xi = \beta$, the compensation extends over a certain bandwidth. The dependence of the standing-wave ratio on θ for various values of ξ and β is illustrated

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S/142/60/003/002/007/022

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Wideband Balancing Devices (Baluns)

in Figs. 4. It is also pointed out that the balancing junctions can be used as high-frequency signal branches. A system of this type is illustrated in Figs. 6. There are 6 figures and 3 references: 2 Soviet and 1 English.

ASSOCIATION: Uchenyy soviet Instituta radiofiziki i elektroniki AN USSR
(Learned Council of the Institute of Radiophysics and Electronics of the AS USSR)

SUBMITTED: August 17, 1959

Card 4/4

20697

9.6000 (also 1040, 1067, 2604, 2904)

S/120/61/000/001/035/062
E192/E382

AUTHORS: Men', A.V. and Zhuk, I.N.

TITLE: Automatic Measuring Line for Short Radio Waves

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No. 1,
pp. 112 - 116

TEXT: The measuring lines (including automatic ones) are widely used for various measurements at ultrahigh frequencies (Refs. 1, 2) but at metre waves it is necessary to employ bridge methods of measurement. These methods have a number of disadvantages and, consequently, an attempt has been made to devise an automatic measuring system based on a measuring line. The system described can be used at frequencies from 10 - 40 Mc/s. The system employs a multiprobe line from which the signals are taken by means of a switching device. A standard coaxial cable PK-1 (RK-1), having a length $l = 0.35 \lambda_{\max}$ (where $l \sim 10$ m) is used as the line; this is helically wound on a drum having a diameter of 300 mm. A number of probes (30 in all) are situated at equal distances along the line, the probes being coupled rather weakly with
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Automatic Measuring Line

S/120/61/000/001/035/062
E192/E382

the line. The signals from the probes are detected by suitable detector stages. The coupling between the probes and the line is adjusted mechanically as well as electrically, so that all the probes have the same sensitivity. The standing wave pattern is observed by successive switching of the outputs of the detector stages to the input of a measuring amplifier. The signals from the amplifier are applied to an oscillograph indicator. Since the coupling between the wave inside the cable and the probes has to be very low, the amplifiers must have a gain of about 120 db. The switching in the instrument is performed by a multicontact frictionless mechanical switches; the contact pairs close in succession. In order to reduce the interference produced by the switches the wave in the cable was amplitude-modulated. The optimum modulation frequency was dependent on the construction of the switching system. This frequency was 500 - 1 000 c.p.s., the switching frequency being 3 c.p.s. Additional reduction in the interference via the switching device was achieved by providing the amplifier with a low input resistance

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S/120/61/000/001/035/062
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Automatic Measuring Line

(about 7.5 kΩ). Physically, the instrument consists of three units: a high-frequency variable generator; a multiprobe line and an amplifier plus indicator with stabilised supply sources. The system permits a comparatively rapid measurement of the standing-wave ratios and phase. The instrument can also be used for the measurements of impedances and progressive waves, which is of importance in the adjustment of antenna systems and feeder lines. There are 4 figures and 2 Soviet references (one of which is translated from English).

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR
(Institute of Radiophysics and Electronics
of the AS Ukrainian SSR)

SUBMITTED: January 29, 1960

Card 3/3

LH

29:58

S:021/61/000/004/010/013
D213/D'03

3.1730

AUTHORS: Braude, S.Ya., Corresponding Member AS UkrSSR
Men, A.V., Zhuk, I.M., and Babenkov, K. A.

TITLE: Spectrum of discrete source of the Cassiopeia-A
cosmic radio-radiation at frequencies below 30 Mc/s

PERIODICAL: Akademiya nauk Ukrayins koya RSR, Dopovidy, no. 4,
1961, 469 - 472

TEXT: The aim of the article was to provide additional observations of the flux density of radio-sources Cassiopeia-A for the frequencies in the range 1.5 - 61 Mc/s, and to establish that the spectral index equals zero. It is assumed that the absorption of ionized hydrogen HII is the cause of such a change. V.A. Razin (Ref. 2: Radiofizika, 3, 584, 1960) has shown that absorption in hydrogen HII cannot be responsible for such a change in α . The author made his observations from May to September 1960. He used two omnidirectional aeriials, 5 m apart, each containing four rows, each row being 5.7m apart. Each row consists of six oscillators (5.5 m in length) pla-
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25158

S/O21/61/080/004/010/013
D213/B303

Spectrum of discrete source ...

ced from east to west. Each oscillator is a horizontal broadbanded dipole consisting of 18 radii situated on the cylinder with a diameter of 1 m. They were placed 2.7 m over the metallized earth. 160 measurements in the range 19.5 - 41 Mc/s of the flux density of the radio-source Cassiopeia-A were made by interferometric radio telescope. To find the flux density I_k the following formula was used:

$$I_k = \frac{P}{\eta A_e \Delta f}$$

where Δf = the width of the band; P the difference between a) the power of the galactic ground together with the discrete source and b) the power of the galactic ground only, A_e - effective area of the aerial; η - coefficient for the whole radio-telescope (not less than 70%) [Abstractor's note: A_e proved to be practically independent of the wavelength and is approximately equal to 220 m²]. The results of research are given, showing the relation between

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D213/D303

Spectrum of discrete source ...

the flux density and the frequency as calculated by different authors. It reveals that the spectral index approximately equals zero, except for three values $\alpha = 1.6$, 10.2 and 1.1 M.S.U. It is stated that it would be of interest to carry out research on the spectrum of Cassiopeia-A and Cygnus-A in the range 100-1000 Mc. There are 2 figures and 13 references: 6 Soviet-B.I.R. and 7 non-Soviet-B.I.R. The 4 most recent references to the English language publications read as follows: D.R. Whitfield, M.N.R.A.S. 121, 689, 1957; D.R. Whitfield, Paris Symp. on Radio Astronomy, Stanford University Press, 50, 1957; H.W. Wells, Proc. I.R.E., 41, 1953 and A.C.B. Lovell and H.W. Wells, M.N.R.A.S. 121, 111, 1951.

ASSOCIATION: Institut radiofiziki i elektroniki AN BSSR (Institute of Radio Physics and Electronics, A.S. USSR)

SUBMITTED: November 16, 1960

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MEF, A.V.

Approximation method for the analysis of the spectra of non-stationary fluctuations. Izv. vys. ucheb. zav.; radiofiz. 4 no.3:521-533 '61. (MIRA 14:10)

1. Institut radiofiziki i elektroniki AN USSR.
(Microwaves)

31995

S/142/61/004/004/016/018
E192/E382

9,1000

AUTHORS: Men', A.V., Zhuk, I.N. and Dudarev, N.I.

TITLE: Multiprobe measuring line with a contactless switch

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy.
Radiotekhnika, v. 4, no. 4, 1961, 494 - 496

TEXT: The instrument described was designed and built at the IRE AN UkrSSR (Institute of Radio-electronics of the AS UkrSSR) and has an operating bandwidth ranging from 10-40 Mc/s. Constructionally, it is in the form of two separate units: the radial frequency unit and a mechanical system. The mechanical system comprises a multiprobe line, a high-frequency capacitatively switch, a capacitatively current probe and collector and a synchronous drive motor operating at 1 500 r.p.m. The line of the system is in the form of a coaxial cable, type PK-6 (RK-6), having an impedance of 52Ω and a length of 10 m; it is wound helically on a toroid. The electrical unit of the device consists of four circuits: a signal generator; an amplifier; a synchronous time-base and an indicator (output) circuit. The design principle of the instrument is illustrated in Fig. 1.
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E192/E382

Multiprobe measuring line

The signals from the HF generator 1, which has a wide operating range, are applied to the input of the long-line 2, which is terminated by the measured load. Weakly-coupled, screened probes are inserted into the line at equal intervals. The HF oscillations picked-up by the probes via the HF capacitive switch 3, the pick-up and the cylindrical collector 4 (which is driven by the synchronous electric motor) are applied successively to the input of the measuring amplifier 5. The HF signal of the generator is modulated by a low-frequency F_M and the amplifier 7, which is terminated by a nonresonant detector, is tuned to this frequency. During uniform rotation of the switch pulse signals are produced at the output of the amplifier and these are applied to the vertical plates of the cathode-ray indicator tube 6. Simultaneously, a trigger time-base waveform is applied to the horizontal plates of the tube from the amplifier 7; the time-base is triggered by the signal received from the first segment of the switch, which is produced by a special auxiliary generator 8, whose operating

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Multiprobe measuring line

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frequency lies outside the operating range of the instrument. In this way, a screen of the indicator tube shows the distribution of the HF voltage along the line, the picture being in the form of a series of pulses. The envelope of these pulses determines the phase and modulus of the reflection coefficient of the measured load. If the signals appearing at the output of the HF switch are detected directly, the instrument can be used to measure the power standing-wave ratio. On the other hand, if an auxiliary non-modulated HF signal of a large amplitude is applied to the input detector, the voltage standing-wave ratio is measured. The instrument has been tested over a long period of time and it was found extremely useful in the adjustment of various types of antenna systems, matching devices, matching of feeders, input circuits of the receivers, filters, etc. There are 2 figures and 2 references: 1 Soviet-bloc and 1 English - Ref. 2 - Lester Zukerman, Electronics, 1959, 32, no. 12, 64.

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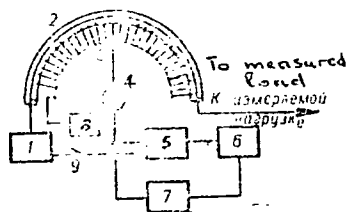
Multiprobe measuring line

31995
S/142/61/004/004/016/018
L192/E382

ASSOCIATION: Ucheny sovet IRE AN UССР (Scientific Council
of the IRE AS UkrSSR)

SUBMITTED: October 15, 1960

Fig. 1:



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MEN', A.V.: ZHUK, I.N.

Automatic measurement line for short waves. Prib. i tekh. eksp. 6
no.1:112-116 Ja-F '61. (MIRA 14:9)

1. Institut radiofiziki i elektroniki AN USSR.
(Radio waves--Measurement) (Pulse techniques (Electronics))

MEN', A.V.

Wide-band "metallic" insulators. Ukr. fiz. zhur. 6 no.2:267-272
Mr-Apr '61. (MIRA 14:6)

1. Institut radiofiziki i elektroniki AN USSR, g. Khar'kov.
(Coaxial cables)
(Electric insulators and insulation)

29308
S/109/61/006/010/005/027
D253/D302

9,9300

AUTHOR: Men', A.V.

TITLE: Time (spectral) characteristics of fluctuations of phase differences arising in the propagation of radio waves in the troposphere

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 10, 1961, 1625 - 1635

TEXT: This is a report of an experimental investigation on 10 cm vertically polarized waves transmitted over a fixed sea path of length 33 km, using two receiving antennas separated by a distance d ranging from 2 to 100 m transverse to the path. An object of the investigation is to obtain more detailed data than presented previously. The spectrum of fluctuations in the range from 0.005 - 0.01 to 200 c/s is studied. The heights of the receiving antennas (h) were about 4 m; the height of the transmitting antenna (h_0) was given different values of 35, 18 and 9 m. The period of the investigation covered summer, autumn and winter, thus including varied

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29308

S/109/61/006/010/005/027
D253/D302

Time (spectral) characteristics ...

meteorological conditions. The records obtained were analyzed by numerical methods; one method involved "discretization" of continuous records and recovery of Fourier components. Another "continuous" method made use of a mechanical correlator. Narrow-band filters with band width $1/T$ were used for the analysis, T being the analysis interval. The spectral distribution observed for the different values of h_0 and for $d = 2$ and 10 m are qualitatively similar. The data obtained indicate a tendency to sharp reduction of spectral density at higher frequencies, evidenced most clearly at higher values of d and h_0 , peak density occurring between 0.1 and 1 c/s. Analysis of a large number of measurements confirmed the essential non-stationariness. While the general intensity of fluctuations was stable to within $0.5 - 1$ db, within narrow frequency intervals there were large variations, of $10 - 20$ db or over. The non-stationariness was also shown by the variations with duration of measurement; with increased duration there was increase of general intensity of fluctuations together with a spectral re-distribution generally towards lower frequencies. Fluctuation intensity varies as T^{-1} , as for "white" noise. The variations of mean spectral density

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Time (spectral) characteristics ...

with frequency and with analysis band width are similar for $d = 2$ and 10 m and for the three values of h_0 ; mean dispersion is $\pm 5 \text{ db}$, increasing in some cases to $\pm 10 \text{ db}$, and over; spectral density decreases rapidly as frequency increases, the relation following an inverse 1.5 law for $d = 2$ and an inverse 2.5 law for $d = 10 \text{ m}$. The results are in good agreement with those given for fluctuations of absolute phase as long as d is sufficiently large compared with l , the characteristic correlation dimension - ($2 - 3 \text{ m}$). Where direct analysis cannot be applied, a statistical method is used. The influence of meteorological conditions was investigated by making measurements of pressure, temperature, wind and humidity at four points along the path; no clear connection could be shown between the spectra of fluctuations and the meteorological conditions. There are 6 figures and 18 references: 14 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: R.B. Muchmore and A.D. Wheelon, PIRE, 1955, 43, 10, 1437; A.P. Deam and B.M. Tannin, PIRE, 1955, 43, 10, 1402; J.W. Herbstrent and M.C. Thompson, PIRE, 1955, 43, 10, 1391; and M.C. Thompson

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Time (spectral) characteristics ... 29308
S/109/61/006/010/000/027
D253/D302
and H.B. Janes, J. Res. Nat. Bonr. Standards, 1959, 63D, 4, 45
SUBMITTED: November 16, 1960

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Card 4/4

87576

9.9000
7.9840

S/053/61/073/001/003/004
B006/B056

AUTHORS: Bass, F. G., Braude, S. Ya., Kaner, E. A., Men', A. V.

TITLE: Fluctuations of Electromagnetic Waves in the Troposphere in the Presence of a Boundary Surface

PERIODICAL: Uspekhi fizicheskikh nauk, 1961, Vol. 73, No. 1, pp. 89-119

TEXT: The present article is a review of theoretical and experimental studies on frequency, phase, and amplitude fluctuations of electromagnetic waves propagating in the troposphere as a result of atmospheric inhomogeneities. The effect of these fluctuations upon wave propagation in an infinite medium was first pointed out by Smolukhovskiy; further investigations by Einstein, Rayleigh and others (Refs. 1 - 14) followed. However, it proved to be of essential importance to the theory of wave propagation to take the existence of a boundary surface (surface of the Earth) into account; this leads to interference effects and other phenomena, and the theory is found to deviate essentially from the theory of fluctuation effects in a free atmosphere. The first part is a review of essential theoretical papers in this field. First, the statistical characteristics

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Fluctuations of Electromagnetic Waves in the
Troposphere in the Presence of a Boundary
Surface

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BC06/B056

of the electromagnetic field above the plane boundary are discussed, after which fluctuations of the electromagnetic field in an infinite space are discussed. In the following, the qualitative effect of a boundary upon the fluctuations of this field are studied, and a mathematical representation of the fluctuation field and of the mean field above the boundary is discussed along with some limiting cases. In the following chapters, amplitude and phase fluctuations in the far zone are discussed, and the correlation of fluctuations above the boundary are dealt with. The second part presents results obtained by experimental investigations of fluctuations. In the course of investigations of ultrasonic wave propagation, frequently the presence of intensive fluctuations of radio signals during their passage through the troposphere was observed. The investigations of these fluctuations, however, are mostly of local character, so that a comparison with the theory presents difficulties. In recent times, investigations have been extended over larger areas (above all oceans), so that more general results are now available. In detail, the authors discuss the method of measuring radiosignal fluctuations, the main characteristics of fluctuations, the various types of phase fluctua

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Fluctuations of Electromagnetic Waves in the
Troposphere in the Presence of a Boundary
Surface

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B006/B056

tions, and the dependence of fluctuations on distance and meteorological conditions. An experimental-theoretical comparison proves the considerable influence exerted by taking the boundary into account: It leads to a quicker increase of fluctuations with growing distance, to a change in the frequency dependence, to the occurrence of fluctuation flashes, to a quick increase of the fluctuation intensity in the minima of the mean field, etc. The problems to be theoretically solved in future consist in taking the curvature of the boundary, the anisotropy, and the instability with time of the medium into account. B. A. Vvedenskiy is mentioned. There are 12 figures and 45 references: 29 Soviet and 16 US.

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7.9622

S/141/62/005/001/007/024
E032/E314

AUTHOR: Men', A.V.

TITLE: On the hypothesis of the transport of "frozen-in" turbulence in the study of fluctuations in non-uniform media

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.5, no. 1, 1962, 70 - 82

TEXT: According to the above hypothesis, first put forward by V.A. Krasil'nikov (Ref. 1 - Izv. AN SSSR, ser. geogr. i geofiz., 13, 33, 1949), the transport of irregularities in the medium by wind has a primary effect on the change in radiowave fluctuations with time. It has been shown that the transport effect can be described with the aid of spatial correlation and autocorrelation functions. It is assumed in such calculations that the properties of the medium remain unaltered during the transport process and it is not always clear whether the assumption is, in fact, justified. In this connection the authors investigated the possibility of the direct

Card 1/2

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B

On the hypothesis

S/141/62/005/001/007/024
E032/E314

determination of the transport effect in the troposphere and estimated the effect of turbulent motion, diffusion, thermal conductivity and convection on the fluctuation characteristics. It is shown that space-time correlation functions of fluctuations can, in most cases, be used to establish the presence of the transport effect among other processes occurring in the medium and to estimate the effect of these processes on the time characteristics of fluctuations. A number of graphs are given to illustrate the application of the correlation functions to these problems. These calculations are of interest in the case of radiowaves propagating along different routes in a nonuniform turbulent medium. There are 4 figures.

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

SUBMITTED: May 26, 1961

Card 2/2

1/2h^h

S/141/62/005/002/010/025
E032/E414

9,9700

AUTHOR: Men', A.V.

TITLE: Study of the space-time correlation functions for
amplitude fluctuations in measurements on intersecting
paths

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika.
v.5, no.2, 1962, 287-306

TEXT: This is a continuation of previous work by this author
(Izv.VUZ. Radiofizika, v.5, 1962, 70). The results obtained in
that paper can be used in conjunction with experimental data to
verify the presence of transport of medium irregularities both in
the case of frozen-in turbulence and in the more general case of
unfrozen turbulence. The experimental verification of the
theoretical results was carried out by studying amplitude
fluctuations of vertically polarized radio waves ($\lambda = 10$ cm) over
sea water along a fixed path of 30 km. The receiving antennas
were at a distance of 2 to 100 m along a line perpendicular to
the direction of transmission. The experimental procedure was as
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S/141/62/005/002/010/025

Study of the space-time correlation ... E032/E414

described by J.W.Herbstreit and M.C.Thompson (Proc. IRE, v.43, 1955, 1391) and the present author (Radiotekhnika i elektronika, no.7, 1962, 232). The measurements were repeated under various meteorological conditions (summer and autumn). Analysis of a large volume of data indicates the presence of a transport effect in most cases. The transport of frozen-in turbulence was detected in 50% of cases. The effect of other processes occurring in the medium (in addition to the latter effect) was detected in 40% of all cases. No clear transport effect was found in about 10% of all cases. However, there is a considerable discrepancy between the experimental results and theoretical predictions. Analysis of the radio data shows that the processes occurring in the medium are non-stationary and the ergodicity condition may not hold. There are 8 figures. 4

Card 2/2

9.9000

S/109/62/007/002/007/024
D256/D303

AUTHOR: Men'. A.V.

TITLE: Correlation between amplitude and phase fluctuations
of radiowaves propagating the troposphere

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 2, 1962,
232 - 238

TEXT: The correlation between the amplitude and phase fluctuations is investigated at a given point in space, for waves propagating above the boundary plane in a non uniform turbulent medium. It is shown that the correlation coefficients of the amplitude and phase fluctuations (i.e. the phase at the point of the receiver as measured against the position of the source) derived by Chernov for an unlimited non-uniform medium are applicable for a more general case of wave propagation in a non-uniform medium limited by a boundary surface. The validity of the theoretical considerations was tested experimentally using vertically polarized 10 cm waves and measuring at the same time the amplitude and phase fluctuations on a fixed

Card 1/2

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B

Correlation between amplitude and ...

S/109/62/007/002/007/024
D256/D303

base of 30 km and at low altitude (35, 18 and 9 m above sea level). The investigation of the wave propagation was extended into the region shielded by the Earth's curvature and as for the direct propagation practically a full decorrelation of the phase and amplitude fluctuations was observed using 100 to 200 sec averaging time. It is pointed out that the obtained results could be of practical interest; by simultaneous application of both phase and amplitude methods the accuracy of measurements can be increased owing to the statistical independence of their errors. There are 3 figures and 12 references: 11 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R.B. Muchmore and A.D. Wheelon, Proc. I.R.E., 1955, 43, 10, 1437. ✓
B

SUBMITTED: December 15, 1960

Card 2/2

35459

S/109/62/007/003/001/029
D256/D302

3.5/33

AUTHOR: Men', A.V.

TITLE: Effect of the transportation of space inhomogeneities
on radiowave fluctuations in a turbulent medium

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 3, 1962,
369 - 374

TEXT: Considering the dependence of radiowave fluctuations on various physical processes taking place in the medium it was proposed to employ the measurements of fluctuations to investigate inhomogeneous media. The measurements of fluctuations could be employed to test the validity of the 'frozen' turbulence approximation, where time dependent (self-correlation) fluctuation functions are expressed by the space correlation functions, and in particular one could examine the fluctuation changes produced by the transportation with the wind of inhomogeneities in the 'frozen' medium. The transportation with the wind of the inhomogeneities was investigated by the author and the experimentally observed properties of the fluctua-

Card 1/3

Effect of the transportation of ...

S/109/62/007/003/001/029
D256/D302

tions are compared with the theoretical predictions. The amplitude fluctuations of 3000 Mc/s radiowaves were measured over the sea surface at 30 km from a transmitter whose antennas were placed at heights of 35, 18 and 9 m. The fluctuations were recorded using simultaneously a pole antenna and one of the antennas placed at a distance of 2, 5, 10, 30 and 100 m from the pole antenna. From the measurements the following function was determined to describe the correlation of the fluctuations

$$K(d, \tau) = \frac{\alpha(y_1, t_1)\alpha(y_2, t_2)}{\alpha^2} \quad (1)$$

where $\alpha(y, t)$ - fluctuation of the wave amplitude or phase; $\tau = t_2 - t_1$ is the time shift; $d = y_1 - y_2$ is the length of the base of the measurement, i.e. the distance between the receiving antennas. The function $K(d, \tau)$ was determined using a mechanical correlator. The fluctuation correlation functions were calculated assuming a Gaussian shape pulsation of the refractive indices showing good

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Effect of the transportation of ...

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D256/D302

agreement with the experimental data. There are 4 figures and 11 references: 8 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: P.G. Bergmann, Phys. Rev., 1946, 70, 7, 486; D. Mintzer, J. Acoust. Soc. America, 1950, 25, 5, 922; 1953, 25, 6, 1107; 1954, 26, 2, 196; R.B. Muchmore, A.D. Wheelon, Proc. I.R.E., 1955, 43, 10, 1437; 1955, 43, 10, 1450.

SUBMITTED: June 15, 1961

X

Card 3/3

BRAUDE, S.Ya.; MEN', A.V.; ZHUK, I.N.; BABENKOV, K.A.

Radio emission spectrum of Cassiopeia-A at frequencies lower
than 30 mc/sec. Astron.zhur. 39 no.1:163-165 Jan-F '62. (MIRA 15:2)

1. Institut radiofiziki i elektroniki AN USSR.
(Stars-Spectra)
(Radio astronomy)

281.53

3,1720

S/033/62/039/003/010/010
E032/E114

AUTHORS: Sodin, L.G., Braude, S.Ya., and Men', A.V.

TITLE: Observations of the spectra of strong bursts of solar radio emission in the 10 - 25 Mc/sec range on July 14 and 18, 1961

PERIODICAL: Astronomicheskii zhurnal, v.39, no.3, 1962, 542-544 (+ 1 plate)

TEXT: These measurements were carried out with a 10-40 Mc/sec spectral analyser, which included a panoramic receiver with a wide-band high-frequency amplifier (10-40 Mc/sec), a heterodyne with frequency conversion in the range 136-166 Mc/sec, an intermediate frequency amplifier (126 Mc/sec), a second frequency converter, a second intermediate frequency amplifier (2 Mc/sec) and various indicating devices. The pass band of the apparatus as a whole was 7 kc/sec. The analyser operates with a multi-dipole antenna consisting of 24 dipoles. The effective area of the antenna was 350-500 m². The width of the main lobe of the polar diagram of the antenna in the E - W plane was about 20°. Owing to the considerable background due to terrestrial radio
Card 1/3

4

Observations of the spectra of ...

S/033/62/039/003/010/010
E032/E114

stations, weak and medium bursts could not be observed. On July 12, 1961, at 10 hours 20 minutes U.T. there was a rapid increase in ionospheric absorption followed by an almost complete fading of all radio signals between 10 and 25 Mc/sec. Immediately after this, the solar radiation flux density rose to about 10^{-19} w/m² cps and the enhanced emission continued until 10 hours 55 minutes. After the termination of the radio burst the enhanced ionospheric absorption continued for a further four hours. Since the reception of the antenna no details of the phenomena are reported. On July 18, 1961, at 9 hours 50 minutes U.T., a region of enhanced radio emission was found to move in from the high-frequency side and had a sharply defined low-frequency cut-off. The rate of drift of the low-frequency cut-off was about 2 Mc/sec/sec so that the spectrum was classified as belonging to type II. At 9 hours 56 minutes the intensity of the burst was found to fall and at 9 hours 58 minutes a second burst appeared from the high-frequency end and persisted until 10 hours 30 mins. It was found that the bursts were simultaneous with large

4

Card 2/3

Observations of the spectra of ... S/033/62/039/003/010/010
EC52/E114

chromospheric flares. The onset of the bursts was simultaneous with the increase in ionospheric absorption of the type reported by K. Sheridan and G. Trent (Observatory, v.81, 921, 1961, 71). This phenomenon may be due to an increase in the ultraviolet solar radiation. In the steady-state stage, the emission consisted of a number of separate bursts which drifted at random at the rate of about 1 Mc/sec/sec towards both low and high frequencies. The width of each burst lay between 0.5 and 5 Mc/sec.

There are 2 figures.

SUBMITTED: December 25, 1961

4

Card 3/3

ACCESSION NR: AP4007177

S/0141/63/006/005/0897/0903

AUTHOR: Pazelyan, L. L.; Braude, S. Ya.; Bruk, Yu. M.; Zhuk, I. N.;
Men¹, A. V.; Ryabov, B. P.; Sodin, L. G.; Shary*kin, N. K.

TITLE: Radiation spectra of discrete radio sources Cassiopeia A,
Cygnus A, Taurus A, and Virgo A at the 12.5 - 40 megacycle frequen-
cies

SOURCE: IVUZ. Radiofizika, v. 6, no. 5, 1963, 897-903

TOPIC TAGS: radio emission, radio emission spectra, Cassiopeia A
radio emission, Cygnus A radio emission, Taurus A radio emission,
Virgo A radio emission, radio source spectrum, discrete radio source,
radio spectroscopy, radio astronomy, radio frequency spectrum, Cassi-
opeia A, Cygnus A, Taurus A, Virgo A, extragalactic radiation, radia-
tion absorption

ABSTRACT: To check on the hypothesis that a sharp change, manifest
in a decrease in intensity with increasing wavelength, occurs in the
radio emission spectrum of discrete radioastronomical sources below

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ACCESSION NR: AP4007177

40 Mc, the fluxes of Cassiopeia-A, Cygnus-A, Taurus-A, and Virgo-A were measured in the 12.5--40-Mc range, for which no reliable absolute values are known presently. To improve the accuracy, absolute measurements were made only for the most powerful source, Cassiopeia-A, using seven sets of radio interferometers with half-wave dipole antennas. The other fluxes were determined relative to this source. The 'collapse' of the spectrum at high frequencies was noted for all but Taurus-A. The emission measure and the ratio of the normal component of the magnetic field to the number of electrons per cubic centimeter of the discrete sources calculated from these measurements are 3.5, 3.5, 5.0 and 700, 700, 120 for Cassiopeia-A, Cygnus-A, and Virgo-A. It is assumed that the decrease in the spectrum is due either to absorption in H_{11} clouds or by a decrease of the refractive index in the source. Orig. art. has: 2 figures, 4 formulas, and 4 tables.

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

Card 2/3

BASS, F.G.; MEN', A.V.

Spatial correlation of the fluctuations of waves propagating
in an infinite turbulent medium. Akust. zhur. 9 no.3:283-290
'63. (MIRA 16:8)

1. Institut radiofiziki i elektroniki AN UkrSSR, Khar'kov.
(Sound waves)

S/108/63/018/002/004/010
D413/D308

AUTHOR: Men', A. V., Member of the Society (see Association)
TITLE: The autocorrelation characteristics of phase-difference
fluctuations
PERIODICAL: Radiotekhnika, v. 18, no. 2, 1963, 27-36

TEXT: Previous studies of fluctuation in waves propagated by turbulent media have been concerned with determining the space and time characteristics of the fluctuating field, and have investigated the fluctuation of absolute phases and amplitudes in greatest detail. The fluctuation of phase-difference between signals received at two points is also of interest in various systems. The author considers the derivation of autocorrelation characteristics for this fluctuation, dealing with both parallel and intersecting paths. For the case where the medium is described by a Gaussian correlation function, he determines the autocorrelation coefficients taking into account the transfer of both 'frozen' and 'unfrozen' turbulences. Results calculated for several particular cases are shown

Card 1/2

S/108/63/018/002/004/010

The autocorrelation characteristics ... D413/D308

graphically, and appear to be in qualitative agreement with experiment. There are 4 figures.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A. S. Popova (Scientific and Technical Society of Radio Engineering and Electrical Communications imeni A. S. Popov) / Abstracter's note: Name of Association taken from first page of journal_/_

SUBMITTED: January 5, 1962 (initially)
April 13, 1962 (after revision)

Card 2/2

L 11921-63

BDS

ACCESSION NR: AP3004088

S/0108/63/018/007/0025/0033

AUTHOR: Men^t, A. V. (Member of the Society, see Association)

47

TITLE: Spectral characteristics of fluctuations of phase difference

SOURCE: Radiotekhnika, v. 18, no. 7, 1963, 25-33

TOPIC TAGS: phase-difference fluctuation

ABSTRACT: This is a continuation of this author's work (Radiotekhnika, v. 18, no. 2, 1963). Spectral characteristics of phase (or amplitude) difference fluctuations of the waves propagating in a turbulent medium are determined mathematically. It is pointed out that these characteristics have some peculiarities as compared with similar characteristics for the fluctuations of absolute phase (or amplitude). Specifically, in large-base measurements, the phase-difference fluctuation spectrum is oscillating for all types of transmission path. The above theory was verified by and found to be in good agreement with experiments on a

Card 1/2

L 14921-63

ACCESSION NR: AP3004088

33-km (sea-surface) path at 10-cm wavelength. "In conclusion, the author wishes to thank L. G. Sodin and I. L. Verbitskiy for their part in discussing the results." Orig. art.has: 4 figures and 14 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 05Jan62

DATE ACQ: 05Aug63

ENCL: 00

SUB CODE: CO

NO REF SOV: 009

OTHER: 001

Card 2/2

ACCESSION NR: AP4037397

S/0106/64/000/p05/0014/0021

AUTHOR: Bazelyan, L. L.; Bruk, Yu. M.; Zhuk, I. N.; Men', A. V.; Shary*kin, N. K.

TITLE: Wide-band highly directional antenna for decameter wavelengths

SOURCE: Elektrosvyaz', no, 5, 1964, 14-21

TOPIC TAGS: antenna, directional antenna, highly directional antenna, wide band antenna, wide band highly directional antenna, beam-width electric control, half wave dipole, shunt dipole, cylindrical dipole, array element, antenna element, antenna efficiency, antenna gain

ABSTRACT: A receiving antenna intended for radioastronomical investigation of discrete sources and cosmic background in the 20-40-mc range is described. The antenna was designed on the principle that the electric control of the beam at large scanning angles can be realized by phasing low-directional discrete elements, whose large

Card 1/3

54"

ACCESSION NR: AP4037397

number insures the required degree of resolution. The antenna array, located along the W-E line, consists of 128 half-wave wide-band cylindrical dipoles arranged in 4 rows, each carrying 32 dipoles. The cylinders, formed by 18 elements of 8 mm each, are 1 m in diameter. The distance between array-element centers along and across the array is 5.5 m. The array elements are suspended 3 m above the ground. The signal excited in each element is transmitted to the output of each row through a matching balancer, three adders, and three coaxial cables with a total length of 101 m. The toroidal ferrite transformers used as adders made it possible in the 10- to 60-mc range to achieve a VSWR of 1.05 or better at a rated load with an efficiency of 95 to 97% or better. The electric control of the beam, which is accomplished by inserting delay cables between the adder and the output of each row, is carried out only in the N-S plane. The radiation pattern and gain of the antenna were determined by the simultaneous recording of signals from Cassiopea-A received with the antenna described and a standard interferometer consisting of two half-wave dipoles and subsequent comparison of the

Card 2/3

ACCESSION NR: AP4037397

results. At the same time the effective area (gain) was calculated by computer. Good agreement of experimental and theoretical data indicates that the antenna gain calculated on the basis of the gain found experimentally for the elevation of 81° will be close to actual, at least for the case of higher elevations. Orig. art. has: 11 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 04Mar63

DATE ACQ: 09Jun64

ENCL: 00

SUB CODE: EO

NO REF SOV: 004

OTHER: 002

Card 3/3

ACCESSION NR: AP4033119

S/0120/64/000/002/0096/0100

AUTHOR: Bruk, Yu. M.; Men', A. V.; Bazelyan, L. L.

TITLE: Measuring the parameters of multiple-unit antennas

SOURCE: Pribory* i tekhnika eksperimenta, no. 2, 1964, 96-100

TOPIC TAGS: antenna, multiple unit antenna, electrically steerable multiple unit antenna, musa, radioastronomic antenna, antenna parameter measurement, musa parameter measurement

ABSTRACT: A method of measuring the parameters of a multiple-unit electrically steerable antenna (musa) under operating conditions without introducing noticeable distortion into its circuit is considered. A low-loss measuring line is connected between the output point being measured and the load (radiators), and the values of loop and node voltages are noted. Then, a calibrated attenuator is connected in place of the multipole being tested, and the attenuator is adjusted until the same values of the loop and node voltages are attained. Simple formulas yield the values of the attenuation and efficiency of the antenna; the impedance,

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ACCESSION NR: AP4033119

radiation power, currents, etc., can also be measured by this method. The errors involved are theoretically assessed. The method was used in practice to measure the efficiency of a 128-unit electrically steerable radioastronomic antenna described by L. L. Bazelyan, et al. (Elektrosvyaz', 1964, no. 4). A 52-ohm multiprobe automatic measuring line was used. Estimated and measured efficiency curves are shown for frequencies within 20-40 mc. "In conclusion, the authors wish to thank P. A. Mel'yanovskiy and V. V. Krymkin for their help in carrying out the experiments." Orig. art. has: 4 figures and 13 formulas.

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

SUBMITTED: 24May63

ATD PRESS: 3076

ENCL: 00

SUB CODE: EC

NO REF SOV: 005

OTHER: 002

Card 2/2

L 19692-65 FBD/FSF(h)/EWT(1)/EWG(v)/BEC-4/BEC(t) Pe-5/Pae-2/P1-4
ESD/ESD/AFWL/ASD(a)-5/AFETR/RAEM(a)/ESD(dp)/ESD(gs)/ESD(t) GW/WS

ACCESSION NR: AP5000611

S/0021/64/000/011/1464/1468

AUTHOR: Bazelyan, L. L.; Braude, S. Ya. (Corresponding member AN
UkrSSR); Vaysberg, V. V.; Krymkin, V. V.; Men', A. V.; Sodin, L. G.

TITLE: Radio emission spectral density of some discrete sources at
frequencies of 20—40 Mc

SOURCE: AN UkrRSR. Dopovidi, no. 11, 1964, 1464-1468

TOPIC TAGS: radio astronomy, radio telescope, radio emission

ABSTRACT: Radiation densities of eight discrete sources of cosmic radiation in the 20—40-Mc band were measured with a wide-band radio telescope. The measurements were carried out from October 1963 through February 1964. The radio telescope consisted of two electrically controlled multielement antenna arrays (each with 128 radiators) spaced 470 m apart along an E-W line. The antennas formed the elements of a T-shaped interferometer system. The width of the radiation pattern of each antenna was 4.6° at 20 Mc and 2.3° at 40 Mc; the interference interval at these frequencies was 1.8° and 0.9° , respectively. Phase-modulated radiometers (i-f bandwidths, 10—15 kc) were used for

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L 19692-65

ACCESSION NR: AP5000611

signal reception. Radiation from each source was recorded simultaneously at 20, 25, 31, and 38.5 Mc. Recorder time constant was nearly 30 sec. Cassiopeia-A was used as a standard source of radiation. No discontinuity of the spectrum was noted for sources situated within the angles $151^\circ < \alpha_{II} < 200^\circ$, and $-13^\circ < \beta_{II} < 60^\circ$. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Instytut radiofizyki i elektroniki AN URSSR (Institute of Radio Physics and Electronics, AN UkrSSR)

SUBMITTED: 27Mar64

ENCL: 00

SUB CODE: AA, EC

NO REF SOV: 004

OTHER: 006

ATD PRESS: 3161

Card 2/2

ACCESSION NR: AP4039721

S/0141/64/007/002/0215/0224

AUTHOR: Bazelyan, L. L.; Bruk, Yu. M.; Zhuk, I. N.; Men', A. V.; Sodin, L. G.; Shary*kin, N. K.

TITLE: Wide-band radiointerferometer with electric control of antenna pattern

SOURCE: IVUZ. Radiofizika, v. 7, no. 2, 1964, 215-224

TOPIC TAGS: antenna radiation pattern, antenna switching, radio astronomy, radio interferometer, radio emission

ABSTRACT: A broadband (20 -- 40 Mcs) radio interferometer with a 470 meter base, oriented east and west, is described. The interferometer is intended for the investigation of radio emission from discrete sources and the cosmic background in the northern hemisphere by directivity-pattern scanning in a + 90° elevation sector and by using the earth's rotation. The interferometer consists of 220 8-dipole plane arrays with remote digital control of the directivity pattern in the meridional plane. The description covers the principles underlying the control of the beam and the summation of the signals, the arrangement of the antenna, the control elements, the antenna directivity pattern, the antenna effective area, and the antenna gain. The large base facilitates separation of the source radio

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ACCESSION NR: AP4039721

emission from the cosmic background. The two interferometer antennas are different and can be used separately. The eastern one can be used as a transit instrument. By using the western antenna with beam scanning, it is possible to make two or three records of a source passing through the azimuthal pattern, with intervals of 10 -- 20 minutes. The resolution of the interference diagram is $1.6 - 0.8^\circ$ in direct ascension and $4^\circ - 2^\circ$ in declination, at frequencies 20 -- 40 Mcs. It is recommended that the antennas be used separately for the radio emission of the cosmic background, in which case the resolution is $4 - 2^\circ$ in ascension and $34 - 17^\circ$ in declination for the eastern antenna, and $34 - 17^\circ$ in ascension and $4 - 2^\circ$ in declination for the western antenna (both at 20 -- 40 Mcs). Some precautions necessary in the operation of the interferometer are mentioned. Orig. art. has: 9 figures and 2 tables.

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR (Institute of Radio-physics and Electronics, AN UkrSSR)

SUBMITTED: 28Apr63

ENCL: 02

SUB CODE: AA, EC

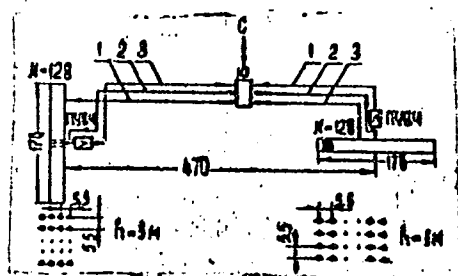
NR REF SOV: 001

OTHER: 003

Card 2/4

ACCESSION NR: AP4039721

ENCLOSURE: 01



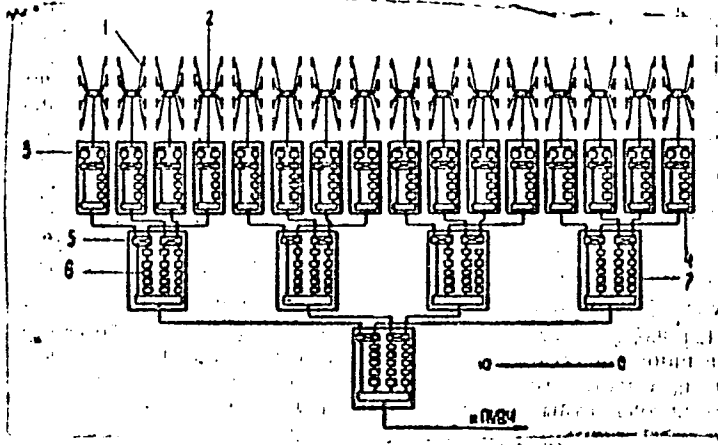
Block diagram of the interferometer
1 - signal, 2 - calibration, 3 -
control of directivity pattern

НУВ4 - UHF receiver
C - north
Ю - south

Card 3/4

ACCESSION NR: AP4039721

ENCLOSURE: 02



Western interferometer antenna

- 1 - dipole, 2 - underground collector, 3 - junction for four elements, 5 - quadrant switch, 6 - binary switch cell, 7 - phase shifter

Card

4/4

BAZELYAN, L.L.; BRUK, Yu.M.; ZHUK, I.N.; MEIN, A.V.; SHARYKIN, N.K.

Wideband highly directional decimeter wave antenna. Elektro-
svyaz' 18 no.5:14-21 My '64 (MIRA 17:2)

BAZELYAN, L.L.; BRAUDE, S.Ya.; KRYMKIN, V.V.; MEN', A.V.; SODIN, L.G.
[Sodin, L.H.]

Frequency spectra of discrete sources in the decimeter radio wave
band. Dop. AN UKSR no.5:580-583 '65.

(MIRA 18:5)

1. Institut radiofiziki i elektroniki AN UkrSSR. 2. Chlen-korres-
pondent AN UkrSSR (for Braude).

L 39395-65 FBD/EWT(1)/ENG(v)/RSC-4/RSC(t) Pe-5/Pae-2/PI-4 CR/RS-4
ACCESSION NR: AP5015584 UR/0033/65/642/003/0618/0628
523.164.42

AUTHOR: Bazelyan, L. L.; Braude, S. Ya.; Veysberg, V. V.; Krymkin, V. V.;
Men', A. V.; Sodin, L. G. 411
40
B

TITLE: Investigation of the spectra of discrete cosmic radio emission sources at frequencies below 40 Mc

SOURCE: Astronomicheskii zhurnal, v. 42, no. 3, 1965, 618-628

TOPIC TAGS: cosmic radio emission, radio emission source, radio emission measurement, radio telescope

ABSTRACT: The spectra of 14 discrete sources (in the 20--40-Mc range) were investigated at the Radio Astronomy Observatory of the Institute of Radio Physics and Electronics, Academy of Sciences UkrSSR, from October 1963 through July 1964. All observations were made between 2200 and 0800 hours local time. The radio telescope employed an interferometer, and its antenna system consisted of two wideband multielement electrically phased arrays, each measuring 176 x 17 m and spaced 470 m apart on an east-west line. Each array consisted of 178 horizontal dipoles. Pattern width was 4° for 20 Mc and 2° for 40 Mc. Lobe width of the interference

Card 1/4

L 59385-65

ACCESSION NR: AP5015584

pattern was 1.6° for 20 Mc and 0.8° for 40 Mc. Beam declination along the meridian was regulated by remote-control delay lines. The telescope radiometers were phase modulated by phase shifting the signal of one of the antennas through 180° at a frequency of 60 cps. The signals of each antenna were amplified by hf preamplifiers. The passband of the preamplifiers and of the phase shifter was about 20 Mc. The adjustable passbands of the four radiometers made it possible to record each source at four frequencies simultaneously (20, 25, 30-31, and 38.5 Mc). The recordings were calibrated with a standard-signal generator fed through a calibrated attenuator and a splitter to the preamplifier inputs. All the sources were measured by comparing them with the standard flux of source 3C 461 (Cas-A), which at 20 Mc is 450×10^{-24} w/m² cps. Flux densities ($5 \cdot 10^{24}$ w/Mc) and the mean probable errors ($\Delta\%$) for fourteen of the sources are listed in Table 1 of the Enclosure. On the basis of these and previous measurements of Cas-A, Signus-A, Virgo-A, and Taurus-A, the spectra of 18 discrete sources can be divided into two classes: spectra with a constant spectral index from 20 to 1400-3200 Mc (13 sources) and spectra with a spectral index which is a function of the frequency (5 sources). Orig. art. has: 3 figures and 2 tables. [DW]

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk UkrSSR (Institute of Radio Physics and Electronics, Academy of Sciences, UkrSSR)

Card 2/4

L 58385-65

ACCESSION NR: AP5015584

SUBMITTED: 13Sep64

ENCL: 01

SUB CODE: AA, EC

NO REF SOV: 016

OTHER: 015

ATD PRESS: 4046

Card 3/4

L 64758-65 REC-1/ENG(v)/EWT(1)/FBD GW/WS-1

ACCESSION NR: AP5013821

UR/0021/65/000/005/0580/0583

AUTHOR: Bazelyan, L. L.; Braude, S. Ya. (Corresponding member AN UkrSSR); Krym-
kin, V. V.; Men', A. V.; Sodin, L. H.⁵⁵ (Sodin, L. G.)

TITLE: The frequency spectra of some discrete sources in the decameter radio band

SOURCE: AN UkrSSR. Dopovidi, no. 5, 1965, 580-583

TOPIC TAGS: radio astronomy, radio telescope, cosmic radio source, galactic radiation

ABSTRACT: The results are presented of measurements of the radiation flux of six discrete sources in the 20--40 Mcs band. The measurements were obtained at the radioastronomical observatory of Institut radiofiziki i elektroniki (Institute of Radio Physics and Electronics) AN UkrSSR using a T-like band telescope operating as a meridional instrument. The telescope was described in detail earlier (Izv. VUZov Radiofizika v. 7, 215, 1964). The measurements were compared with the flux of Cassiopea-A which was chosen as the standard. The spectra are found to be linear in the whole frequency range and can thus be classified as being of the spectral type B. It is established that the sources bounded by the galactic coordinates $21^\circ < l_{II} < 89^\circ$, $-13^\circ < b_{II} < 60^\circ$ exhibit no turning points of the frequency spectrum in the given range. Orig. art. has: 6 figures and 2 tables.

Card 1/2

L 64758-65

ACCESSION NR: AP5013821

2

ASSOCIATION: Instytut radiofizyki i elektroniki AN URSR [Institut radiofiziki i elektroniki AN UkrSSR] (Institute of Radio Physics and Electronics, AN UkrSSR)

SUBMITTED: 15Aug64

ENCL: 00

SUB CODE: AA, EC 55

NR REF SOV: 003

OTHER: 004

Card ⁷⁷⁴ 2/2

I. 08929-67 PWT(1) OW/WJ-2

ACC NR: AR6025344

SOURCE CODE: UR/0269/66/000/004/0054/0054

AUTHOR: Bazelyan, L. L.; Braude, S. Ya.; Men', A. V.

53

TITLE: Spectrum of discrete source 3C200 in the dekameter and meter range

SOURCE: Ref. zh. Astronomiya, Abs. 4.51.422

REF SOURCE: Astron. tsirkulyar, no. 328, maya 5, 1965

TOPIC TAGS: radio astronomy, ~~stellar radiation source 3C200~~, radiotelescope, cosmic

radio source, signal frequency
ABSTRACT: Results of flow energy density measurements of the radiosource 3C200 on the 38, 31, 25 and 20 megacycles frequencies are communicated. Observations were made with the aid of the large radiotelescope IRE AN UkSSR in Kharkov. On the 38 and 31 mc frequencies, the flow density turned out to be about $200 \cdot 10^{-26} \text{ w/m}^2 \cdot (\text{cycle/sec})$. On two other frequencies the source could not be detected. An upper estimate of its density was made ($\leq 150 \cdot 10^{-26} \text{ w/m}^2 \cdot (\text{cycle/sec})$ on the 20 mc frequency). Comparison with other observations (catalogs 3C, 3C revised and 2C) permitted to determine the spectral index of the microwave source in the range of 178-38 mc, which was found to be close to 2. On lower frequencies, a gap is observed in the spectrum. Necessity for additional detailed measurements of the 3C200 source in the 20-200 mc range is noted. [Translation of abstract].

SUB CODE: 03

Card 1/1 egk

UDC 523.164.4

BAZELYAN, L.L.; BRAUDE, S.Ya.; VAYSBERG, V.V.; KRYMKIN, V.V.; MEN', A.V.;
SODIN, L.G.

Density of radio emission fluxes from certain discrete sources
in the 20-40 mc. range. Dop. AN URSR no.11:1464-1468 '64.

(MIRA 18:1)

1. Institut radiofiziki i elektroniki AN UkrSSR. 2. Chlen-
korrespondent AN UkrSSR (for Braude).

BATALIN, G.I.; MEN', E.N.

Determination of hydrogen content in steel during the process of melting. Trudy Inst.chern.met.AN URSR 7:33-38 '53. (MIRA 8:5)
(Steel--Metallurgy) (Iron--Hydrogen content)

MEN', Grigoriy Yakovlevich; KUZNETSOV, N.A., red.; GONCHAROVA, Ye.A.,
tekhn. red.

[On a sunny highway; concise manual and guidebook for the
Moscow-Yalta automobile route] Na solnechnoi magistrali; krat-
kii spravochnik-putevoditel' po avtotrasse Moskva-Ialta.
Belgorod, Belgorodskoe knizhnoe izd-vo, 1962. 114 p.

(MIRA 15:9)

(Automobiles--Road guides)

I 20657-66 EWP(t) IJP(a) JD

ACC NR: AP5028798

SOURCE CODE: CZ/0009/65/000/009/0537/0540

AUTHOR: Jindra, J.—Yindra, I.; Husek, M.—Gushek, M.; Men, J.—Men, Ya. 49
BORG: Research Institute for Single Crystals, Turnov (Vyzkumny ustav monokrystalu)TITLE: Preparation of high-purity sulfur 21

SOURCE: Chemicky prumysl, no. 9, 1965, 537-540

TOPIC TAGS: sulfur, crystallization, distillation, sublimation, oxidation, thermal decomposition, zone melting

ABSTRACT: The existing methods of high sulfur purification were analyzed and the efficiency of the following methods was tested: crystallization from carbon disulfide, distillation, fractional sublimation in vacuo, zone melting, chemical oxidation by an acid mixture, and thermal decomposition of impurities. Chemical oxidation by $H_2SO_4-HNO_3$ at elevated temperature followed by distillation and extraction with redistilled water was found to be the most suitable method. The paper is dedicated to Professor Dr. Eng. Frantisek Petr on the occasion of his 60th birthday. Orig. art. has: 2 figures and 1 table. [Based on author's abstract.]

SUB CODE: 07, 11, 20/ SUBM DATE: 29Apr65/ ORIG REF: 003/ OTH REF: 010

Card 1/1 BK

UDC: 661.2

SMIRNOVA, L.A.; SERGEYEVA, T.I.; MEN', M.L.; BONDARYUK, A.S.; KAGARLITSKAYA,
E.A.; BUBOVIK, V.E.; YAROSH, A.P.; ZELENSKAYA, G.E.

In memory of T.M. Stepanov. *Khirurgiia* no.4:91-92 Ap '53. (MLRA 6:6)
(Stepanov, T.M., 1880-1951)

MEMO, H. YA.

PA 66/19768

Issue/Medicine - Tuberculosis, Skin Mar/Apr 49
Vitamin D₂

"Treatment of Tuberculosis of the Skin With
Vitamin D₂," M. Ye. Men', M. G. Podgayetskaya,
Clinic of Skin Tuberculosis, Ukrainian Sci Res
Tuberculosis Inst, 5 1/2 pp

"Prob Tuber" No 2

Vitamin D₂ is a highly effective medical treatment
which heals a great number of Lupus vulgaris cases,
as indicated by clinical microscope examinations.
Serious secondary symptoms, caused by a prolonged
injection of large Vitamin D₂ doses, necessitate
thorough observation of patient during treatment

period. Following moments were noticed in the
process of treatments: (1) reactive symptoms
originating in the tubercular nidus of skin,
regional lymphatic glands and lungs; (2)
microscopic changes in the affected nidus whose
character and intensity indicate a certain
stimulation of the tissue-joined elements.
Gives table of treatment result and time with
Vitamin D₂.

66/19768