SOV/142-2-1-13/22

9(3)
AUTHORS: Braude, S.Ya., and Komarov, N.N.

TITLE: Generalized Curves of the Fresnel Reflection Coefficients for Horizontal and Vertical Polarizations (Obobshchenyye krivyye koeffitsiyentov otrazheniya Frenelya dlya gorizontal'noy i vertikal'noy polyarizatsiy)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - radiotekhnika, 1959, Vol 2, Nr 1, pp 100-106 (USSR)

BSTRACT: For calculating some wave propagation problems it will be necessary to determine the Fresnel reflection coefficient f_h for the horizontal and f_v for the vertical polarization. This is done by known formulae [Ref 1,2]. However, determining the modulus and the phase of the Fresnel coefficients from these formulae is very time-consuming, especially when the permittivity ε is a complex number. For this reason various graphs have been produced which are used for engineering calculations, but they are not applicable in all cases. G.P. Ohman, IRE [Ref 3]

Card 1/3

Generalized Curves of the Fresnel Reflection Coefficients for Horizontal and Vertical Polarizations

obtained a generalized expression for the Fresnel factor f_v and produced generalized graphs for f_v and φ_v. Since these curves cannot be used for the horizontal polarization, the authors investigated another method for calculating generalized graphs for determining the Fresnel coefficient for vertical and horizontal polarization. Based on these formulae, they plotted generalized curves which permit determining the modulus and the phase of the reflection coefficients without performing any calculations. These graphs are shown by figure 1 thru 6. The authors based their calculations on the relation [illegible] which is observed during the propagation of radio waves on the surface of a section, whereby they obtained the following formulae for the horizontal and vertical polarization:

Generalized Curves of the Fresnel Reflection Coefficients for Horizontal and Vertical Polarizations

$$F_h = -1 + \frac{2 \sin \psi}{1+} \qquad F_v = 1 - \frac{2}{1+, \sin \psi}$$

whereby ψ is the angle of slide. Assuming that $F = C_1 + iC_2$, they determine C_1 and C_2 and present the following formulae for calculating the modulus $F = |F|$ and the phase ψ:

$$C_4 = \frac{4(C_3-1)}{1 - |F|^2} - C_3^2 \; ; \; C_3 = 1 + 2C_4 \operatorname{ctg} \psi + 1 - C_4^2 .$$

There are 6 graphs and 3 references, 1 of which is American and 2 Soviet.

Card 3/4

Sci Council Inst. of Radio Physics & Electronics, AS UkrSSR

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

Card1/4

4

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 $\varphi_1 \simeq 2\pi n$, 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).

Card 2/4

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.

67531

SOV/141-2-3-8/26

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

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

SUBMITTED: March 5, 1959

Card 4/4

9.9000

S/141/59/002/05/003/026
E192/E382

AUTHOR: Braude, S.Ya.

TITLE: The Fresnel Coefficients of a Rough Surface

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol. 2, Nr 5, pp 691 - 696 (USSR)

ABSTRACT: It has been shown by Ye.L. Feynberg (Ref 3) that the Fresnel coefficients for the vertical (f) and the horizontal (F) polarisations of the waves reflected from a rough surface are given by:

$$f = \frac{\bar{\varepsilon}_{\vartheta\varphi\varphi}\sin\vartheta - \sqrt{\bar{\varepsilon}_{\vartheta\varphi\varphi} - \cos^2\vartheta}}{\bar{\varepsilon}_{\vartheta\varphi\varphi}\sin\vartheta + \sqrt{\bar{\varepsilon}_{\vartheta\varphi\varphi} - \cos^2\vartheta}} \approx \frac{\sin\vartheta - \sqrt{\bar{\eta}_{\vartheta\varphi\varphi}}}{\sin\vartheta + \sqrt{\bar{\eta}_{\vartheta\varphi\varphi}}} \quad (1)$$

and

Card1/5

The Fresnel Coefficients of a Rough Surface

$$F = \frac{\sin\Theta - \sqrt{\bar{\varepsilon}_{3\phi\phi} - \cos^2\Theta}}{\sin\Theta + \sqrt{\bar{\varepsilon}_{3\phi\phi} - \cos^2\Theta}} \simeq \frac{\sqrt{\bar{\eta}_{3\phi\phi}}\sin\Theta - 1}{\sqrt{\bar{\eta}_{3\phi\phi}}\sin\Theta + 1} \qquad (2) .$$

The effective value of $\eta = 1/\sqrt{\varepsilon}$ can be determined from Eq (3). In Eqs (1) and (2) it is assumed that $\sqrt{\eta_{3\phi\phi}} \ll 1$. The symbols in Eqs (1) and (3) are as follows. The quantity ξ_o depends on the form of the surface, i.e. $\xi = \xi_o Z(x/l, y/l)$, where l is the characteristic parameter over which ξ changes by the order of its average value; $q_o = 2\pi/l$, $k = 2\pi/\lambda$, while A_1 and A_2 are positive numbers near to unity, which are dependent on the actual profile

Card2/5

The Fresnel Coefficients of a Rough Surface

of the reflecting surface. The theory of Feynberg (Ref 3) is true if the conditions of Eq (4) are fulfilled. By introducing the roughness parameter γ, as defined by Eq (5), it is found that the theory is valid for $\gamma^2 \ll 1$. Eq (3) can now be written as Eq (3a). Further quantities are defined by Eqs (6) and (7), where ε_2 and σ_2 represent the permittivity and conductivity of the surface (the soil). By using the notation of Eqs (6) and (7), it is found from Eqs (1) and (2) that the moduli of the Fresnel coefficients are expressed by Eqs (8). On the other hand, the phases of the coefficients are defined by Eqs (9), where subscripts 'B' refer to vertical polarisation, while subscripts 'Г' refer to horizontal polarisation. From Eqs (8) it is possible to determine the maxima and minima of the quantities $|f|$ and $|F|$. The maximum of $|f|$ is obtained at $\Theta = 0$, while the minimum occurs at Θ_B

Card3/5

The Fresnel Coefficients of a Rough Surface

which is defined by Eqs (12) and (13). For the horizontal polarisation the minimum is defined by Eq (12a). If $\sigma_2 \to \infty$, Eqs (12) and (12a) can be expressed as Eqs (14) and (15), where $\alpha = \gamma^2 A_2$ and $\beta = -\gamma^2 A_1$. The maximum and minimum values of $|f|$ are therefore expressed by Eqs (16). The above results are illustrated graphically in Figures 1 and 2. By employing Eqs (8), (9), (12) and (13), it is also possible to determine the Fresnel coefficients for a surface having a finite conductivity. In this case, the extrema occur at the angles defined by Eqs (20) and (20a). It is found that the minimum value of the vertical Fresnel coefficient is zero. The results are illustrated in Figures 3. Figure 3a shows $|f(\Theta)|$. Figure 3b gives $\Psi_B(\Theta)$ and Figure 3B gives $|f(\gamma)|^2$.

From the above it is seen that for an actual surface characterised by "gentle" irregularities, the Fresnel

Card4/5

68642

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E162/E382

The Fresnel Coefficients of a Rough Surface

coefficients are dependent on the parameters ε_2 and σ_2 of the soil, the wavelength λ, the glancing angle θ and the roughness parameter γ. The author expresses his gratitude to Ye.L. Feynberg for valuable discussions and to F.G. Bass for constructive criticism.
There are 3 figures and 4 Soviet references.

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

SUBMITTED: June 22, 1959

Card 5/5

80121

9.9000

S/141/59/002/06/002/024
E192/E382

AUTHORS: Men', A.V., Braude, S.Ya. and 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 of vertically polarized radio waves 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

Card1/4

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

4

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

4

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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

4

Card 4/4

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 Ukrains'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

Card 1/1

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 rasprostranenii 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

Card 1/4

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

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

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

SOV/20-125-5-18/61

are Soviet.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk USSR (Institute for Radiophysics and Electronics of the Academy of Sciences of the UkrSSR)

PRESENTED: January 8, 1959, by B. A. Vvedenskiy, Academician

SUBMITTED: January 8, 1959

Card 4/4

S/021/61/000/004/010/013
D213/D303

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'koyi RSR, Dopovidi, 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 19.5 - 31 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. 5: 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 broadband aerials, 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-

Card 1/3

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 - 31 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:

$$I_k = \frac{2P}{\eta A_e \Delta f} \qquad (1)$$

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 m^2]. The results of research are given, showing the relation between

Card 2/3

S/021/61/000/004/010/013
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 f = 16.6, 19.5 and 20.4 Mc/s). 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 10-30 Mc/s. There are 2 figures and 13 references: 6 Soviet-bloc and 7 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: G.R. Whitfield, M.N.R.A.S., 117, 680, 1957; G.R. Whitfield, Paris Symp. on Radio Astronomy, Stanford University Press, 98, 297, 1959; H.W. Wells, Pire, 46, 205, 1958 and A.C.B. Lovell and H.W. Wells, M.N.R.A.S. 121, III, 1960.

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

SUBMITTED: November 26, 1960

Card 3/3

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

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

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

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

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

Card 1/8

The use of the concept ...

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

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

where

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

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

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

h_o representing the height at which the gradient of the

Card 2/6

the use of the concept ...

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

Card 3/ 6

The use of the concept ...

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

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

SUBMITTED: June 10, 1960

Table 1.

h_1 (km)	h_2 (km)	r_c/r_{rc}	a_3 (km)	r_c (km)	r (km)	r/r_c	ζ
18	6	0,8	−600 000	21,9	53,6	2,45	0,2
.	.	.	−100 000	.	140	6,4	0,6
.	.	.	− 80 000	.	165	7,5	0,8
.	.	.	− 65 000	.	174	7,9	1

Card 4/6

BRAUDE, S.Ya.

S/141/61/004/001/022/022
E192/E382

AUTHOR: None given

TITLE: Fourth All-Union Conference on Radio-electronics of the Ministry of Specialised Higher and Secondary Education of the USSR

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol. 4, No. 1, pp. 187 - 196

TEXT: The conference took place during October 24 - 29, 1960 in Khar'kov and was attended by 1 000 delegates from 35 towns in the Soviet Union.
Over 230 papers were read at the conference. The conference was opened by the Deputy Minister of the MVSSO UkrSSR (Ministry of Specialised Higher and Secondary Education of the Ukrainian SSR) Comrade I.S. Dzyubko and by the lectures of Corresponding Member of the AS Ukrainian SSR S.Ya. Braude, entitled "Radio Oceanographic Investigations of the Sea-wave Phenomena" and Corresponding Member of the AS Ukrainian SSR N.D. Morgulis dealing with "Some Problems of the Physics of Thermionic Energy Conversion".
Card 1/8

Fourth All-Union Conference ....

During the concluding plenary session the following survey papers were read:
"Some Problems of Electrodynamics and Thermodynamics of the General Relativity Theory During Accelerated Motion of Macroscopic Bodies with Relativistic Velocities" by V.L. German and "Methods of Experimental Investigation of Electron Beams" by N.S. Zinchenko.
The achievement of the conference was summarised by Corresponding Member of the AS Ukrainian SSR A. Ya. Usikov.
The conference recommended that the Fifth All-Union Conference on Radio-electronics should take place in Minsk in the Spring of 1962.
The conference was divided into the following sections: electrodynamics at UHF; UHF electronics; general electronics; quantum radiophysics; radio-wave propagation and radio-astronomy; general radio-engineering; semiconductors and their application in radio-engineering and radio measurements.

1. Papers read at the sections of UHF electronics, general electronics and UHF electrodynamics.
In general, it can be said that the papers in these sections were mainly concerned with the investigation of various processes dealing with the interaction of plasma and electromagnetic fields.
The work of O.G. Zagorodnov et al described the experimental investigation of the nonlinear distortion of sinusoidal electromagnetic waves propagating in a cylindrical plasma waveguide.
The lecture by V.Ye. Golant and A.P. Zhilinskiy dealt with the nonlinear effects which accompany wave propagation in waveguides containing plasma.
The work of V.D. Shapiro investigated theoretically the stability of longitudinal nonlinear oscillations of plasma electrons with respect to the perturbations whose wavelength is small in comparison with the wavelength of the stationary potential.

The works of O.G. Zagorodnov et al were devoted to the investigation of the propagation of electromagnetic waves in moving plasma. A detailed analysis of the propagation of electromagnetic waves in plasma waveguides was given in the experimental works of O.G. Zagorodnov et al (three papers). The work of V.P. Shestopalov and I.P. Yakimenko investigated in detail the scattering characteristics of a helix-plasma system.
The paper of N.A. Kuz'min was concerned with the variation method of analysis of the waveguides which are partially filled with a gyrotropic medium.
The problem of wave propagation in a waveguide partially filled with a weakly relativistic plasma in the presence of a constant magnetic field applied along the axis of the system was considered in the work of A.V. Gaponov and M.I. Petelin.
The paper of Ya.M. Turover was concerned with the evaluation of the possibility of description of a plasma delay line by telegraph equations.

The work of V.D. Ivanova and V.S. Mikhalevskiy gave an experimental investigation of the frequency-control of a travelling-wave tube oscillator.
The paper by Yu.F. Filippov was devoted to the investigation of magnetohydrodynamic oscillations of the medium in resonators and waveguides.
Electromagnetic waves propagating in plasma transversely to an external magnetic field were considered in the work of Yu.N. Dnestrovskaya and D.P. Kostomarov.
Several papers were concerned with the investigation of the interaction of plasma with electron and ion beams; in particular, M.S. Kovner investigated the stability of a beam of charged particles and plasma by using the kinetic equation.
The paper of V.O. Rapoport was concerned with the phenomenological method of solving the problem of amplification of electromagnetic waves in a plasma beam moving in plasma in the presence of a magnetic field.
The work of V.D. Shapiro considered the deceleration of an electron beam as a result of its interaction with bulk plasma oscillations.
Card 5/8

M.A. Gintsburg gave a detailed analysis of the interaction of plasma with ion beams on the basis of the kinetic equation. The problems of high-frequency discharges in rarefied gases were discussed in two papers: the work of S.B. Mochenev gave a theoretical analysis of the influence of irregularities of the magnetic field on the discharge characteristics, while the work of G.N. Zastenker et al gave results of an experimental investigation of the formation of the discharge at frequencies between 3 and 20 Mc/s and pressures from 0.3 to 30 mm Hg. I.A. Savchenko and A.A. Zaytsev presented the results of an experimental investigation of the electron oscillations in plasma.

2. Section of UHF electronics.

The papers read at this section dealt with the interaction of plasma with electromagnetic fields; apart from that, a number of papers dealt with the theoretical and experimental investigation of electron devices for UHF.

The opening lecture at the section by V.S. Ganzburg and V.G. Karmazin surveyed the present state of technology of a high-power klystron amplifier.

Fourth All-Union Conference ....

3. Section of UHF electrodynamics.
Some of the papers read at this section dealt with the propagation of electromagnetic waves in plasma, while a number of papers were concerned with the problems of the electrodynamics of delay systems, waveguides and resonators.
4. Section of general electronics .
During the sessions of this section, 15 papers were read and discussed. Some of the papers were devoted to the investigation of various aspects of electron optics.
5. Section on quantum radiophysics.
Some of the papers in this section dealt with the problem of nuclear magnetic resonance; several papers were concerned with the processes taking place in ferrite media; other papers were devoted to the theory of masers and parametric amplifiers.
6. Section on radio-wave propagation and radio-astronomy.
The 37 papers read at this section were devoted to some of the problems of radio-astronomy, experimental and theoretical investigation of radio-wave propagation in nonuniform media,

methods of investigation of the structure of the ionosphere and to special antenna systems.
7. Section on general radio-engineering.
The 12 papers read at this section covered a fair variety of subjects.
8. Semiconductor section.
Some of the papers read in this section were concerned with the preparation and application of semiconductor devices for radio-engineering; there were also papers dealing with the investigation of internal processes in semiconductors.
9. Radio-measurements section.
The papers in this section were concerned with the development and investigation of quartz crystal oscillators, measurement of the parameters of travelling-wave and backward-wave tubes, measurement of dielectric characteristics of various substances and new methods of measurement.

30821
S/033/61/038/005/009/015
E032/E414

3,1730(1172)

AUTHOR: Braude, S.Ya.

TITLE: On the selection of a standard discrete source of cosmic radio emission

PERIODICAL: Astronomicheskiy zhurnal, v.38, no.5, 1961, 898-904

TEXT: It is pointed out that even for the strongest sources, such as, for example, Cyg A, the experimental radio flux densities cannot be regarded as reliable, particularly below 30 Mc/sec. It is therefore customary to quote relative measurements, using Cas A as a standard. However, the present author argues against this choice and suggests Cyg A as an alternative. In distinction to Cas A, the metagalactic source in Cyg A arose in a central collision of two galaxies, located at a distance of about 100 Mpc. Again, in distinction to Cas A, the latter source should remain practically constant in intensity over long periods of time. However, it has the disadvantage that it is near to the extended source Cyg X which distorts the measured intensity of Cyg A. Analysis of published results carried out by the present author indicates that the ratio of the intensities of Cyg X and Cyg A is proportional to $f^{0.8}$ where f is the frequency.

Card 1/ 3

4

On the selection of a standard ...

Since the spectral index x of Cyg A is x = - 0.8, it follows that the intensity of Cyg X is independent of frequency, which is a partial confirmation of its thermal nature. If it is assumed that relation $I_{Cyg\ X}/I_{Cyg\ A} \sim f^{0.8}$ holds below 60 Mc/sec, then it can be used to set up a standard frequency dependence for the intensity of the discrete source in Cyg A. In order to obtain this relation, the Cyg A intensity curve must be corrected for the presence of Cyg X. The present author derives a formula for this correction. Fig.2 shows the intensity of the Cyg A radio emission (W/m^2 cps x 10^{-24}) as a function of frequency (Mc/sec). The dotted line is taken from the papers by G.R.Whitfield (Ref.1: Monthly Notices Roy. Astron. Soc., v.117, 680, 1957 and Ref.2: Paris Symp. on Radio Astronomy. Paper 58, 297-304, 1959, Stanford University Press). As can be seen from this figure, the relation between 30 and 10000 Mc/sec is $I_{Cyg\ A} \sim f^{-0.8}$. A certain amount of disagreement between various workers in the region below 30 Mc/sec is noted. Fig.4 shows the intensity versus frequency curve for the Cas A source, based on the data summarized in Fig.2. There are 4 figures, 2 tables and 20 references: 3 Soviet-bloc and 17 non-Soviet-bloc. The four most recent references to English

Card 2/03

4

On the selection of a standard ...

language publications read as follows:
Ref.2: as quoted in text;
Ref.3: R.Minkowski, Paris Symp. on Radioastronomy, Paper 61, 315-322, 1959, Stanford University Press;
Ref.11: D.S.Mathewson, M.I.Large, C.G.T.Haslaw, Monthly Notices Roy. Astron. Soc., v.120, 242, 1960;
Ref.12: F.D.Drake, Paris Symp. on Radio Astronomy, Paper 65, 339-346, 1959, Stanford University Press.

ASSOCIATION: In-t radiofiziki i elektroniki Akademii nauk UkrSSR
(Institute of Radiophysics and Electronics AS UkrSSR)

SUBMITTED: October 2, 1960

4

Card 3/3

9.9000
9.9840

87576

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

AUTHORS: Bass, F. G., Brauda, 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

Card 1/3

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

87576
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B006/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-

Card 2/3

87576

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

S/ 53/61/073/001/003/004
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.

Card 3/3

BRAUDE, S.Ya., red.; LABINOVA, N.M., red.

[Radio oceanographic studies of sea waves] Radiookeanograficheskie issledovaniia morskogo volneniia. Kiev, Izd-vo AN USSR, 1962. 114 p. (MIRA 17:9)

1. Chlen-korrespondent AN Ukr.SSR (for Braude).

L 19898-63 EWT(1)/BDS AFFTC GW

ACCESSION NR: AR3004391 S/0274/63/000/005/A038/A038

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Abs. 5A214P

AUTHOR: Bass, F.G., Braude, S.Ya., Poplavko, Yu.V.

TITLE: Determination of statistical parameters of marine turbulence according to radio measurements in the medium and high frequencies

CITED SOURCE: Sb. Radiookeanogr. issled. morsk. volneniya, Kiyev, AN ChSSR, 1962, 96-115

TOPIC TAGS: marine turbulence, oceanography, radio measurement, diffused wave

TRANSLATION: The authors present a theoretical discussion of the problem of the diffusion of radio waves from inhomogeneities on a marine surface in the form of waves and ridges. A determination is made of the dependence of the properties of diffused waves on the parameters of marine turbulence, and the use of this dependence in practical measurements is proposed. The authors conclude that the radiooceanographic measurements have a number of advantages over the methods of studying the elements of marine turbulence described in the literature, in that

Card 1/2

L 19898-63

ACCESSION NR: AR3004391

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they make it possible to determine certain quantities formerly not measured in oceanography. Ten illustrations. Bibliography with 43 titles. V.S.

DATE ACQ: 25Jun63 SUB CODE: AS ENCL: 00

Card 2/2

L 16842-63 EWT(1)/BDS AFFTC GW
ACCESSION NR: AR3006325 S/0058/63/000/007/H029/H029

SOURCE: RZh. Fizika, Abs. 7Zh194 52

AUTHOR: Bass, F. G.; Braude, S. Ya.; Poplavko, Yu. V.

TITLE: Determination of statistical parameters of sea waves from measurements made at short and medium radio waves

CITED SOURCE: Sb. Radiookeanogr. issled morsk. volneniya. Kiyev, AN USSR, 1962, 96-115

TOPIC TAGS: radio wave propagation, sea surface, scattering, short wave , medium wave

TRANSLATION: On the basis of the result of the preceding work (Abstract 7Zh192), calculation formulas are obtained for the scattering of electromagnetic waves by sea waves, making it possible to determine the parameters of the sea waves. The calculated data are

Card 1/2

L 16842-63

ACCESSION NR: AR3006325

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compared with experimental results obtained at wavelengths from 10 to 240 meters (Abstracts 7Zh199 -- 191). It is shown that in order to find the radii of correlation and the mean square of the height of the sea waves it is necessary to measure the scattered signals at two wavelengths and to find its angular distribution in space. An interpretation is presented for the frequency spectrum of the scattered field and its structure at different distances. Bibliography, 43 titles. F. Bass.

DATE ACQ: 15Aug63 SUB CODE: PH, GE ENCL: 00

Card 2/2

3,1730

S/141/62/005/002/001/025
E140/E435

AUTHORS: Chayevskiy, Ye.V., Braude, S.Ya.

TITLE: On the low-frequency radio spectrum of the discrete source A Cassiopeia

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika. v.5, no.2, 1962, 211-215

TEXT: Two models for explaining the observed spectrum of the discrete source A Cassiopeia are discussed. The particular features under consideration are the exponential decrease above 50 Mc/s, proportional to $f^{-0.8}$, and the practically constant intensity between 12 and 30 Mc/s. A.C.B.Lowell, H.W.Wells and R.J.Lamden (Monthly Notices Roy. Astron. Soc., v.121, 1960, 111; Phil. Mag., v.8, 1956, 1725) proposed a model now generally accepted to explain these features, essentially that of selective absorption in ionized hydrogen of the energy radiated by electrons in vacuum. An alternative model is proposed here, according to which electrons radiating in a medium with refractive index different from unity would give a spectrum close to that observed

Card 1/2

(without the hypothesis of the ionized hydrogen layer). The first model gives an integral relation between the density of free electrons in a layer and the thickness of the layer; the new model gives a local relationship between the free-electron density and the magnetic field intensity in the source. It is necessary to carry out observations below 10 Mc/s to be able to decide between the two models. If, however, it is found that H/N_e is less than 3×10^5 for the source, the difference of the index of refraction from unity can be neglected. There are 2 figures.

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

SUBMITTED: August 10, 1961

39265
S/141/62/005/002/006/025
E192/E382

9,9700

AUTHORS: Braude, S.Ya. and Kaner, E.A.

TITLE: Fluctuations of the radio waves of different frequencies in the troposphere

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v. 5, no. 2, 246 - 254, 1962

TEXT: Amplitude and phase fluctuations of single-frequency radio waves propagating in the troposphere have been investigated by several authors but the problem of radio waves of various frequencies has hardly been touched. This is studied in the paper under the assumption that the waves propagate in a nonuniform troposphere whose refractive index $\mu(r)$ fluctuates in accordance with the Gaussian correlation law:

$$B(r) = \overline{\mu(r)\mu(0)} = \overline{\mu^2} \exp(-r^2/l^2) \qquad (1)$$

where l is the characteristic size of the irregularities. The following three cases are analyzed: 1) the correlation function of the fluctuations is determined at a point for two

Card 1/3

Fluctuations of ....

waves of different frequencies; 2) the amplitude and phase fluctuations are evaluated for signals of different frequencies at various points in space, such that the signal source of frequencies ω_1 and ω_2 is situated at the origin of the coordinates and the receivers are situated at two different points, A and B; 3) two transmitters of frequencies ω_1 and ω_2 are situated at a point and the receiver is situated in a different place. The investigation of the fluctuation correlation functions of various frequencies shows that in the near zone the correlation coefficient of the phase and amplitude is equal to unity and is independent of the relative frequency deviation δ, whilst in the far zone it depends substantially on δ. In the latter case, the correlation is appreciable only at very small values of δ ($\delta \ll 1$). For the values of $\delta \geq 1/D$ (where $D = 2\lambda r_2/\pi\ell^2$, r_1 and r_2 being lengths of the transmission paths of the transmitters of frequencies ω_1 and ω_2), the

Fluctuations of ....

correlation coefficient decreases rapidly and passes through zero and then at $\delta \gg 1/D$ an almost complete decorrelation of the signals takes place. There are 3 figures.

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

SUBMITTED: August 22, 1961

4

Card 3/3

44186

S/109/62/007/012/001/021
D266/D308

AUTHORS: Kopilovich, L. Ye. and Braude, S. Ya.

TITLE: Amplitude and phase of the field with a lognormal distribution of the components

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 12, 1962, 1988-1996

TEXT: The field has two rectangular components x and y. It is first assumed that x and y are positive and have equal distribution. Changing to polar coordinates the author derives formulas for the distribution of amplitude (r) and phase (φ). The amplitude distribution is found in an integral form whilst its moments are represented by finite series. The second moment is particularly simple:

$$\overline{r^2} = 2e^{\sigma^2+2\mu} \qquad (11)$$

Card 1/3

Amplitude and phase ...

The phase distribution is not calculated from the general formula but with the aid of simple reasoning ($\tan\varphi$ has to be also log-normally distributed) and is obtained in the form

$$W(\varphi) = \frac{1}{\sigma\sqrt{1-\rho}\sqrt{2\pi}\sin\varphi\cos\varphi}\, e^{-\frac{\ln^2 \operatorname{tg}\varphi}{2\sigma^2(1-\rho)}} \qquad (16)$$

Introducing the parameter $K = \sigma\sqrt{1-\rho}$ it is shown that if $K \ll 1$ then $W(\varphi)$ is concentrated into a narrow lobe located symmetrically to $\bar{\varphi} = \pi/4$. If $K > 1$ the function spreads out having now a minimum at $\varphi = \pi/4$. The moments are expressed in an integral form which reduces to a simple result only for the first moment when $\bar{\varphi} = \pi/4$. Since it is easier to measure phase difference than the actual value of the phase, the authors also calculate the distribution of

Card 2/3

phase difference assuming two lognormal distributions. In the last section of the paper it is assumed that |x| and |y| follow lognormal distributions. The distributions for the amplitude and phase are then easily obtained from previous results. There are 3 figures.

SUBMITTED: January 2, 1962

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 Ja-F '62. (MIRA 15:2)

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

3,1720

3801.03

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: Astronomicheskiy 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 m^2. 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

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/m^2 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 radio emission was carried out in the side lobes 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

Observations of the spectra of ...

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.

4

SUBMITTED: December 25, 1961

Card 3/3

BRAUDE, Semen Yakovich

Voices of distant worlds. Znan. ta pratsia no.3:2-3 Mr '63.
(MIRA 16:10)

1. Zamestitel' direktora Instituta radiofiziki i elektroniki AN UkrSSR po nauchnoy rabote, chlen-korrespondent AN UkrSSR.

S/021/63/000/002/009/016
D405/D301

AUTHOR: Braude, S. Ya., Corresponding Member of the AS UkrRSR

TITLE: Spectra of the discrete radio sources Cassiopeia-A, Cygnus-A, Taurus-A and Virgo-A at frequencies below 40 Mc

PERIODICAL: Akademiya nauk UkrRSR. Dopovidi. no. 2, 1963, 193-197

TEXT: The experimental and theoretical values of the flux density I_ν of radio-source emission, obtained by various authors, are plotted. General formulas are obtained, by means of which it is possible to compare these data and thus determine the emission measure. Two different mechanisms underlying the change in the emission spectrum at frequencies $\nu < 40$ Mc are considered: 1) The decrease in emission intensity is due to absorption in ionized hydrogen H II, and 2) the decrease in intensity is due to the fact that the refractive index of the medium μ is smaller than unity; the second mechanism gives the local connection between the free-electron density n_e and the magnetic field-strength H of the

Card 1/2

Spectra of the ...

source. From the formula for I_ν/I_m (I_m denoting the maximum of I_ν) for the second model the following values were tabulated:

Source	Cassiopeia-A	Cygnus-A
α	0.75	0.75
EM	550	550
$10^6 H/n_e$	2	2

α is the spectral index and EM the emission measure. In the frequency range under investigation (10 - 10^4 Mc) it is impossible to decide on the basis of the above experimental data which of the two mechanisms is responsible for the sharp change in the spectral index at low frequencies. There are 2 figures and 1 table.

ASSOCIATION: Instytut radiofizyky ta elektroniky AN URSR (Institute of Radiophysics and Electronics of the AS UkrRSR)

SUBMITTED: August 2, 1962

Card 2/2

ACCESSION NR: AP4007177 S/0141/63/006/005/0897/0903

AUTHOR: Pazėlyan, L. L.; Braude, S. Ya.; Bruk, Yu. M.; Zhuk, I. N.; Men', 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 frequencies

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, Cassiopeia A, Cygnus A, Taurus A, Virgo A, extragalactic radiation, radiation 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

Card 1/5

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)

BAZELYAN, L.L.; BRAUDE, S.Ya.; BRUK, Yu.M.; ZHUK, I.N.; MEN', A.V.; RYABOV, B.P.; SODIN, L.G.; SHARYKIN, N.K.

Radio emission spectra of the discrete sources Cassiopeia-A, Cygnus-A, Taurus-A, and Virgo-A at frequencies of 12.5 to 40 Mc. Izv. vys. ucheb. zav.; radiofiz. 6 no.5:897-903 '63. (MIRA 16:12)

1. Institut radiofiziki i elektroniki AN UkrSSR.

BRAUDE, S. Ya.; VAYSBERG, V.V.

Distribution of thermal and nonthermal radiation components over the galactic disc. Izv. vys. ucheb. zav. radiofiz. 7 no.2:193-201 '64 (MIRA 18:1)

1. Institut radiofiziki i elektroniki AN UkrSSR.

L 38119-65 FBD/EWT(1)/EWG(v)/EEC-4/EEC(t) Pe-5/Pae-2/Pi-4 GW/WS-4

ACCESSION NR: AP5006015 S/0141/64/007/006/1032/1040

AUTHOR: Braude, S. Ya.; Vaysberg, V. V.

TITLE: Low frequency spectrum of cosmic radio emission

SOURCE: IVUZ. Radiofizika, v. 7, no. 6, 1964, 1032-1040

TOPIC TAGS: cosmic radio emission, galactic disc, galactic halo, synchrotron radiation, radio emission spectrum, ionized hydrogen

ABSTRACT: This is a continuation of an earlier paper (Izv. vyssh. uch. zav. - Radiofizika, v. 7, 193, 1964) dealing with a multi-layer model of a galactic disc consisting of alternating layers of synchrotron radiation and absorption in HII. Since the earlier calculations were made without account of the radio emission from the halo, the authors check in the present article the applicability of the multi-layer model if the emission from the halo is also taken into account. The particular form of the model is considered in which it is assumed that the thermal and nonthermal components are thoroughly mixed in the disc. The low-frequency spectrum of cosmic radio emission ($\nu < 10$ Mcs) is regarded as the result of absorption of synchrotron radiation from the halo in the ionized hydrogen of the galactic

Card 1/3

L 38119-65

ACCESSION NR: AP5006015

disc. The model is such that the emission measure (ME) is unequal along different lines of sight, even though the HII filling the galactic disc forms a single layer. Owing to the uneven distribution of the HII in the disc, it is expected that the ME (which characterizes the degree of absorption) in a given direction would deviate from that in other directions in accordance with a random law (within the directivity pattern of the radio telescope). Calculations based on this assumption show that the radiation flux can fluctuate greatly in such a model. Experiments aimed at checking these results should provide for elimination of fluctuations of ionospheric origin, by receiving the cosmic background outside the limits of the ionosphere. Such measurements at low frequencies are now feasible. Estimates show that the fluctuations in the radiation flux can reach 37% of the radio emission from the halo. Estimates of the electron density, determined from the average emission measure, agree with those obtained by the authors previously and by others. It is therefore concluded that the proposed model can explain earlier measurements of the low-frequency spectrum of galactic radio emission without resorting to the hypothesis that the spectrum of the synchrotron component of the radio emission experiences a break. Orig. art. has: 5 figures, 17 formulas, and 1 table.

Card 2/3

L 38119-65
ACCESSION NR: AP5006015

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

SUBMITTED: 30Nov63 ENCL: 00 SUB CODE: AA

NR REF SOV: 008 OTHER: 011

Card 3/3

L 19692-65 FBD/FSF(h)/EWT(l)/EWG(v)/EEC-4/EEC(t) Pe-5/Pae-2/Pi-4
SSD/BSD/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

Card 1/2

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 $151° \leq l^{II} \leq 200°$, and $-13° \leq b^{II} \leq 60°$. Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: Instytut radiofizyky i elektroniky AN URSR (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

BRAUDE, S.Ya.

Integrability conditions for a certain type of nonlinear differential equations of the second order. Dop. AN URSR no. 12:1555-1558 '64.
(MIRA 18:1)

1. Institut radiofiziki i elektroniki AN UkrSSR; chlen-korrespondent AN UkrSSR.

L 19011-65 EWT(1)/EPF(c)/EPA(w)-2 Pr-4/Pab-10 IJP(c)/RAEM(a)/AFWL/SSD/ASD(a)-5/BSD/AFETR/ESD(c)/RAEM(c)/ESD(gs)/ESD(t) WW

ACCESSION NR: AP4049055 S/0057/64/034/011/2085/2086

AUTHOR: Braude, S.Ya.; Vigdorchik, I.M.

B

TITLE: Concerning the article "On the anomalous violation of the Hull cut-off condition in strong crossed fields"

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.11, 1964, 2085-2086

TOPIC TAGS: electric field, magnetic field, magnetron, history

ABSTRACT: The authors point out that conclusions of the paper mentioned in the title (M.M.Butusov and S.A.Fridrikhov, ZhTF 34,283,1964; see Abstract ACC.NR: AP4013416) concerning the existence of a sharp maximum in the cut-off curve of a magnetron diode at a magnetic field greater than the critical cut-off value and the phenomena at the cathode accompanying this effect have been known for more than 25 years, and they complain that appropriate reference was not made to the older literature. A list of references is supplied.

1/2

L 19011-65
ACCESSION NR: AP4049055

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

SUBMITTED: 14Mar64 ENCL: 00

SUB CODE: EM,EC NR REF SOV: 012 OTHER: 002

2/2

L 60354-65 EEC-4/EWG(v)/EWT(1)/FBD Pe-5/Pi-4/Pae-2 GW/WS-4

ACCESSION NR: AP5014499 UR/0141/65/008/002/0229/0233
523.164.4

AUTHOR: Braude, S. Ya.

TITLE: Frequency dependence and time variation of the ratio of the density of the fluxes from the discrete sources Cassiopeia-A and Cygnus-A at decameter wavelengths

SOURCE: IVUZ. Radiofizika, v. 8, no. 2, 1965, 229-233

TOPIC TAGS: radio astronomy, discrete source, galactic source, radiation flux, time variation, frequency spectrum, decameter wavelength

ABSTRACT: The author examines the causes of the peak in the frequency spectrum of the discrete radiation from Cassiopeia-A and Cygnus-A, two possible reasons for which were suggested in his earlier papers (Izv. vyssh. uch. zav.--Radiofizika v. 5, 211, 1962 and DAN UkrSSR, 193, 1963). The two reasons proposed were either that the radiation is absorbed in the clouds of ionized hydrogen (HII) in the galactic disc, or that the source itself contains a medium having a refractive index smaller than unity. Since measurements of the absolute fluxes from these sources entail considerable errors, the author measured in the frequency range 12.5--40 Mc/s the ratio of the flux from Cassiopeia-A to the flux of Cygnus-A. Using these measurement data, which were reported elsewhere (Izv. vyssh. uch. zav.--Radiofizika v. 6, 897, 1963), the author compared the hypothetical variation of the same ratio in

Card 1/2

L 60154-65

ACCESSION NR: AP5014499

the case when the peak of the discrete spectrum is connected with the absorption in HII, and when it is connected with the deviation of the refractive index in the source from unity. Comparison of the results shows that although a clear cut distinction between the two mechanisms is still impossible at the frequencies measured thus far, indication is that at frequencies 8--10 Mcs the separation of the two mechanisms already becomes possible and the data favor the HII hypothesis. The results show also that at decameter waves, the observed time-decrease in the flux from Cassiopeia-A exceeds the corresponding theoretical value. To explain this decrease, further data on the measured ratio, obtained over a wider frequency range, are necessary. Orig. art. has: 2 figures, 10 formulas, and 2 tables.

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

SUBMITTED: 24Jun64 ENCL: 00 SUB CODE: AA

NR REF SOV: 008 OTHER: 004

Card 2/2

L 58385-65 FBD/EWT(1)/EWG(v)/EEC-4/EEC(t) Pe-5/Pae-2/Pi-4 GW/WS-4
ACCESSION NR: AP5015584 UR/0033/65/042/003/0618/0628
523.164.42

AUTHOR: Bazelyan, L. L.; Braude, S. Ya.; Vaysberg, V. V.; Krymkin, V. V.; Men', A. V.; Sodin, L. G.

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

SOURCE: Astronomicheskiy 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 58385-65
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/m^2 cps. Flux densities ($S \cdot 10^{24}$ 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 58385-65

ACCESSION NR: AP5015584 ENCLOSURE: 01

Table 1. Flux densities and mean expected errors for 14 discrete sources

Frequency Mc:	20		25		31		38.5		38		38	
Source	$S \cdot 10^{24}$	Δ %	$S \cdot 10^{24}$	Δ %	$S \cdot 10^{24}$	Δ %	$S \cdot 10^{24}$	Δ %	$S \cdot 10^{24}$	Δ %	$S \cdot 10^{24}$	Δ %
3C 84	9.1	26	8.6	29	7.6	27	4.5	45	4.7	25	5.5	46
3C 111	3.3	31	4.1	26	4.4	32	2.8	48	2.2	15	2.5	27
3C 123	8.7	26	8.8	29	6.4	27	10	26	6.1	15	6.0	25
3C 134	5.5	30	5.9	32	5.1	29	3.7	37	3.0	25	2.7	26
3C 166	3.9	30	2.6	50	—	—	—	—	0.68	15	—	—
3C 196	3.7	26	4.3	29	2.8	27	2.4	27	1.85	15	1.25	56
3C 218	25.0	26	14.5	28	15.8	33	14.9	31	14.5	25	11.0	9
3C 219	3.0	27	3.3	31	2.1	27	2.2	27	1.2	25	—	—
3C 310	6.6	31	4.5	40	3.4	36	6.4	32	2.0	25	2.7	37
3C 338	3.6	32	3.9	35	2.4	33	2.6	34	1.8	15	2.25	31
3C 348	28.5	38	26.5	29	13.7	36	17.2	27	14.5	25	15.7	12
3C 358	6.8	33	10.5	31	5.2	35	7.7	34	6.[illegible]	15	6.6	16
3C 433	—	—	—	—	1.7	33	4.5	36	1.5	15	1.8	39
3C 438	7.2	34	3.4	40	2.7	31	2.8	40	1.3	25	—	—

Card 1/1

L 64758-65 EEC-4/EWG(v)/EWT(1)/FBD GW/WS-4

ACCESSION NR: AP5013821 UR/0021/65/000/005/0580/0583

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

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

SOURCE: AN UkrRSR. 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 S. It is established that the sources bounded by the galactic coordinates $21° \leq l^{II} \leq 89°$, $-13° \leq b^{II} \ll 60°$ 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 radiofizyky i elektroniky 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 2/2

BRUNOV, S.Ye., KOPILOVICH, L.Ye.

Engineering method for the calculation of Fresnel's coefficients. Izv.vys.ucheb.zav.; radiotekh. 8 no.5:595-601 S-O '65. (MIRA 18:12)

1. Submitted November 13, 1964.

BRAUDE, S.Ya.

Reabsorption of synchrotron radiation in discrete sources. Astron. zhur. 42 no.6:1150-1154 N-D '65. (MIRA 19:1)

1. Institut radiofiziki i elektroniki AN UkrSSR. Submitted February 19, 1965.

L 08929-67 EWT(1) GW/WS-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 200.10^{-26} w/m^2(cycle/sec). On two other frequencies the source could not be detected. An upper estimate of its density was made ($\leq 150.10^{-26}$ w/m^2(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

Braude, Ts S

M. A. 20.

Argon Arc-Welding of Elektron. Ts. S. Braude (Avtog. Delo, 1949, (9) 10-14).--(In Russian). Magnesium Alloy MA-1 can be arc welded in an atmosphere of argon, without the use of flux. Welding of various types of joints is possible, the strength of the joint being equal to 70-90% of that of the original metal. Both pure and commercial argon can be employed. It is recommended that welding of parts made from MA-1 alloy of thickness up to 3 mm. be carried out with a backing plate to secure better removal of heat and to reduce distortion. Before welding, the edge of butt joints must be cleaned to remove burrs and dirt. The torch setting must be carefully controlled. The angle between the article and the electrode is 80-90°, and the angle between the welding rod and the electrode 90°. A table shows the conditions under which a good-quality joint can be secured with D.C. In welding joints without clamps, the current should be reduced to 30-35%. Argon-arc welding can be carried out on D.C. (with reverse polarity) and A.C. With D.C. (reverse polarity), the surface of the work obtained is cleaner and brighter than with A.C.--W.J.K.

BRAUDE, Ts. S., Engr

[redacted]

USSR/Metals - Welding — Jul 50

"Argon-Arc Welding of Copper," Ts. S. Braude, Engr

"Avtogen Delo" No 7, pp 12-15

PA 167T61

VNIIAVTOGEN (All-Union Sci Res Inst of Autogenous Welding) investigated electric arc welding of copper in atmosphere of argon, using copper sheets 1-3 mm thick. Conclusions: argon-arc welding of copper possible using direct polarity [work piece negative]; method permits welding immediately on 1-2 mm thickness; 1.5-2 sec on 3-3.5 mm; with bare welding rod gives porous seams of low strength, preliminary heating decreases number of pores to obtain strong,

[redacted]

167T61

USSR/Metals - Welding (Contd) — Jul 50

compact joint, must employ deoxidizers, then strength of welded seam reaches 80-95% strength of base metal.

167T61

BRAUDE, V., kand.tekhn.nauk

Improved crane mechanism. Rech.transp. 21 no.11:15-16 N '62.
(MIRA 15:11)
(Cranes, derricks, etc.)

BRAUDE, V.A.; DIDENKO, K.I., kand. tekhn. nauk; KORSUNSKIY, L.M.; LEVIN, V.M.

The REF electromagnetic flowmeters. Avtom. i prib. no.2:75-78 Ap-Je '65.
(MIRA 18:7)

BRAUDE, V.I.

Stresses in mechanisms used for changing portal crane boom lengths and some ways of decreasing such stresses. Trudy TSNIIMF no.21:39-44 '58. (MIRA 12:8)
(Cranes, derricks, etc.)

BRAUDE, V., inzh.

Investigating certain types of adjusting gear for the outreach of gantry crane jibs. Rech.transp. 19 no.7: 17-20 Jl '60. (MIRA 13:8)
(Cranes, derricks, etc.)

BRAUDE, V.I., inzh.

Dynamics of the mechanism controlling changes in the projection of hinge-connected booms with flexible guys. Trudy LIVT no.4: 18-26 '60. (MIRA 15:3)

(Cranes, derricks, etc.)

OSTAKHOV, S.M.; BRAUL, V.I.

Practices in aerial chemical control of the water vole. Zashch. rast.ot vred.i bol. 5 no.2:19 F '60. (MIRA 15:12)

1. Starshiy inzh. Grazhdanskogo vozdushnogo flota (for Ostakhov).
2. Literaturnyy sotrudnik gazety "Kryl'ya Sovetov" (for Braul).
(Aeronautics in agriculture)
(Siberia, Western--Water voles--Extermination)

BRAUDE, V. I., Master Med Sci —(diss) "Materials on the pathological anatomy and pathogenesis of hydronephrosis, hydro-pyonephrosis and nephrosis." Moscow, 1956, 8 pp. (Acad Med Sci), 110 copies.

(KL, No 40, 1957, p.95)

BRAUDE, V. I.

Role of the pathoanatomist in a district public health system.
Zdrav.Ros.Feder. 1 no.6:21-24 Je '57. (MLRA 10:8)

1. Iz prozektury Pavlovo-Posadskogo rayona Moskovskoy oblasti
(ANATOMY, PATHOLOGICAL)

USSR/Human and Animal Physiology. Excretion

Abs Jour : Ref Zhur - Biol., No 14, 1958, No 65398

Author : Braude V.I.

Inst : -

Title : A Morphological Exposition of the Dynamics of the Hydronephrotic Process

Orig Pub : Urologiya, 1957, No 3, 17-21

Abstract : An early pathomorphological sign of hydronephrosis of the kidneys of any origin is hypertrophy of the smooth muscle in the walls of the calices and pelves. In the presence of sclerotic atrophy of the renal parenchyma, this hypertrophied smooth muscle is replaced by fibrous tissue. Two stages were established in the renal parenchyma-presclerotic (congestive hyperemia, dystrophic changes in the convoluted tubules, and the accumulation of serous fluid in the capsular spaces of the glomeruli) and sclerotic (the appearance of diffuse infiltration in the interstitial tissues of the kidney,

Card : 1/2

66

* Iz patomorfologicheskogo otdela, Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta i iz prozektury Pavlovo-Posadskogo rayona Moskovskoy oblasti.

Abs Jour : Ref Zhur - Biol., No 14, 1958, No 65398

extraglomerular sclerosis and scarring of the glomeruli). Secondary pyelitis is a possible complication hydronephrosis.

Braude, V. I.

BRAUDE, V.I.

Problem of so-called retention diseases of the kidneys. Klin.med. 35 no.7:110-114 Jl '57. (MIRA 10:11)

1. Iz Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta imeni M.F.Vladimirskogo (dir. - kand.med.nauk P.M.Leonenko, zaveduyushchiy patomorfologicheskim otdelom - prof. S.B.Vaynberg) i prozektury Pavlovo-Posadskogo rayona Moskovskoy oblasti.
(HYDRONEPHROSIS, classif. (Rus))

UGRYUMOV, B.P., prof.; BRAUDE, V.I., kand.med.nauk (Moskva)

"Pathological anatomy of silicosis" by S.F.Serov. Reviewed by B.P.Ugrimov, V.I.Braude. Arkh. pat. 21 no.10:74-75 '59. (MIRA 14:8)

(LUNGS--DUST DISEASES) (SEROV, S.F.)

BRAUDE, V.I.

Morphological changes in bronchial "stumps" of surgically removed lungs and a general pathological evaluation of these changes. Arkh. pat. 22 no. 8:49-55 '60. (MIRA 14:1)
(TUBERCULOSIS) (BRONCHI--DISEASES)