21

stages and 2 af stages. The error in the absolute value of the intensity of cosmic radio emission was ± 30% for 1525 kc and (+30, -50)% for 725 kc. The measurement results were processed by converting the output voltages to the effective temperature of radio emission. Values of effective temperature T_{eff} for a 2-hr flight near the apogee are given in Fig. 1 on the Enclosure, where the points correspond to 1525 kc and the crosses to 725 kc. All of the data on the spectrum of cosmic radio emission indicate that for $f \leq 3$-5 Mc its intensity decreases with frequency. The profile of the electron concentration in the ionosphere was determined from its effect on radiation resistance and capacitance of the antenna. A graph of electron concentration N versus altitude h is shown in Fig. 2 on the Enclosure. Sporadic radio emission from the earth's atmosphere considerably exceeding the cosmic radio emission in intensity was recorded at both frequencies. A correlation between radio emission and the intensity of soft-electron flux is found. The distribution of radio emission indicates that electron fluxes penetrate the ionosphere primarily at latitudes of 30-50°. The authors thank Yu. V. Abramov, A. A. Andronov, B. N. Boykin, V. L. Ginzburg, V. V. Zheleznyakov, V. B. Karavanov, Yu. I. Logachev, G. A. Skuridin, and V. Yu. Trakhtengerts for aid in preparing the experiment and discussion of the results. Orig. art. has: 14 graphs, 1 diagram, 1 chart, 3 tables, and 11 formulas.

L 5315-66
ACCESSION NR: AT5023642

ASSOCIATION: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva, Moscow (All-Union Conference on Space Physics)

SUBMITTED: 02Sep65 ENCL: 02 SUB CODE: ES, NP

NO REF SOV: 011 OTHER: 007

Card 3/5

L 5315-66
ACCESSION NR: AT5023642

ENCLOSURE: 01

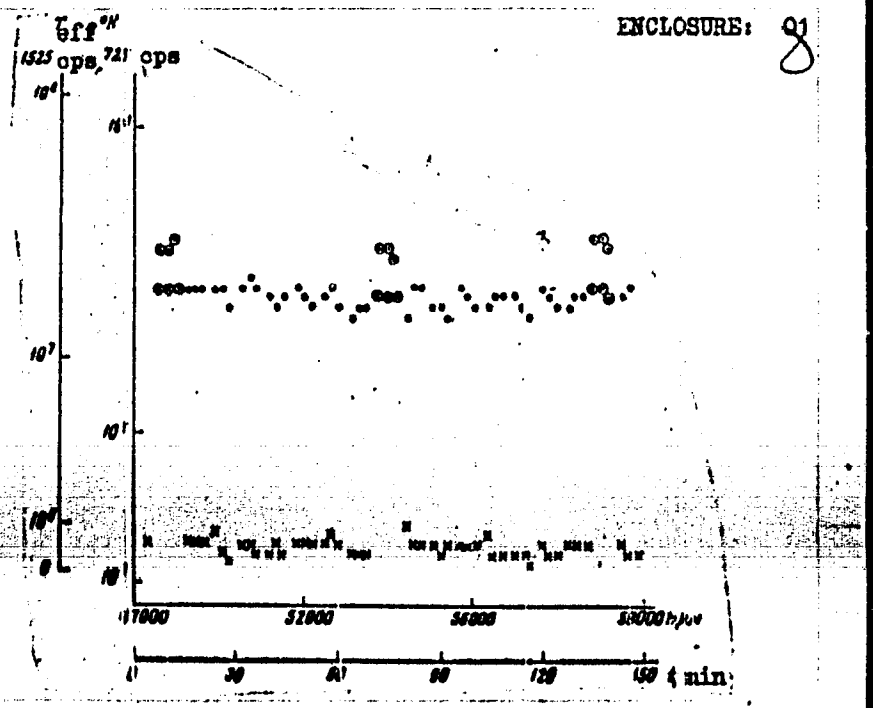


Fig. 1. Effective temperature versus time

Card 4/5

L 5315-66

ACCESSION NR: AT5023642

ENCLOSURE: 02

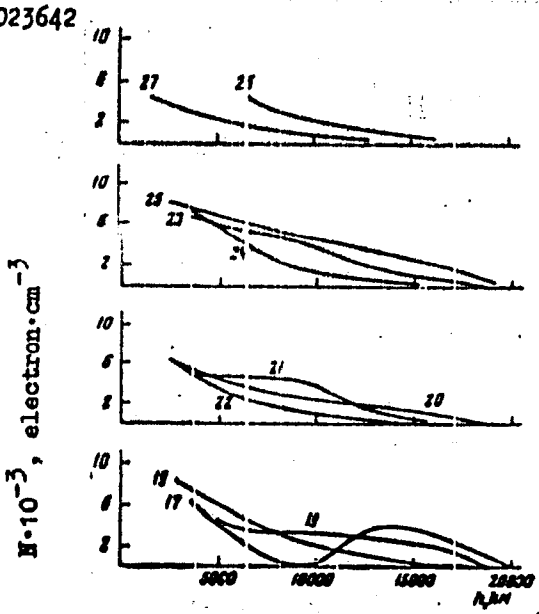


Fig. 2. Electron concentration versus altitude

Card 5/5

L 1322-66 FBD/FSS-2/EWT(1)/FS(v)-3/EWA(d) IT/GW/WS-4
ACCESSION NR: AP5021254 UR/0293/65/003/004/0614/0617
523.164.4:350.388.1:629.195.2

AUTHOR: Benediktov, Ye. A.; Gutmantsev, G. G.; Sazonov, Yu. A.; Tarasov, A. F. 44 B

TITLE: Preliminary results of measurements of the intensity of distributed cosmic radio emission by the Elektron-2 satellite

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 4, 1965, 614-617

TOPIC TAGS: radio emission, cosmic ray intensity / Elektron 2

ABSTRACT: Preliminary results of measurements of the intensity of distributed cosmic radio emission conducted by Elektron-2 are presented. A 4-m rod antenna connected with two receivers was used in the measurements. The receivers operated at fixed frequencies of 725 and 1525 kc. Passbands were 3.9 kc at 725 kc and 7.4 kc at 1525 kc. Time constant of the output circuit was 1 sec. Some readings taken at the apogee (68,000 km) showed changes in cosmic radio emission levels with time; these were attributed to the spin of the satellite. Absolute values of the effective temperatures of the sky at 725 and 1525 kc were 3.2×10^7K and 1.2×10^7K, respectively. An increase in absolute effective temperature was noted with decreased frequency, and, conversely, radio emission intensity dropped with decreased frequency.

Card 1/2

L 1322-66
ACCESSION NR: AP5021254

Maximum emission was observed at latitudes of ±40°—50°. The intensity of distributed cosmic radio emission at 725 kc was 0.51 x 10^{-20} w m^{-2} cps^{-1} $sterad^{-1}$ and at 1525 kc, 0.87 x 10^{-20} w m^{-2} cps^{-1} $sterad^{-1}$. Orig. art. has: 3 figures. [PW]

ASSOCIATION: none

SUBMITTED: 16Jul64 ENCL: 00 SUB CODE: ES,EC

NO REF SOV: 002 OTHER: 002 ATD PRESS: 4105

Card 2/2

L 1713-66 EWT(1)/FCC/EWA(h) GW

ACCESSION NR: AP5020999 UR/0203/65/005/004/0698/0704

550.388.3:550.385.2

AUTHOR: Benediktov, Ye. A.; Korobkov, Yu. S.; Tolmacheva, A. V.

TITLE: Anomalous ionization of the lower ionosphere over temperate latitudes during global geomagnetic storms

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 4, 1965, 698-704

TOPIC TAGS: ionospheric absorption, ionospheric inhomogeneity, magnetic storm, geomagnetic disturbance radio wave absorption

ABSTRACT: Anomalous ionization of the lower ionosphere, causing additional absorption of radio waves, is observed during global geomagnetic storms over temperate geographic latitudes. This paper reports on measurements of flareups in radio wave ionospheric absorption made at Zimenki near Gorky ($\varphi = 56^{\circ}09'$, $\lambda = 50^{\circ}21'$) during global geomagnetic storms on July 15, 1959, April 1, 1960, and October 28, 1961. The first two storms were registered at 25 and 18.6 Mc, and the last one was tracked at 9, 13, and 25 Mc by means of synphase multi-dipole antenna systems. The following findings were made. 1) Anomalous absorptions appeared in the form of consecutive absorption bursts lasting from several minutes to several dozen minutes.

Card 1/3

L 1713-66

ACCESSION NR: AP5020999

2) They appeared regularly at the end of the first phase of the magnetic storm and continued to appear while the storm developed. 3) In the case of the last two storms, some correlation apparently exists between the geomagnetic field variations and the absorption occurrences. 4) During the same two storms, short (5 min) fadeouts of cosmic radiation were observed over periods of several hours prior to the appearance of anomalous absorptions. These fadeouts were not accompanied by solar chromospheric flares. 5) The ratio of absorption intensities at two frequencies was smaller than the inverse of the ratio of the squares of the respective frequencies. 6) Numerous bursts of solar radiation at 18.6 and 25 Mc were registered on July 25, 1959, by the side lobes of the antenna. 7) The magnitude of the anomalous 13-Mc cosmic radio wave absorption 45^0 over the horizon did not exceed 0.2 to 0.3 db while the zenith absorption at the same frequency reached 2—3db. 8) Changes in the 27.8-Mc cosmic radio wave intensity observed by IZMIRAN at Krasnaya Pakhra on July 15, 1959 led the absorption bursts at Zimenki by 8—12 minutes. 9) At the vertical probing station, the reflected signal was missing during the periods of abnormal absorption. Analysis of ionospheric cosmic radiation and absorption results shows that anomalous ionization occurs at altitudes of approximately 50 km and the electron concentration attains 10^3 electrons/cm^3. The authors discuss and give an estimate of the primary electron flux needed for the generation of the observed level of anomalous ionization. ' "The authors

Card 2/3

L 1713-66

ACCESSION NR: AP5020999

2

thank A. A. Beloborodova for help during the processing of data." Orig. art. has: 6 formulas, 1 figure, and 4 tables. [08]

ASSOCIATION: Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete (Radio Physics Institute at Gorky State University)

SUBMITTED: 24Aug64 ENCL: 00 SUB CODE: ES

NO REF SOV: 006 OTHER: 009 ATD PRESS: 4096

KC

Card 3/3

L 6345-66 FBD/EWT(1) GW/WS-2
ACC NR: AP5025618 SOURCE CODE: UR/0033/65/042/005/1011/1013

AUTHOR: Artem'yeva, G. M.; Benediktov, Ye. A.; Rapoport, V. O.

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

TITLE: Relationship between sporadic solar radio emission in the decameter range and chromospheric flares

SOURCE: Astronomicheskiy zhurnal, v. 42, no. 5, 1965, 1011-1013

TOPIC TAGS: radio astronomy, radio emission, solar chromosphere, solar radio emission, solar radiation effect

ABSTRACT: Data on solar radio emission bursts in the decameter range and the parameters of chromospheric flares are compared. 850 bursts were recorded at Zimenkakh, using apparatus designed for radio astronomical investigations of the ionosphere and investigations of the spectrum of cosmic radio emission at a number of fixed frequencies in the range 6-25 Mc/s. Observations were made in different periods from July 1959 through September 1962. All bursts were divided into two groups according to whether or not they coincided with chromospheric flares. Although

 UDC: 523.75.164

L 6345-66
ACC NR: AP5025618

this separation was arbitrary it indicated a correlation between solar radio emission bursts in the decameter range and solar activity in the optical range. For example, of the 131 bursts observed from 25July 1959 through 20 October 1959, 74 (57%) coincided in time with chromospheric flares. During the same time there were only 57 bursts when no chromospheric flares were present. Statistical analysis reveals that the probability of occurrence of bursts of the second group is 5 times less than for the bursts of the first group. Statistics for the first group of bursts were analyzed to determine a possible dependence between the intensity of the bursts and their spectral index, and also such flare parameters as areas, brightness, width of the H_α line and position on the solar disk. Although no clear relationship was discovered between the parameters of the bursts and flares brightness or area, there is a definite dependence between the probability of appearance of solar radio emission bursts at $\lambda > 10$ m and the width of the H_α line. Further analysis revealed presence of an east-west asymmetry of the distribution of radio emission bursts in the decameter range on the solar disk. "The authors express appreciation to L. G. Pavlov for assistance in analyzing the data". Orig. art. has: 3 figures.

SUB CODE: AS/ SUBM DATE: 09Dec64/ ORIG REF: 003/ OTH REF: 005

nw
Card 2/2

L 05821-67 EWT(1)/FCC GW

ACC NR: AP6018928 SOURCE CODE: UR/0203/66/006/003/0600/0602

AUTHOR: Belikovich, V. V.; Benediktov, Ye. A.; Tolmacheva, A. V.

ORG: Institute of Radio Physics, Gor'kiy State University (Radiofizicheskiy institut pri Gor'kovskom gosudarstvennom universitete)

TITLE: A possible interpretation of the frequency dependence of anomalous absorption of cosmic radiation

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 3, 1966, 600-602

TOPIC TAGS: cosmic radiation, radio wave absorption, magnetic storm, ionospheric absorption

ABSTRACT: The authors have proposed their own explanation, based on a nonuniform or heterogeneous ionization region in the horizontal plane, of the test results for the anomalous absorption of cosmic radiation in the ionosphere on several fixed frequencies observed during three world-wide magnetic disturbances, cited in a previous paper (Ye. A. Benediktov, Yu. S. Korobkov, A. V. Tolmacheva. Geomagn. i aeronomiya, 1965, 5, no. 4, 698). On the assumption that the radiation is uniformly distributed over the sky and by substituting for the

Card 1/2 UDC: 550.388.2

L 05421-67
ACC NR: AP6018928

real radiation pattern of the antenna a certain effective pattern described only by the solid angle Ω_0, formulas are obtained for the recorded level of cosmic radiation and for the ratio of the quantity of absorption as measured radio-astronomically to the "true" quantity. It is shown that the problem of determining the frequency dependence of anomalous radio wave absorption in the ionosphere becomes vastly more complex, unless additional information is available regarding the degree of ionization homogeneity in the horizontal direction. Using the formula obtained, an attempt is made to define the heterogeneous structure of the ionization region through a computation of the frequency function $\Gamma(\omega)$ on the basis of data from the three magnetic storms. The examples given show that the presence of a nonuniformly structured anomalous ionization region can significantly distort radio-astronomically derived information regarding the altitudes at which radio waves passing through the ionosphere are subject to maximum absorption. Orig. art. has: 2 figures and 3 formulas.

SUB CODE: 04/ SUBM DATE: 28Oct65/ ORIG REF: 002/ OTH REF: 002

Card 2/2

L 23279-66 FBD/EWT(1)/FCC/EWA(h) GW/WS-2

ACC NR: AP6011921 SOURCE CODE: UR/0141/66/009/002/0399/0400

AUTHOR: Belikovich, V. V.; Benediktov, Ye. A.

ORG: Scientific Research Institute of Radio Physics at Gorky State University (Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete)

TITLE: Additional absorption of cosmic radio emission in the ionosphere during the ionospheric disturbance of 18 April 1965

SOURCE: IVUZ. Radiofizika, v. 9, no. 2, 1966, 399-400

TOPIC TAGS: radio wave absorption, ionospheric radio wave, cosmic radiation, ionospheric absorption

ABSTRACT: Preliminary findings on the polar-type anomalous absorption recorded at the Zimenki station on 18 April 1965 are reported. Measurements of cosmic emission intensity were made at 24.6, 13.0, 8.9, and 8.5 Mc. Antenna radiation patterns for the frequencies of 24.6 and 13.0 Mc were 25° x 18° at the half-power points. For 8.5 and 8.9 Mc, they were 25° x 35° and 5° x 8°, respectively. The anomalous absorption began at 0950 hours Moscow time and lasted till 1000 hours. The intensity of the anomalous absorption reached 1.5--2 db at 8.5 and 8.9 Mc; at 13 Mc it was two or three times less. At 25.0 Mc, absorption intensity was about 0.2 db. Within the limits of measurement error, these values are in accordance with the law of the inverse dependence of absorption on the square of the operating frequency. It is

Card 1/2 UDC: 621.371.177

L 23279-66
ACC NR: AP6011921

pointed out in conclusion that the occurrence of polar type absorption in the middle latitudes is very rare. The author is grateful to A. A. Beloborodova for her assistance in processing the data. [CS]

SUB CODE: 17/ SUBM DATE: 04Oct65/ ORIG REF: 002/ ATD PRESS: 4231

Card 2/2 UDC

ACC NR: AP6032699

used square-law detection of the signal, which was then recorded by EPP-09 automatic tape recorders at speeds of 240 and 120 mm/hr. Hourly calibration of the measuring equipment was made using a noise generator. Absorpitons for the two received frequencies were plotted (absorption of higher frequency as abscissa and that of the lower as ordinate) on the same graph as the calculated value. A comparison of the experimental curves with the calculated ones indicates that no additional absorption occurs at altitudes of 50—60 km and below during sudden atmospheric disturbances. Orig. art. has: 4 figures and 1 formula.

SUB CODE: 04, 20/ SUBM DATE: 17May65/ ORIG REF: 007/ OTH REF: 002

Card 2/2

BENEDIKTOVA, A. A.

262T1

USSR/Chemistry - Plastics Jan 53

"The Relationship Between Oxidation and Polymerization of Methyl Methacrylate," G. F. Laletskiy and A. A. Benediktova, Saratov State U im N. G. Chernyshevskiy

DAN SSSR, Vol 88, No 1, pp 67-70

The sequence of the reactions of oxidation and polymerization of methyl methacrylate was established and the inhibiting action of oxygen pointed out. The induction period was interpreted as the time for the formation of peroxides. The start of the decompn of these peroxides, possible only on

262T1

collision with activated mols of the monomer, dets the start of the polymerization process. Presented by Acad A. V. Topchiyev 6 Nov 52.

[redacted]

68947

15.8600

SOV/81-59-24-88478

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 24, p 582 (USSR)

AUTHORS: Benediktova, A.A., Ponomarev, A.A.

TITLE: Materials on the Problem of Utilization of Tetrahydrofuran Substances as Plasticizer of High-Polymers

PERIODICAL: V sb.: Vopr. ispol'zovaniya pentozansoderzhashchego syr'ya. Riga, AS LatvSSR, 1958, pp 341 - 349

ABSTRACT: A large group of tetrahydrofuran substances (THF) was investigated, which differed in molecular weight and in the structure of the side chain, in order to discover the most suitable among them for utilization as plasticizers of high polymers (HP), and the effect of structural peculiarities of THF on their properties was investigated. The swelling capacity and the solubility of HP in THF and the change of the frost-resistance, the electric insulation and the mechanical properties of HP films under the effect of THF additions in various quantities were determined. The most important physical-mechanical properties of various THF (alcohols with alkyl and aryl radicals, ethers and esters, and compounds with two tetrahydrofuran rings) were presented, as well as the changes in

Card 1/2

68947
SOV/81-59-24-88478

Materials on the Problem of Utilization of Tetrahydrofuran Substances as Plasticizer of High-Polymers

the tensile strength and tensile lengthening of films of perchlorovinylic resin, acetobutyrate- and ethyl-cellulose containing additions of various quantities of THF and conventional plasticizers. It has been established that among THF, especially among some alcohols and their esters, a large group of compounds can be singled out which can be used as plasticizers of HP, and the dominating majority of THF are good high-boiling solvents for many HP.

N. Gardenin

Card 2/2

BENEDIKTOVA, A. A.

AUTHOR: Benediktova, A. A. 32-2-50/60

TITLE: A Laboratory Instrument for the Determination of the Resistance to Frost in Highly Polymerized Films (Laboratornyy pribor dlya opredeleniya morozostoykosti plenok vysokopolimerov).

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 2, pp. 243-244 (USSR)

ABSTRACT: The method described here is a modification of the method proposed according to ГОСТ-5960-51. The newly constructed device is smaller and needs less freezing mixture (ethanol and dry ice). Moreover it is now possible by its means to investigate dissolved polymers. In a tube-like container three samples (12x1o mm, 3o-12oμ film thickness), fastened by screws, are spread in a kind of wire frame. The container with the samples is placed in the freezing mixture for one hour, and then the samples are examined. We define that temperature as frost resisting temperature where the film suffers bending without any changes. Compared to the ГОСТ 5960-51 method a good coincidence was obtained with a sample of perchloro-vinyl as is shown by the results given in the table. There are 1 figure, 1 table.

Card 1/2

A Laboratory Instrument for the Determination of the Resistance to Frost in Highly Polymerized Films. 32-2-50/60

ASSOCIATION: Saratov State University imeni N. G. Chernyshevskiy (Saratovskiy gosudarstvennyy universitet im. N. G. Cherrysheva-kogo).

AVAILABLE: Library of Congress

1. Plastic film-Test methods

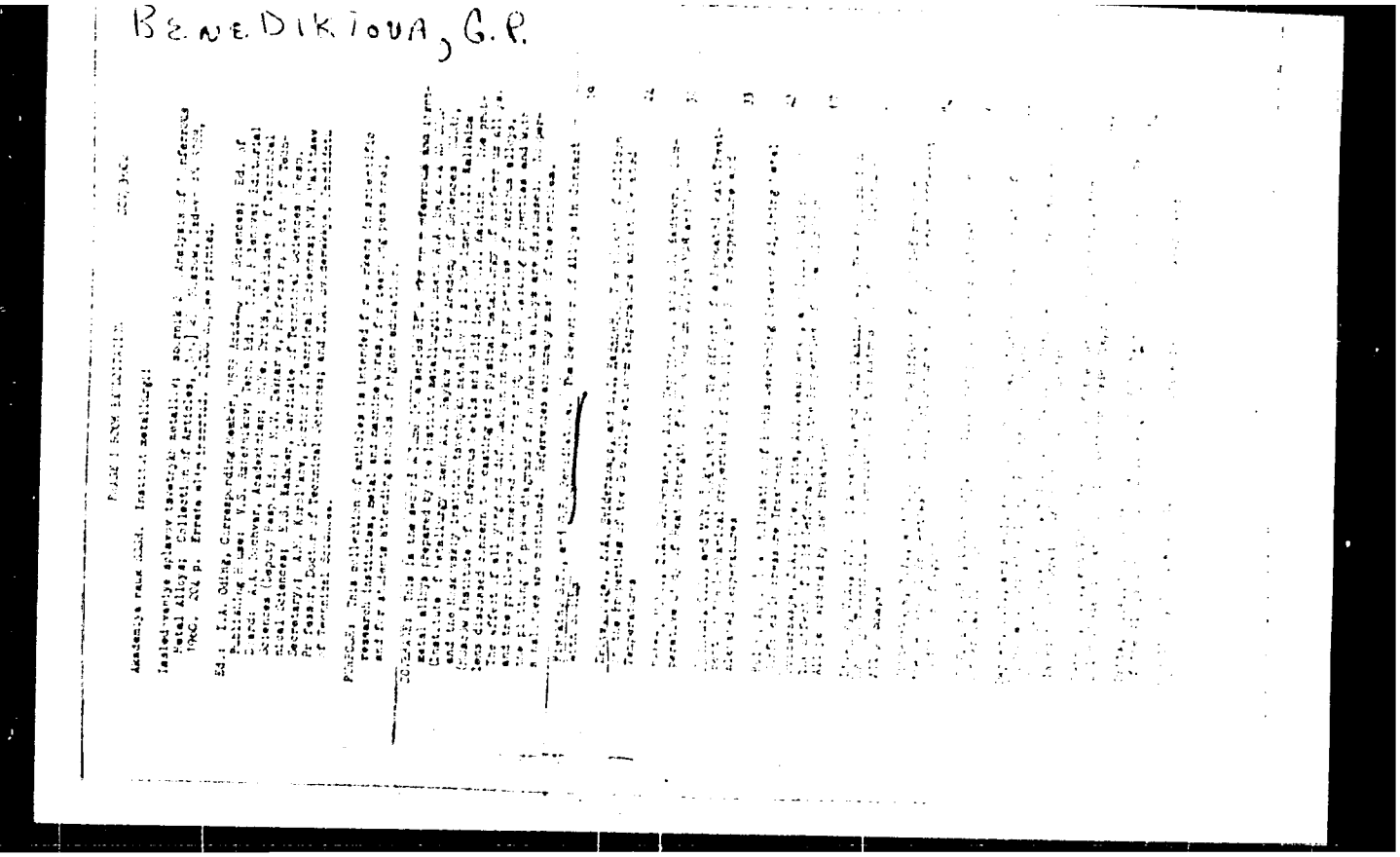
Card 2/2

BENEDIKTOVA, A.A.; PONOMAREV, A.A.

Frost resistance of higher polymer films with the addition of plasticizers of the tetrahydrofuran series. Uch.zap. SGU 75:44-49 '62. (MIRA 17:3)

KISHKIN, S.T., doktor tekhn.nauk; BENEDIKTOVA, O.P., insh.

Strength of alloys in contact with sodium. Trudy MAI no.123:45-52 '60. (MIRA 13:8)
(Alloys--Testing) (Sodium) (Nuclear reactors--Materials)



BENEDIKTOVA, G.I., kand. tekhn. nauk; KISHKIN, S.T., doktor tekhn. nauk

Behavior of heat-resistant alloys in contact with sodium in a state of stress. Trudy MAI no.158:29-34 '64.

(MIRA 17:10)

L 28512-66 EWT(m)/EWI(m)/T/EWP(t)/ETI LJP(c) JD/JG

ACC NR: AP6016595 (A) SOURCE CODE: UR/0129/66/000/005/0055/0057

AUTHORS: Benediktova, G. P.; Dubinin, G. N.; Karpman, M. G.; Shcherbedinskiy, G. V.

ORG: MAI, TsNIIChERMET

62
B

TITLE: Diffusion of potassium in mono- and polycrystalline molybdenum

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1966, 55-57

TOPIC TAGS: potassium, molybdenum, metal diffusion, physical diffusion, temperature dependence, polycrystal

ABSTRACT: The diffusion of potassium into mono- and polycrystalline molybdenum at a number of temperatures (800, 900, 1000, and 1100C) was studied. The experiments were carried out by exposing mono- and polycrystalline specimens of Mo to molten KCl or metallic K containing radioactive K^{42}. The diffusion coefficients were determined from the concentration distribution of K^{42} in the surface layers of the specimens. The experimental results are presented in graphs and tables (see Fig. 1). The diffusion coefficients for diffusion into mono- and polycrystalline molybdenum obeyed the relationships

$$D = 9{,}34 \cdot 10^{-9} e^{-\frac{26\,800}{RT}} \ [cm^2/sec],$$

$$D = 2{,}86 \cdot 10^{-10} e^{-\frac{14\,600}{RT}} \ [cm^2/sec],$$

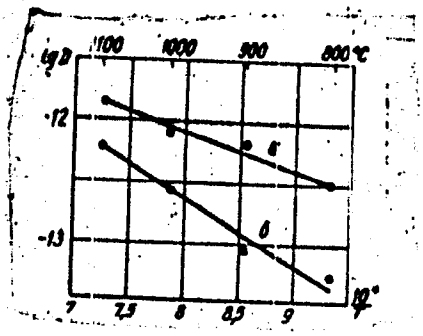
Card 1/2

UDC: 539.12.172:669.24'28

L 28512-66

ACC NR: AP6016595

Fig. 1. Temperature dependence of the diffusion coefficients for the diffusion of potassium into molybdenum: a - polycrystal, b - monocrystal.



respectively. It is noted that the derived diffusion coefficients differ from those obtained by I. Cornides (Naturwissenschaften, 1958, v. 45, No. 6) by four orders of magnitude. Orig. art. has: 1 table and 2 figures.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 006

Card 2/2

BENEDIKTOVA, N.B.; ZAMYATIN, S.R.; NEMNONOVA, T.V.; SOLOMONOV, Ye.F.

Manufacture of resin and dolomite firebrick and its testing in service. Ogneupory 27 no.4:151-155 '62. (MIRA 15:4)

1. Kuznetskiy metallurgicheskiy kombinat.
(Firebrick)

BENEDIKTOVA, R.N.

Carboniferous of the Sayan-Altai mountain system. Trudy SNIIGGIMS no.21:9-45 '62.

General paleontologic characteristics of the Carboniferous in the Sayan-Altai area. Ibid.:53-55 (MIRA 16:12)

BENEDIKTOVA, R.N.; MUROMTSEVA, V.A.

Phylum Mollusca. Trudy SNIIGGIMS no.21:193-211 '62. (MIRA 16:12)

BENEDIKTOVA, R.N.; BETEKHTINA, O.A.

Phylum Mollusca. Trudy SNIIGGIMS no.21:425-440 '62. (MIRA 16:12)

BENEDIKTOVA,R.N.

Lower Carboniferous deposits in the Gorlovskiy Coal Basin. Trudy Gor.-geol.inst. Zap.-Sib.fil.AN SSSR no.13:103-109 '53. (MLRA 8:12)

(Gorlovskiy Basin--Coal geology)

AKSARIN,A.V.; ANAN'YEV,A.P.; BENEDIKTOVA,R.N.; GORBUNOV,M.G.; GRATSIANOVA, R.T.; YEGOROVA,L.I.; IVANIYA,V.A.; KHAYEVSKAYA,L.N.; KRASNOPEYEVA, P.S.; LEBEDEV,I.V.; LOMOVITSKAYA,M.P.; POLETAYEVA,O.K.; ROGOZIN,L.A.; RADCHENKO,G.P.; RZHONSNITSKAYA,M.A.; SIVOV,A.G.; FOMICHEV,V.D.; KHALFINA,V.K.; KHALFIN,L.L.; CHERNYSHEVA,S.V.; NIKITINA,V.N., redaktor; GUROVA,O.A., tekhnicheskiy redaktor

[Atlas of leading forms of fossils in the fauna and flora of Western Siberia] Atlas rukovodiashchikh form iskopaemykh fauny i flory zapadnoi sibiri. Pod red. L.L.Khalfina. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po geologii i okhrane nedr, Vol.1. 1955. 498 p. Vol.2. 1955. 318 p. [Microfilm] (MLRA 9:3)

1. Tomsk. Politekhnicheskiy institut imeni Kirova.
(Siberia, Western--Paleontology)

BENEDIKTOVA, R.N.; IVANOV, K.V.; MUROMTSEVA, V.A.

Stratigraphy and age of clay schists in the surroundings of Tomsk. Trudy SNIGGIMS no.8:108-126 '60. (MIRA 15:9)
(Tomsk region--Paleontology, Stratigraphic)
(Tomsk region--Clay)

BEZNOSOVA, R.A.; BENEDIKTOVA, R.V.; SARYCHEVA, T.G.; SOKOL'SKAYA, A.N.

Phylum Brachiopoda. Trudy SNIIGGIMS no.21:143-184 '62. (MIRA 16:12)

BENEDIKTOVA-LODOCHNIKOVA, N.V.

Photometric determination of copper with α-furil dioxime.
Zhur. anal. khim. 18 no.11:1322-1325 N '63. (MIRA 17:1)

1. Leningradskoye otdeleniye Matematicheskogo instituta imeni V.A. Steklova AN SSSR.

BENEDIKTOVA-LOBOCHNIKOVA, N.V.

Photometric determination of copper with α-furil dioxime. Trudy VSEGEI 117:45-48 '64. (MIRA 17:9)

CZECHOSLOVAKIA

ENGELBERTH, O., JEZKOVA, Z., BLEHA, O., MALEK, J., BENDL, J.

1.Third Clinic of Internal Medicine (III vnitrni klinika), (for ?); 2. Institute of Hematology and Blood Transfusions (Ustav hematologie a krevni transfuze), (for ?); 3.First Obstetrical Clinic (porodnicka klinika), (for ?); 4.Second Obstetrical Clinic (II porodnicka klinika), (for ?).

Prague, Vnitrni lekarstvi, No 8, August 1965, pp 737-744.

"Autoantibodies in Sheehan's syndrome."

(5)

BENEDYCKI, Janusz

Selection of methods to climatized crane cabins in metallurgic factories. Problemy proj hut maszyn 11 no.12:368-372 D '63.

1. Biprohut, Gliwice.

BENEDIK, G.

Communication and Traffic

Following the method used by the Latvian communication workers. Sov. sviaz. no. 11, 1951.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~AFSR~~, Uncl.

: Poland

: Wojtowicz, M., Banczykowska, J.

: Rapid Complexometric Method of Determining Calcium and Magnesium in Milk

: Mocz. technol. i chem. wyw., 1957, 2, 79-85

: The diluted sample of milk is titrated with a solution of di-sodium salt of ethylenediamine-tetracetic acid. Colloidal compounds of Ca combinations in the milk are decomposed by heating at 75° in alk. line medium, proteins are precipitated with HNO_3. Accuracy of determination of Ca (~ 2.4%) with a probability of 0.95%). Described is a rapid method of Ca determination, based on the constant value of the CaO:MgO ratio in milk. Accuracy of the method ~ 2.5%. The method is suitable for use in technical analyses of milk. According to the authors' summary.

BIELEDYKCINSKI, M.

We are working with the books at hand. p. 21. (Gospodarka Miesna, Vol. 8, No. 6, June 1956, Warsaw, Poland)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 8, Aug 1957. Uncl.

BENEDYKCINSKI, S.

Journal of the Science
of Food and Agriculture
May 1954
Agriculture and Horticulture

(4)

Use of high-protein rations for young pigs during quarantine and acculation. S. Alexandrowicz, T. Losinski, W. Krampe, and S. Benedykcinski (*Roczn. nauk Rol.*, 1953, **66**, B, 5—19).—Under the experimental conditions skim milk in the ration was replaced by fish meal + blood meal (up to 200 g. per head daily) without ill effects. A supplement of green fodder was found desirable.

A. G. POLLARD.

STRAUTMAN, F.I.; BENEDYUK, G.A.[Benediuk, H.O.]

Distribution of murine rodents in plant associations of the Borzhavskiy mountain valleys. Pratsi Inst. agrobiol. AN URSR 5:91-112 '54. (MIRA 11:7)
(Borzhavskiy Range--Field mice)

BENEI, Sandor

What factors ensure the value of the Hungarian kadarka wine and is it worth-while to color it? Elet tud 18 no.37:1167 15 S '63.

1. Alfoldi Allami Pincegazdasag igazgatoja, Kecskemet.

L 16788-66 EWP(t) JD

ACC NR: AP6010880 SOURCE CODE: CZ/0034/65/000/010/0689/0694

AUTHOR: Benek, Bedrich (Engineer); Machej, Vladislav (Engineer)

ORG: Trinec Iron Works VRSR, Trinec (Trinecke zelezarny VRSR)

TITLE: Modifications of sintering-plant equipment from the viewpoint of increasing the output and reducing dust

SOURCE: Hutnicke listy, no. 10, 1965, 689-694

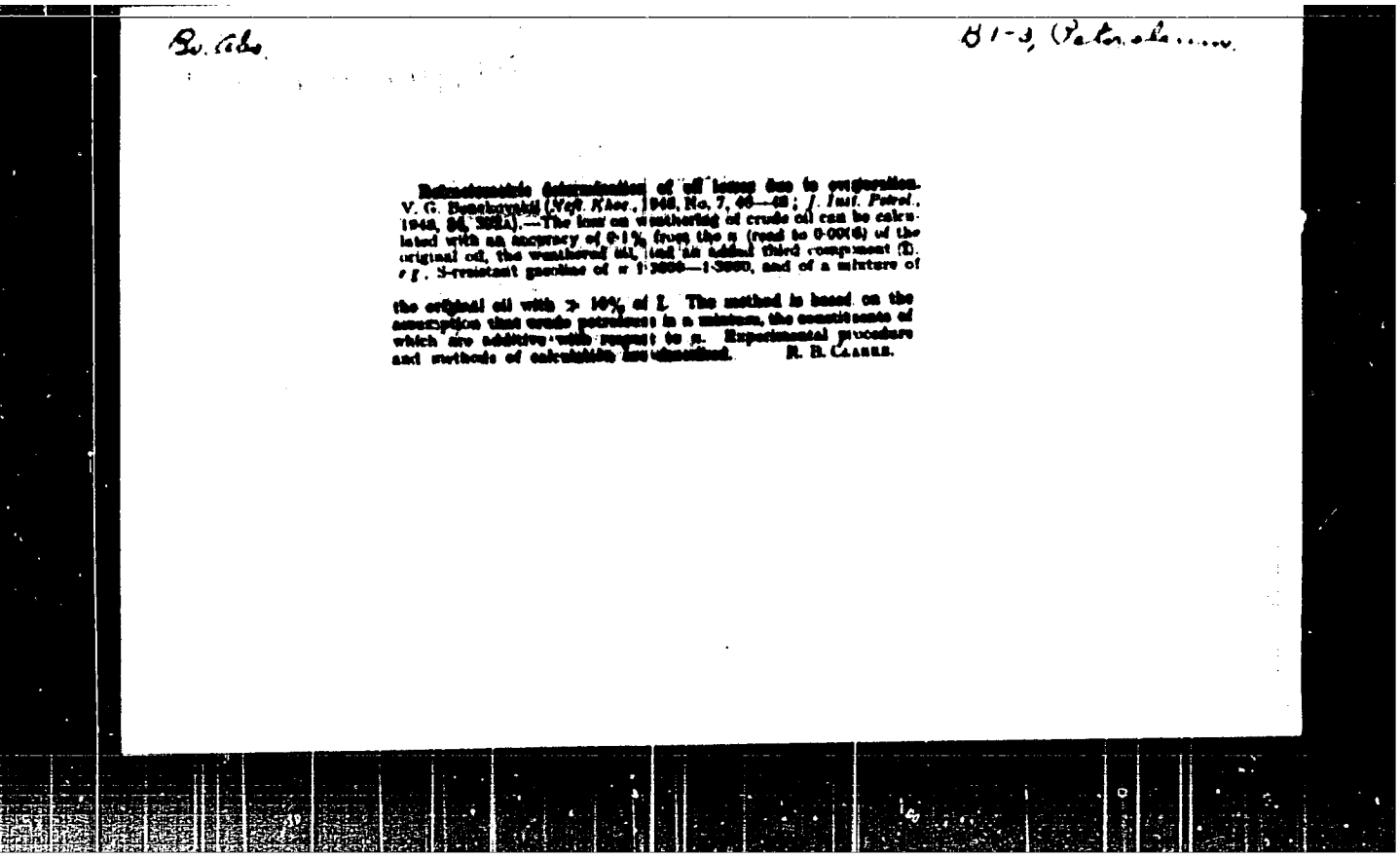
TOPIC TAGS: sintering, metallurgic machinery

ABSTRACT: The intensification of the sintering process is discussed, from the viewpoint of the specific conditions existing at the sintering plant of the Trinec Iron and Steel Works. An increase in the performance of the sintering lines and a reduction of dust were achieved through modifications in the equipment, particularly by redesigning the chutes, exhaust tubes, and the paths along which the sintered product is transported. Orig. art. has: 6 figures and 1 table. [JPRS]

SUB CODE: 13, 11 / SUBM DATE: none

Card 1/1

UDC: 622.785



Refractometric determination of oil losses due to evaporation. V. G. Dmitriyevskii (*Vest. Mosk.*, 1948, No. 7, 65—68; *J. Inst. Petrol.*, 1948, 34, 362A).—The loss on weathering of crude oil can be calculated with an accuracy of 0·1% from the n (read to 0·0001) of the original oil, the weathered oil, and an added third component (D. *cf.* S-resistant gasoline of n 1·3650—1·3660, and of a mixture of the original oil with > 10% of L. The method is based on the assumption that crude petroleum is a mixture, the constituents of which are additive with respect to n. Experimental procedure and methods of calculation are discussed. R. B. CLARKE.

BENENDO, B.; GRONIOWSKI, J.; SZOSTEK, M.

Utero-sigmoid fistulae. Polski przegl.radiol. 25 no.3:469-474 My-Je '61.

1. Z Zakladu Radiologii Lekarskiej AM w Warszawie Kierownik: prof. dr nauk med. W. Zawadowski Z I Kliniki Chirurgicznej AM w Warszawie Kierownik: prof. dr med. J. Nielubowicz.

(INTESTINAL FISTULA radiog) (UTERUS dis)
(FISTULA radiog)

BENENDO, Boguslawa; OLSZEWSKI, Waldemar

Entero-gastric invagination following gastric resection. Pol. przegl. radiol. 26 no.3:199-204 '62.

1. Z Zakladu Radiologii Lekarskiej AM w Warszawie Kierownik: prof. dr nauk med. W. Zawadowski Z I Kliniki Chirurgicznej AM w Warszawie Kierownik: doc. dr med. J. Nielubowicz.

(GASTRECTOMY compl) (INTUSSUSCEPTION etiol)

BENENDO, Boguslawa

On cases of mediastinal and subcutaneous emphysema. Pol. przegl. radiol. 27 no.4:321-328 '63.

1. Z Zakladu Radiologii Lekarskiej AM w Warszawie Kierownik: prof. dr nauk med. W. Zawadowski.
(MEDIASTINAL EMPHYSEMA) (EMPHYSEMA)

BACZKO, Aurelia; BENENDO, Bonusława; RYLSKI, Miroslaw.

Two cases of staphylococcal septicemia associated with pneumonia. Pol. tyg. lek. 18 no.44:1649-1651 28 O'63.

1. Z II Kliniki Chorob Wewnetrznych AM w Warszawie (kierownik: prof.dr.med. D.Aleksandrow), z Zakladu Radiologii Lekarskiej AM w Warszawie (kierownik: doc. dr.med. S.L.Zgliczynski).

*

BEHENDO-KAPUSCINSKA, Boguslawa

Intravenous cholangiography using endocistobil. Pol. przegl. radiol. 29 no.1:61-65 Ja-F'65.

1. Z Zakladu Radiologii Lekarskiej Akademii Medycznej w Warszawie (Kierownik: prof. dr. med. S.L. Zgliczynski).

ZGLICZYNSKI, S.L.; BENENIX-KAPUSCINSKA, B.

Radiographic examination in the diagnosis of renal hypertension.
Pol. arch. med. wewnet. 35 no.6:755-760 '65.

BENEDO-KAPUSCINSKA, Boguslawa; LITWAK, Arnold

Calcium milk in the kidneys. Pol. przegl. radiol. 29 no.1: 67-73 Ja-F'65

1. Z Zakladu Radiologii Lekarskiej Akademii Medycznej w Warszawie (Kierownik: prof. dr. med. L. Zgliczynski) ; z Kliniki Urologicznej Akademii Medycznej w Warszawie (Kierownik: prof. dr. med. S. Wesolowski).

BENENDO-NIEDZWIECKA, Alicja

On the treatment of pemphigus with corticosteroids. Polski tygod. lek. 17 no.22:876-879 28 My '62.

1. Z Kliniki Dermatologicznej AM w Gdansku: kierownik: prof. dr Franciszek Miedzinski.
(ADRENAL CORTEX HORMONES ther) (PEMPHIGUS ther)

BENENSON, A., master (g.Borisov)

Good reputation. Prom. koop. 12 no.10:5 O '58. (MCRA 11:10)
(Borisov--Shoe manufacture)

KASHKAROV, Iosif Mikhaylovich; RASSADKIN, I.D., redaktor; BENENSON, A.N., redaktor; LAZOVSKAYA, L.P., tekhnicheskiy redaktor

[Fire prevention methods in libraries] Protivopozharnye meropriiatiia v bibliotekakh. Pod red. I.D.Rassadkina. Moskva, Gos. izd-vo kul'turno-prosvetet. lit-ry, 1956. 20 p. (MLRA 10:1)
(Libraries--Fires and fire prevention)

GINZBURG, P.S.; TSVETAYEVA, Ye.M.; PAYATSYK, V.V., redaktor; BENENSON, A.N., redaktor; ROZEN, E.A., tekhnicheskiy redaktor

[Let us increase the production of potatoes and vegetables; an annotated bibliography] Uvelichim proizvodstvo kartofelia i ovoshchei; annotirovannyi ukazatel' literatury. Moskva, Gos. izd-vo kul'turno-prosvetitel'noi lit-ry, 1956. 36 p. (MLRA 9:11)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni V.I.Lenina.
(Bibliography--Potatoes)
(Bibliography--Vegetable gardening)

GINZBURG, F.S.; YEGOROV, V.I., redaktor; BRUNSON, A.N., redaktor; YELAGIN, A.Ye., tekhnicheskiy redaktor

[More fruit, berries, and grapes; annotated bibliography] Bol'she plodov, iagod i vinograda; annotirovannyi ukazatel' literatury. Moskva, Gos. izd.-vo kul'turno-prosv. lit-ry, 1956. 63 p. (MLRA 10:4)

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(Bibliography--Fruit culture)

ARKHIPOVA, Marina Konstantinovna,; LEVIN, Mikhail Izrailevich,; BERENSON, A.N., red.; YELAGIN, A.S., tekhn. red.

[Literature on economics] Literatura po ekonomike. Moskva, Izd-vo "Sovetskaia Rossia," 1958. 51 p. (MIRA 11:11)
(Bibliography--Economics)

KUZNETSOV, Nikolay Vasil'yevich; IL'ICHEVA, Norma Vladimirovna; PLAVIL'SHCHIKOV, N.N., doktor biolog.nauk, red.; BENENSON, A.N., red.; MEDVEDEVA, R.A., tekhn.red.

[Nature in a regional museum] Priroda v kraevedcheskom muzee. Moskva, Izd-vo "Sovetskaia Rossiia," 1958. 76 p. (MIRA 12:2)
(Yaroslavl--Natural history museums)

L 01166-66 EWT(1)/EPA(sp)-2/EWA(d)/EPA(w)-2/T-2/EWA(m)-2 IJP(c) AT

ACCESSION NR: AP5016655 UR/0382/65/000/002/0080/0088
533.95 : 538.4 : 621.313.12

AUTHOR: Benenson, E. B.; Genkin, A. L. 44,55 44,55

TITLE: Fringe effects in a magnetohydrodynamic generator 21,44,55

SOURCE: Magnitnaya gidrodinamika, no. 2, 1965, 80-88

TOPIC TAGS: MHD generator, electrode potential, electric insulator

ABSTRACT: The dependance of MHD generator efficiency on the fringe effects occuring in the converter channel is studied theoretically. The finite length of the insulators separating the continuous electrodes from the grounded parts is taken into account in computation of current and potential distributions in the channel. Also computed are losses due to return currents and ground leakage currents which depend on the insulator size. The problem is approximated by assuming that the first order approximation to the hydrodynamic parameters are known from computations for infinitely long channels and electrodes. It is shown that increase of insulator length, up to some limiting value, decreases losses and ground leakage. Fur-

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L 01466-66

ACCESSION NR: AP5016655

thermore, extension of the magnetic field beyond the electrodes leads to an increase of the output power of the generator; however, ground leakage also increases. Orig. art. has: 19 formulas, 8 figures.

ASSOCIATION: none

SUBMITTED: 27Jan65 ENCL: 00 SUB CODE: ME, EM

NO REF SOV: 007 OTHER: 001

Card 2/2

BENDSON, G.M.

"Wood in the national economy of the USSR"
Moskva, Gos. les. tekhn., 1947

BENENSON, G. M.

Woodwork

Problems in the development of the lumber and woodworking industry. Les. prom. 11 No. 7, 1951.

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

BENENSON, G.

"The forest industry on the road to socialist industrialization." Tr. from the Russian. p. 42. (ANALE ROMANO-SOVIETICE. SERIA SILVICULTURA-INDUSTRIA LEMNULUI SI A HARTIEI, Vol. 7, seria a II-a , no. 14, July/Aug. 1952. Bucuresti.)

SO: Monthly List of East European Accessions, Vol. 2, No. 10, Library of Congress August, 1953, Uncl.

HENSON, G. M.

"Lumber industry on the road towari socialist industrialization"
Les. prom. 12, no. 4, 1952

BEMENOV, G.M.

Lesozagotoritel'naia promyshlennost' v narodnom khozyaistve SSSR [Timber industry in the national economy of the U.S.S.R.]. 212 p.

SO: Monthly List of Russian Accessions, Vol. 6, No. 9, May 1953

BENENSON, G.M.; BOGIN, G.M.

New wholesale price list on lumber and the planning of forest transportation. Les.prom. 14 no.6:28-30 Je '54. (MLRA 7:6)
(Lumber--Prices) (Lumber--Transportation)

RENEMSON, G.M.

RENEMSON, G.M., kandidat ekonomicheskikh nauk.

World resources of woodpulp, paper, and raw materials (abstracted from FAO 1954 publication "World Pulp and Paper Resources and Prospects" and "Pulp and Paper World Review" no.8 1956). Bum.prom. 32 no.2:22-25 F '57. (MLRA 10:5)

(Woodpulp--Statistics) (Paper--Statistics)

BENENSON, G.

BENENSON, G., kandidat ekonomicheskikh nauk.

Sawmilling in the prerevolutionary Russia. Mast.lesa. no.4:22-23 Ap '57. (MIRA 10:10)
(Lumbering--History)

SKOBLOV, Dmitriy Alekseyevich; BENENSON, G.M., red.; UL'IN, V.M., red.; MALYUGIN, V.I., red.; NASLOV, N.A., red.; USPENSKIY, V.V., red.; CHERNYAK, M.Ya., red.; SHASS, M.Ye., red.; MORSKOY, K.L., red. izd-va; TEMKINA, Ye.L., tekhn.red.

[Lowering the expenditure of wood in building] Snizhenie raskhoda drevesiny v stroitel'stve. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 45 p. (MIRA 12:12)
(Building materials) (Building, Wooden)

BENENSON, Grigoriy Moiseyevich; OBRAZTSOV, Sergey Aleksandrovich; BOLYATIN-SKAYA, Lyudmila Sergeyevna; BURKOV, V.I., red.; VOLOSHCHSKAYA, L.V., red. izd-va; BACHURINA, A.M., tekhn. red.

[Prospects of the distribution of sawmills and woodworking industries] Perspektivy razmeshcheniia lesopil'nogo derevoobrabatyvaiushchei promyshlennosti. Moskva, Goslesbumizdat, 1960. 206 p. (MIRA 14:6)

1. Laboratoriya ekonomiki TSentral'nogo nauchno-issledovatel'skogo instituta mekhanicheskoy obrabotki drevesiny (for Benenson, Obraztsov, Bolyatinskaya)
(Woodworking industries) (Industries, Location of)

BENENSON, Grigoriy Moiseyevich, kand. ekon.nauk; GNEDKOV, N.Ye., red.; SEDOVA, Z.D., red.izd-va; PARAKHINA, N.L., tekhn. red.

[Specialization and cooperation in the lumber and woodworking industries] Spetsializatsiia i kooperirovanie v lesopil'no-dereboobrabatyvaiushchei promyshlennosti. Moskva, Goslesbumizdat, 1961. 112 p. (MIRA 14:12)
(Woodworking industries) (Sawmills) (Industrial organization)

BENENSON, I.

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DLC: HE7.S6

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress Reference Department, Washington, 1952, Unclassfied.

BENENSON, I., kand. ekon. nauk; IVANOVA, Ye.

Development of the interurban bus service and rate scales.
Avt. transp. 37 no.2:34-36 F '59. (MIRA 13:1)
(Motorbus lines)

ARTEM'YEV, S.P.; AFANAS'YEV, L.I.; BELOUSOV, I.I.; BENESON, I.M.; BRONSHTEYN, L.A.; BUYANOV, V.A.; VELIKANOV, D.P.; VERKHOVSKIY, I.A.; GORINOV, A.V.; GOBERMAN, I.M.; DAVIDOVICH, L.N.; DEGTEREV, G.N.; ZVONKOV, V.V.; KALABUKHOV, F.V.; KOMAROV, A.V.; KUDRYAVTSEV, A.S.; LIV'YANT, Ya.A.; PETROV, A.P.; PETROV, V.I.; TARANOV, A.T.; TIKHOMIROV, N.N.; FEDOROV, V.F.; CHUDINOV, A.A.; SHUPLYAKOV, S.I.; YANKIN, Yu.S.

Anatolii Pavlovich Aleksandrov; obituary. Avt.transp. 38 no.9:57 S '60. (MIRA 13:9)

(Aleksandrov, Anatolii Pavlovich, 1903-1960)

BANNENSON, I.S., ordinator

Case of poisoning from a tincture of Strophanthus with recovery.
Med.zhur.Uzb. no.7:62-63 Jl '58. (MIRA 13:6)

1. Iz II terapevticheskogo otdeleniya Tashkentskoy klinicheskoy bol'nitsy neotloshnoy pomoshchi. Nauchnyy rukovoditel' - prof. A.S. Melik-Karamyan.
(STROPHANTHIN--TOXICOLOGY)

BENENSON, I.S.; KALISH, F.M.

Transitory cardiac fibrillation. Med. zhur. Uzb. no.10:47-49 '61.
(MIRA 14:10)

1. Iz 1-go terapevticheskogo otdeleniya (nauchnyy rukovoditel' - prof. O.N.Pavlova) Tashkentskoy klinicheskoy bol'nitsy neotlozhnoy pomoshchi.

(ARRHYTHMIA)

BENENSON, L. S.

USSR/Electronics - Waveguides Apr 52

"Computing the Excitation of Waveguides," L.S. Benenson

"Zhur Tekh Fiz" Vol XXII, No 4, pp 559-578

Author refers to works by Ya. N. Feld ("Zhur Tekh Fiz" Vol XVII, No 12, 1947; Vol XVIII, No 10, 1948). He generalizes particular cases discussed by Feld and derives formulas for the computation of coeffs in the eqs. He also solves an auxiliary problem concerning the excitation of waveguides with loads at the terminals. Indebted to Prof Ya. N. Feld. Received 10 Sep 51.

216T37

SOV/109- -4-3-10/38

AUTHORS: Ya.N. Fel'd, and L.S. Benenson

TITLE: Calculation of the Phase Velocities of the Waves in an Artificial Metallic Dielectric (Raschet fazovykh skorostey voln v iskusstvennom metallodielektrike)

PERIODICAL: Radiotekhnika i Elektronika, Vol 4, Nr 3, 1959, pp 417-427 (USSR)

ABSTRACT: A general method for deriving the characteristic equation for determining the phase velocity of a metal-dielectric system is presented. The system considered is in the form of a three-dimensional grid containing metallic elements. It is assumed that the waves propagate along one of the axes of the grid, e.g. axis z. The overall surface area of the elements of the grid is $S = \sum_n S_n$, where S_n is the area of the n-th element. A wave propagating along axis z induces a surface current of density $\vec{K}$ on the surface of the elements. The total field in the system is, therefore, in the form of an integral operator of the current $\vec{K}$, that is $\vec{E} = \vec{E}(\vec{K})$. If the current at the zero element is $\vec{K} = A\vec{\psi}$, the current at an arbitrary element is expressed by Eq (2) where h is the wave number and f(n) is the unknown function of n, which

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is identical for all the elements lying in the same plane z = const; A is a constant. The characteristic equation for the phase velocity can be written as:

$$\int_{S_n} \vec{K} \; \vec{E} \; (\vec{K}) \; dS = 0 \quad . \tag{3}$$

By substituting Eq (2) in Eq (3), the latter can be written as Eq (4) where $\mathfrak{L}$ is given by Eq (4a). Eq (4) can be used to evaluate the phase velocity in an artificial metal-dielectric. In particular, it can be employed to evaluate the velocity in the system shown in Fig (1); this is in the form of a rectangular three-dimensional lattice formed of metal stubs having a length l and a radius a ; the spacings between the stubs in the three directions are L_x , L_y and L_z . For this case, Eq (4) is in the form of:

$$|A|^2 \, e^{ihf(o)} \int_{S_o} \vec{\psi} \sum_n e^{-ihf(n)} \vec{E}_n \{ \quad dS = 0 \tag{13}$$

Card 2/4 This can also be written as Eq (13a) or Eq (15), where Z_n

Calculation of the Phase Velocities of the Waves in an Artificial Metallic Dielectric

is defined by Eq (14). This can further be transformed into Eq (17) where Z_{0x} is defined by Eq (16). Z_{0x} is the impedance induced into the zero stub by all the stubs situated in the plane z = constant. The impedance Z_{0x} can be evaluated from Eq (18), or Eq (20). It can also be written in the form of Eq (24), where N is defined by Eq (21) while f is given by Eq (22); the parameter γ_p is the propagation constant of the p-wave in a waveguide which is equivalent to a two-dimensional lattice shown in Fig 2. The resistance of a single stub in the equivalent waveguide is given by Eq (25). On the basis of the above expressions it is shown that the characteristic equation of the system is in the form of Eq (32), where $X(h)$ is given by Eq (31); in these equations $\gamma_1 = k$ and $\gamma_p = i\alpha_p$. By analysing Eq (32) it is found that the region of the transmission of the waves through the lattice is defined by Eq (41); the boundaries of the transmission region can be found from Eq (42). Eq (32) was also used to evaluate the values of $hL_z = \zeta(k)L_z$ for various R_{00}/X_{00}. The

Calculation of the Phase Velocities of the Waves in an Artificial Metallic Dielectric

resulting graphs are shown in Fig (3). These do not take into account the existence of the attenuated eigen-waves. The values of similar functions which take into account the higher-order waves are plotted in Fig (4). From Fig (4) it is seen that the existence of the higher-order waves may lead to a substantial change of the phase constant.

Card 4/4 There are 5 figures, an Appendix and 7 references, 4 of which are Soviet and 3 English.

SUBMITTED: November 6, 1957

AUTHOR: Benenson, L.3. SOV/109- - -4-3-23/38

TITLE: Anisotropic Properties of a Rib-Type Delay Structure (Anizotropnyye svoystva rebristoy zamedlyayushchey struktury)

PERIODICAL: Radiotekhnika i Elektronika, Vol 4, Nr 3, 1959, pp 517-520 (USSR)

ABSTRACT: A rib-type delay structure, shown in Fig 1, fulfils the surface boundary conditions given by Eq (1). The surface wave propagating over the structure can be described by the Hertz vectors as expressed by Eq (2), where the quantities α, β, γ, obey the relationship expressed by Eq (3). Miller (Refs 1 and 2) showed that the parameters obey Eq (4), in which the symbols are defined by Eq (5). On the basis of Eqs (3) and (4) it is possible to determine the magnitude of the phase velocity in the direction of the phase normal and the angle between the direction of the rays and the phase normals. Since the quantities γ and β in Eq (3) represent the projections of the phase constant Γe on to the axes z and x, these can be expressed by:

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Anisotropic Properties of a Rib-Type Delay Structure

$$\gamma = \Gamma_z = \Gamma \cos(\vec{e}, \vec{i}_z) = \Gamma \cos \varphi \ ,$$

$$\beta = \Gamma_x = \Gamma \cos(\vec{e}, \vec{i}_x) = \pm \Gamma \sin \varphi \ , \qquad (6)$$

$$\beta = \pm \gamma \ \mathrm{tg}\, \varphi \ ; \quad \varphi = \pm \arctan \mathrm{tg} \frac{\beta}{\gamma} \ ,$$

where φ is the angle between the normal of the phase front and the axis z. The angle is expressed by Eq (12) where Γ_0 is defined by Eq (10). The curves calculated by employing Eq (12) are shown in Figs 2 and 3. The direction of the rays or the direction of the energy transmission with respect to the axis z is defined by:

$$\mathrm{tg}\, \Psi = \frac{S_x}{S_z} \qquad (13)$$

where S_x and S_z are components of the Poynting vector. These components are expressed by Eq (14). The field components can be found from Eqs (15) and (16);

Card 2/3 consequently the Poynting vector components are given by Eq (18), and the direction of the energy propagation is

Anisotropic Properties of a Rib-Type Delay Structure

defined by Eq (19). On the basis of Eqs (6) and (7), Eq (19) can be written as Eq (21). The functional dependence of the angle Ψ on φ is illustrated in Fig 4.

Card 3/3 There are 4 figures and 2 Soviet references.

SUBMITTED: November 6, 1957

BRENSON, L.S.

Induced vibrator resistances in a wave guide. Radiotekh.i elektron. 6 no.6:926-933 Je '61. (MIRA 14:6)
(Wave guides)

24464

S/109/61/006/006/005/016
D204/D303

4.1310

AUTHOR: Benenson, L.S.

TITLE: Induced resistances of an iris in a wave guide

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 6, 1961, 926 - 933

TEXT: In many problems of electrodynamics dealing with the periodic structure of irises, it is necessary to determine the complex impedance and current distribution in the elements of this structure. The problem reduces, under certain conditions, to evaluating amplitudes of current harmonics a_j and of impedances Z_{jk}, resulting from each other. The impedance of radiation Z can be represented by

$$Z = \sum_{j,k} a_j a_k^* Z_{jk}. \qquad (1)$$

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Induced resistances of an ...

and since the coefficients of unknown amplitudes a_j are also Z_{jk}, it is clear that the possibility of determining them is of great importance. In the present article the author shows therefore how to evaluate Z_{jk} in a problem of iris design, which is situated either in a two-dimensional lattice or in a rectangular wave guide. The case of a cylindrical rod, intersecting completely an ideally magneto conducting rectangular wave guide (Fig. 1) is considered first. The field excited in the wave guide by the rod is equal to the field of a series of in phase rods obtained by mirror irises in the walls of the wave guide, the current distribution in all of them being determined by its Ky component of

$$K_y = \sum_{n=0}^{\infty} z_n \cos n\varphi, \qquad (2)$$

where angle φ is counted starting from the direction of the wave guide axis Z. The field of the n-th harmonic of one rod is evaluated with the help of the electric hertzian vector. A case of prac-

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Induced resistances of an ...

tical interest is considered next, i.e. the case of an iris which does not intersect completely the waveguide (Fig. 3). The resistance $Z_{p'm',\,pm}$ induced by the harmonic with indices pm into the harmonic with indices p'm' as determined by

$$Z_{p'm',pm} = \int_{-L/2}^{L/2} \int_{0}^{2\pi} \frac{E_y^{(mp)}}{(2\pi a)^2 C_{mp}} \cdot \cos p'\varphi \cos \frac{(2m'+1)\pi}{L} y a d\varphi dy. \quad (22)$$

Finally, after certain transformations,

$$Z_{p'm',pm} = \frac{Z_o}{2kL_y} \times \sum_{n=-\infty}^{\infty} \frac{(-1)^{m+m'} \gamma_n^2 \cos^2 \frac{n\pi L}{L_y} \left(\frac{2m+1}{L}\pi\right)\left(\frac{2m'+1}{L}\pi\right)}{\left[\left(\frac{2m+1}{L}\pi\right)^2 - \left(\frac{2n}{L_y}\right)^2\right]\left[\left(\frac{2m'+1}{L}\pi\right)^2 - \left(\frac{2n}{L_y}\pi\right)^2\right]} \quad (23)$$

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$$J_p(\gamma_n a) \times \left\{\varepsilon_{po}\delta_{pp'}H_p^{(2)}(\gamma_n a)+J_{p'}(\gamma_n a)\left[1+(-1)^{p+p'}\right]\sum_{t=1}^{\infty}\left[(-1)^{p'}H_{p+p'}^{(2)}(\gamma_n tL_x)+ H_{p-p'}^{(2)}(\gamma_n tL_x)\right]\right\} \quad (23)$$

is derived. Of practical interest is the magnitude of $Z_{oo,oo}$, equal to the impedance of the rod in the equivalent wave guide under the assumption that current distribution can te represented by one harmonic of zero order only. This value is given by

$$Z_{oo,oo} = \frac{(kL)^2 Z_0}{\pi^2(kL_y)}\left\{J_0(ka)H_0^{(2)}(ka) + 2J_0^2(ka)\sum_{t=1}^{\infty}H_0^{(2)}(ktL_x) - \right. \quad (24)$$

$$\left. - \frac{4i}{\pi}\sum_{n=1}^{\infty}\frac{\cos^2\frac{n\pi L}{L_y}}{\left[1-\left(\frac{2nL}{L_y}\right)^2\right]^2}\left(\frac{\delta_n}{k}\right)^2\left[I_0(\delta_n a)K_0(\delta_n a)+\right.\right.$$

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$$+ 2I_0^2(\delta_n a)\sum_{l=1}^{\infty} K_0(\delta_n l L_x)\Big]\Big\}. \qquad (24)$$

which can be used directly for more exact determination of the phase velocity in the structure using Eq. (30) as given in Ya.N. Fel'd (Ref. 4: Padeniye elektromagnitnykh voln na dvoynye beskonechnye reshetki, Dokl. AN SSSR, 1956, 107, 1, 71). The induced impedance of rods in metal wave guides can be determined in the same manner, remembering only the different disposition of image rods and that the main wave is TEM by H_{01}. The above results can also be used for a more general case of arbitrary direction of wave propagation in metal dielectrics. Table 1 gives the relative discrepances between exact and approximate values of $X_{oo}/R_{oo} = \xi$. It may be seen that this discrepancy increases with the diminishing periodicity of the iris structure (i.e. when the interaction between the actual and image rods increases). For small periodicity values

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values (L_x/λ = 0.1 - 0.2) the error is considerable (of the order of 10-30 %) even for not too thick rods ($a/\lambda \cong 0.025$-0.045). There are 5 figures, 1 table and 4 Soviet-bloc references.

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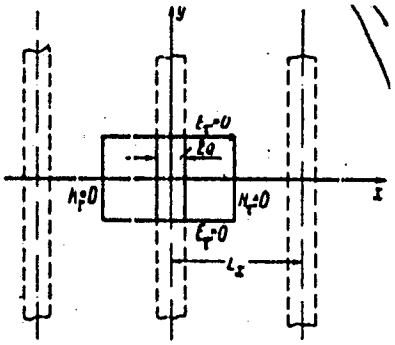
Fig. 1.



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AUTHOR: Benenson, L.S.

TITLE: Evaluation of phase velocity in an artificial metal dielectric with current harmonics at the structure element

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 7, 1961, 1128 - 1135

TEXT: In this article the author derives a generalized characteristic equation valid for any current distribution. The problem is solved for the case of waves being propagated along one axis of the structure whilst its solution for the case of arbitrary propagation can be easily provided using the method given in L.S. Benenson (Ref. 2: Fazovaya skorost'voln v anizotropnom iskusstvennom metallo-dielektrike pri proizvol'nom napravlenii rasprostraneniya. Radiotekhnika i elektronika, 1959, 4, 11, 1806). The phase velocity constant h in the structure is derived by establishing a system

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$$\sum_j a_j \left(\sum_n e^{-ihnL_z} Z_{on,pj} \right) = 0, \quad p = 1, 2, \ldots, \qquad (4)$$

of homogeneous linear equations with respect to the unknown amplitudes a_j of current harmonics. In this equation L_z is the axial lattice period of the equivalent waveguide and

$$Z_{on,pj} = -\frac{1}{I^2} \int_{sd} \vec{\psi}_p \vec{E}_n (\vec{\psi}_j)\, ds \qquad (5)$$

in the resistance induced by current $\vec{\psi}_j$, distributed at the n-th element and current $\vec{\psi}_2$ distributed at the zero element having s_o and T-a factor equal to the perimeter of the cross section of the structure element. For the non-trivial solutions of Eq. (4) to exist the determinants

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$$\begin{vmatrix} A_{00}, & A_{10}, & \cdots \\ A_{01}, & A_{11}, & \cdots \\ \cdots & \cdots & \cdots \end{vmatrix} = 0 \qquad (6a)$$

of the system must be equal to zero, where

$$A_{pj} = \sum_{h} e^{-ihnL_z} Z_{on,\ pj}. \qquad (6b)$$

Eq. (6a) is the required equation for determining the phase constant h of waves in the structure. Approximations are obtained e.g. the zero order approximation is

$$A_{00}(h) = 0. \qquad (9)$$

The face term in Eq. (9) incorporates $X_{00,00}$ - the radiation reac-.

tance of the element of the structure. If only the approximate current distribution at the structure elements is given, one should assume it to be that corresponding to the distribution at a single element, placed in an equivalent waveguide excited by a TEM wave. The current distribution will then be determined by

$$\vec{K}_n = e^{-ih_n L_z} \sum_{ij} a_j \vec{\psi}_j, \qquad (1)$$

with the proviso that factors a_j should be determined first from a system of linear equations using the method of induced emf's. It can be shown that then

$$\sum_{p,j} a_j a_p^* \sum_n e^{-ih_n L_z} Z_{mn,pj} = 0, \qquad (29)$$

holds. It can also be easily seen that

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$$\sum_{j+p\ =\ \text{even}} \alpha_j \alpha_p^* R_{00,pj} = R_{00} \quad \text{and} \quad \sum_{j+p=\text{even}} \alpha_j \alpha_p^* X_{00,pj} = X_{00}$$

represent the real (R_{00}) and reactive (X_{00}) impedance of the posts in equivalent waveguide (or two-dimensional lattice) when current

$$\psi = \sum_p \alpha_p \psi_p$$

is propagated. If an infinite lattice of posts is given in which the current distribution is described by

$$\psi = 1 + \alpha_1 \cos\varphi, \qquad (32)$$

according to L.S. Benenson (Ref. 5: Navedennye soprotivleniya vibratora volnovode, Radiotekhnika i elektronika, 1961, 6, 6, 926)

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$$\alpha_1 = \frac{f_0^{(1)}}{f_0^{(0)}} \frac{Z_{00,00}}{Z_{00,11}}, \quad f_0^{(0)} = J_0(ka), \quad f_{\pm 0}^{(1)} = \mp i J_1(ka),$$

$$R_{00,00} = -\frac{J_0^2(ka)}{N_{TEM}}, \quad R_{00,11} = -\frac{J_1^2(ka)}{N_{TEM}}, \quad \frac{R_{00,11}}{R_{00,00}} = \frac{J_1^2(ka)}{J_0^2(ka)} \simeq \frac{(ka)^2}{2} \ll 1. \tag{33}$$

are obtained. There are 1 figure and 5 Soviet-bloc references.

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