DOLUKHANOV, M.P.

Scattering of ultrashort waves in the troposphere. Izv. vys. ucheb. zav.; radiotekh., no.1:49-63 Ja-F '58. (MIRA 11:4)

1. Rekomendovana kafedroy antenn i rasprostraneniya radiovoln Leningradskogo elektrotekhnicheskogo instituta svyazi im. M.A. Bonch-Bruyevicha.

(Radio waves)

AUTHOR: Dolukhanov, M.P.

108-13-6-9/11

TITLE: On the Appropriateness of Using the Term "Tropospheric Radiowaves" (O tselesoobraznosti primeneniya termina "troposfernyye radiovolny")

PERIODICAL: Radiotekhnika, 1958, Vol 13, Nr 6, pp. 75-76 (USSR)

ABSTRACT: It may at present be considered to be an established fact that all cases of the long-distance propagation of ultrashort waves can be subdivided into two groups, i.e.,those with a sporadic and those with a stable character. It is logical to class the radio waves of the ultrashort range, which are propagated over long distances at the expense of scattering by the local heterogeneities of the ionosphere, among the ionospheric waves. It is, however, also necessary to supplement the present definition of ground waves and to formulate it precisely. The propagation of ground waves is influenced to a certain extent by the heterogeneity of the troposphere, for this heterogeneity causes a distortion of light beams as well as of radio waves (atmospheric refraction). The following definition of ground waves is suggested: Ground waves are radiowaves which are propagated over the surface of the earth which is surrounded by a normal (standard) atmosphere, and which envelop the earth's surface as a result of diffraction. Even very consider-

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INSTITUTE — Deystvitel'nyy chlen Vsesoyuznogo nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni A. S. Popova.

able deviations of the tropospheric state from normal conditions exercise only a hardly noticeable effect upon the propagation of long-, medium-, and short waves, as in these ranges the field, at large distances from the transmitter, is determined by the waves of the ionosphere. On the other hand, in the range of ultrashort waves, where the distance over which ground waves are propagated, is determined by the distance of direct sight (in first approximation), the state of the troposphere exercises considerable influence upon the distance of radio connection. This makes the introduction of a special term describing such a manner of propagation of ultrashort waves in which the heterogeneity of the troposphere is decisive, appear advisable. On the strength of what has been said, the following definition of tropospheric waves is suggested: Tropospheric waves, which are observed practically only in the range of ultrashort waves, are waves which are propagated over a distance that by far surpasses that of direct sight. This takes place at the expense of the directioning effect of the tropospheric waveguides, of scattering by local heterogeneities of the troposphere, and of processes of coherent wave-scattering in the troposphere.

SUBMITTED: September 3, 1957

Card 2/2 1. Radio waves--Propagation 2. Radio waves--Scattering
3. Atmosphere--Reflective effects

SOV/107-59-1-23/51

AUTHOR: Dolukhanov, M., Doctor of the Technical Sciences (Leningrad)

TITLE: What is New in the Theory of the Propagation of Ultrashort Waves (Novoye v teorii rasprostraneniya ul'trakorotkikh voln)

PERIODICAL: Radio, 1959, Nr 1, pp 28-30 (USSR)

ABSTRACT: The author states that ultrashort waves are reflected back to the earth in the troposphere and the ionosphere and can be received under favorable conditions at distances of up to 2,000 km. He explains this wave propagation by the existence of turbulent air streams in the troposphere and by the E-layer in the ionosphere. Some waves are reflected earthwards by meteoric trails. There are 6 diagrams, one table and 7 Soviet references.

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A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 7, p. 326, # 17974

AUTHOR: Dolukhanov, M. P.

TITLE: Comparative Estimation of the Most Common Diffraction Formulae for the Shade Region

PERIODICAL: Tr. Leningr. elektrotekhn. in-ta svyazi, 1959, No. 2(39), pp. 3-12

TEXT: As a result of a comparison of the various formulae for the shade region diffraction, it is stated that the diffraction formula of Van der Pole - - Bremmer and the formula obtained by the normal wave method are fully identical with the diffraction formula of Fok.

Author's summary

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

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AUTHOR: Dolukhanov, M.P. SOV/109-4-4-1/24

TITLE: Some Possible Methods of Measuring the Entropy of Discrete and Continuous Information Sources (O nekotorykh vozmozhnykh sposobakh izmereniya entropii diskretnykh i nepreryvnykh istochnikov soobshcheniy)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 4, pp 559 - 565 (USSR)

ABSTRACT: The statistical properties of the majority of actual information sources are characterised by the probability of occurrence of various information elements, as well as the probabilities of the existence of the statistical correlation between successive information elements. If the information source were characterised only by the probabilities of the first type, the measurements of its entropy would be simple. This problem is analysed in some detail. It is assumed that an information source produces a signal whose spectrum does not exceed a limiting frequency F . Further, it is assumed that the reception is satisfactory, if k levels are distinguished. The transmission of such a signal is done by sending out sample

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pulses spaced at intervals 1/2F . This type of system can be terminated by k amplitude selectors; each of these reacts only to specified signal level. Each amplitude selector can be provided with a counter which determines a total number of given levels. This type of device is illustrated in Figure 1. By recording the count registered by various counters it is possible to determine the probabilities of occurrence of various levels: p_1, p_2, ..., p_k . The entropy of the source is then given by Eq (1) and the rate of transmission of the information is expressed by Eq (2). In the same way it is possible to measure the entropy of a discrete source. When the entropy of the source is dependent on the cross-correlation between successive elements, an approximate estimate of the entropy can be given by artificially destroying the cross-correlation between the elements and carrying out the measurement in the same way as indicated in Figure 1. It was shown by Wiener (Ref 4) that it is

possible to construct a formula of linear extrapolation which would give an optimum approximation of the process. The formula can be in the form of Eq (3) where l_o is the predicted value of an element based on n preceding values l_{-1}, l_{-2}, ..., l_{-n} which are known. The measurements of the entropy can, therefore, be done by employing an extrapolator (correlator), whose parameters correspond to the coefficients of Eq (3). The main disadvantage of such a system is due to the difficulty of estimating the error in the determination of the entropy. P. Elias (Ref 6) first drew attention to the fact that when the investigated process is governed by the normal-distribution law, a certain correlation exists between the entropy and the correlation function of the process. The relationship between the entropy and the correlation function of a process can be investigated mathematically. Thus, if the probability density of an

Some Possible Methods of Measuring the Entropy of Discrete and Continuous Information Sources

n-dimensional random quantity is given by Eq (4) and its correlation coefficient by Eq (5), the entropy can be expressed by:

$$H(x) = \log \left[(2\pi e)^{n/2} \left| A_{ij} \right|^{1/2} \right] \qquad (18)$$

where A_{ij} denote the initial second-order moments of the process. These moments are determined by the correlation function of the process. If the information source produces an infinite series of co-ordinates ζ_i : where i extends from $-N$ to $+N$, the correlation function of the system is given by Eq (19) for $N \to \infty$; m in Eq (19) can assume any values from zero to n . The second-order moments for this case are given by Eq (20). The relationship between Eq (20) and Eq (19) is expressed by Eq (21). From the above it is seen that if n^2 values of the correlation function are measured by

Some Possible Methods of Measuring the Entropy of Discrete and Continuous Information Sources

means of a correlator (the same number of moments is also recorded), the value of the determinant of the moments is calculated and the entropy can be found by using Eq (18). The entropy per degree of freedom in the system can be determined from Eq (18a). The above method of measurement is suitable for evaluating the maximum possible entropy. In practice, the measured value will deviate from the actual value, the magnitude of the discrepancy being dependent on the deviation of the probability distribution of the process from the normal distribution.
There are 9 references, 5 of which are English and 4 Soviet, 1 of the Soviet references being translated from English.

SUBMITTED: November 25, 1957

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S/106/59/000/11/002/013

AUTHOR: Dolukhanov, M. P.

TITLE: On the Nature of the Signal Distortions in a Single-Sideband Telephonic Communication System Using a Tropospheric Link

PERIODICAL: Elektrosvyaz', 1959, Nr 11, pp 12-16 (USSR)

ABSTRACT: The object of this article is the theoretical investigation of the steady-state, signal distortions in a single-sideband communications system using tropospheric scatter. The question of distortions of FM signals in tropospheric propagation is not considered. The physical cause of signal distortion in tropospheric links is the "path multiplicity". It is initially assumed that the field at the receiving point is the resultant of two rays dispersed by two arbitrary points in the dispersion zone. Then the results are extended to the case when there is a multiplicity of paths; a case corresponding more closely to reality. Using the following denotations (with corresponding suffixes for the rays 1 and 2): E - the receiver field strength; ρ - the relative amplitudes of the rays; Δl - the difference in the ray-path length relative to some fixed dispersion point (e.g. relative to the lowest point of the dispersion

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On the Nature of the Signal Distortions in a Single-Sideband Telephonic Communication System Using a Tropospheric Link

area); v - the rate of change of the difference in the ray-paths due to displacement of the dispersion area; v_{ph} - the phase velocity of the radio propagation, then

$$E = E_m K(\omega,t)\cos\left[\omega t - \psi(\omega,t)\right], \qquad (4)$$

where

$$K(\omega,t) = \sqrt{\rho_1^2 + 2\rho_1\rho_2\cos\left[(\tau_1 - \tau_2)\omega + (\Delta\omega_1 + \Delta\omega_2)t\right] + \rho_2^2} \qquad (5)$$

and

$$\phi(\omega,t) = \operatorname{arc\,tg}\frac{\rho_1\sin(\omega\tau_1 + \Delta\omega_1 t) + \rho_2\sin(\omega\tau_2 + \Delta\omega_2 t)}{\rho_1\cos(\omega\tau_1 + \Delta\omega_1 t) + \rho_2\cos(\omega\tau_2 + \Delta\omega_2 t)} \qquad (6)$$

In the above expressions, the following substitutions have been used

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On the Nature of the Signal Distortions in a Single-Sideband Telephonic Communication System Using a Tropospheric Link

$$\Delta l = \Delta l_0 + vt \qquad (1)$$

$\tau = \frac{l_0}{v_{ph}}$ = the time delay, $\Delta\omega = \frac{v}{v_{ph}}\omega$ = the Doppler frequency change. The general conditions for no distortion are 1) $K(\omega,t)$ - the transmission coefficient - to be independent of frequency and 2) the phase $\phi(\omega,t)$ to be linear with frequency. Neither of these two conditions are fulfilled in the case considered. However, in a single-sideband system, the modulating frequency Ω is very much less than ω_0, the carrier frequency, and thus, within the limits of the narrow sideband, the transmission coefficient will be independent of frequency ($K_0(t)$) and the expression for the field strength is shown to be

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On the Nature of the Signal Distortions in a Single-Sideband Telephonic Communication System Using a Tropospheric Link

$$E = \frac{mE_m K_o(t)}{2} \cos\left[\omega_o(t - t_{ph}) - \Omega(t - t_{gr})\right] (\beta/M) . \quad (13)$$

i.e. the carrier frequency is reproduced at the receiver with a phase delay and a group delay, i.e. a low frequency modulation. Thus, in the steady state the amplitude and phase of the receiver signal vary with time. The cause of these variations is the displacement of the dispersing area. If the dispersing area remains stable, then the only form of distortion present would be a phase shift, depending on the phase and group time delays. The author then obtains an expression (Eq 15) for the Doppler frequency shift due to displacement of the dispersing area. To extend the results from two ray-paths to a multiplicity of ray-paths, the author uses the concept of the tropospheric dispersion being equivalent to a narrow-band filter, and shows that the field at the receiver is given by

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$$E = E_m K(\omega,t)\cos\left[\omega t - \phi(\omega,t)\right] \tag{21}$$

when

$$K(\omega,t) = \sqrt{(\Sigma\rho_i \cos\beta_i)^2 + (\Sigma\rho_i \sin\beta_i)^2} \tag{22}$$

$$\phi(\omega,t) = \arctan\frac{\Sigma\rho_i \sin\beta_i}{\Sigma\rho_i \cos\beta_i} \tag{23}$$

and

$$\beta_i = \omega\tau_i + \Delta\omega_i t \quad .$$

The Doppler frequency shift is given by:

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On the Nature of the Signal Distortions in a Single-Sideband Telephonic Communication System Using a Tropospheric Link

$$\omega' = \omega - \frac{(\Delta\omega_1+\Delta\omega_2+\ldots\Delta\omega_n)+\cos(\beta_1-\beta_2)(\Delta\omega_1+\Delta\omega_2)+\ldots}{n+2[\cos(\beta_1-\beta_2)+\cos(\beta_1-\beta_3)+\ldots+\cos(\beta_{n-1}-\beta_n)]}$$

$$\ldots+\cos(\beta_1-\beta_3)(\Delta\omega_1+\Delta\omega_3)+\ldots+\cos(\beta_{n-1}-\beta_n)(\Delta\omega_{n-1}+\Delta\omega_n) \quad . \quad (24")$$

It is concluded that transit distortions should not arise in single-sideband tropospheric transmission, but fading due to the Doppler frequency shift will occur. Professor I. G. Klyatskin and Dots. V. V. Palshkov advised in this work. There is 1 figure and there are 5 references, 4 of which are Soviet and 1 English.

SUBMITTED: May 28, 1959.

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SOV/26-59-5-5/47

6(4,6)

AUTHOR: Dolukhanov, M.P., Professor (Leningrad)

TITLE: Long-Range Propagation of Ultrashort Radiowaves

PERIODICAL: Priroda, 1959, Nr 5, pp 29 - 34 (USSR)

ABSTRACT: An editorial introduction precedes this article, recalling that the first radio-receiving set in the world was constructed and demonstrated by the Russian scientist A.S. Popov in May 1895, and that later discoveries, including application of short waves to TV and to multi-channel radio communication, are described by the author in the present article. The author then refers to the discovery since 1941 of the curved propagation of ultra short waves, which made TV reception up to 700 km away a practical proposition. He describes how the coherent scattering of radio waves made possible multi-channel radio communication. This enabled simultaneous (100 or more) telephone communications over a distance of 300 - 500 miles. There are 5 diagrams and 2 graphs.

SOV/5201

PHASE I BOOK EXPLOITATION

Dolukhanov, Mark Pavlovich

Rasprostraneniye radiovoln (Propagation of Radio Waves) Moscow, Svyaz'izdat, 1960. 2d. ed. 390 p. Errata slip inserted. 22,200 copies printed.

Ed.: A. I. Voronova; Tech. Ed.: S. F. Karabilova.

PURPOSE: This textbook has been approved by the Ministerstvo vysshego obrazovaniya SSSR (Ministry of Higher Education USSR) for use in schools of higher education and university divisions of radio and electrical engineering.

COVERAGE: This edition of the textbook has been considerably enlarged as compared with the first edition, published in 1951. Discoveries of the last ten years in the field of ultrashort-wave propagation have been incorporated, so that a whole chapter is devoted to tropospheric propagation as against two paragraphs in the first edition. The chapter on the ionosphere has been extensively revised. The author thanks P. Bekman, Candidate of

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Technical Sciences, who translated the book into Czech, Doctor Lauter and Engineer Sprenger [first names not given], who translated it into German, and G. P. Grudinskaya, Ye. N. Vasil'yev, and G. M. Bartenev, who reviewed the book. There are 75 references: 52 Soviet (including 3 translations) and 23 English.

TABLE OF CONTENTS:

MARKOV, Grigoriy Timofeyevich. Prinimali uchastiye: TERESHIN, O.N., dotsent; VASIL'YEV, Ye.N., dotsent; DUPLENKOV, D.A., aspirant; SAZONOV, D.M., aspirant; MOSOV, O.N., inzh. PISTOL'KORS, A.A., retsenzent; DOLUKHANOV, M.P., prof., retsenzent; KOCHERZHEVSKIY, G.N., dotsent, red.; VORONIN, K.P., tekhn.red.

[Antennas] Antenny. Moskva, Gos.energ.izd-vo, 1960. 534 p. (MIRA 14:4)

1. Chlen-korrespondent AN SSSR (for Pistol'kors).
(Radio--Antennas)

DOLUKHANOV, M.P.

Definition sharpness in photography using 8-mm. motion-picture cameras with fixed lenses. Tekh.kino i telev. 4 no.5:76-79 My '60. (MIRA 13:8)

(Motion-picture cameras)
(Lenses, Photographic)

DOLUKHANOV, M.P.

Particular characteristics of the procedure for obtaining a sharp screen image in filming fast-moving objects. Tekh.kino i telev. 4 no.6:77-78 Je '60. (MIRA 13:7)
(Motion-picture photography)

S/108/60/015/05/01/008
B007/B014

AUTHOR: Dolukhanov, M. P., Member of the Society

TITLE: A Method of Determining the Intensity of Radio Signals Reflected From the Moon's Surface

PERIODICAL: Radiotekhnika, 1960, Vol. 15, No. 5, pp. 5-8

TEXT: The main losses of radio signals during their propagation and reflection from the Moon's surface are usually calculated from the so-called "radio-bearing equation", assuming that the Moon's surface be ideally smooth or ideally diffuse. In the first case (ideally smooth surface) (Ref. 1) the main losses are determined from formula (1) and in the second case (ideally diffuse surface) from formula (2). Observations have shown that the Moon's surface is neither ideally smooth nor ideally diffuse. Here, it is shown that the same formula (1) may be derived in another way by using the method of calculating the intensity of a wave reflected from the Earth's surface. These calculations are based on the following three principles: 1) The radio wave reflected from the Earth's surface

A Method of Determining the Intensity of Radio Signals Reflected From the Moon's Surface

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is assumed to be formed within the first Fresnel half-zone; 2) the effect of the spherical shape of the reflecting surface is taken into account; 3) the unevenness of the Earth's surface is taken into account by a corresponding reduction of the reflection coefficient and by its substitution into the so-called "effective reflection coefficient". Fig. 1 is used to determine the dimensions of the first Fresnel half-zone at the Moon. Formula (3) is written down for the calculation of the radius of the first Fresnel half-zone at the Moon. Results are listed in Table 1. The values obtained show that the dimensions of the half-zone are much smaller than the Moon's radius throughout the wave range. The processes of secondary emission may thus be regarded as a single reflection of radio waves from the Moon's surface. Next, formula (5) is written down for the calculation of the main losses occurring in wave propagation. For a real, spherical Moon it is necessary to add the divergence coefficient G to this formula, which considers the additional field attenuation of the reflected wave. One obtains formula (6), after which it is

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VA

A Method of Determining the Intensity of Radio Signals Reflected From the Moon's Surface

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only necessary to determine G to solve the whole problem. Formula (12) is derived for G, substituted into (6), and the definite formula (13) is obtained. The latter formula is identical with formula (1) but offers a more accurate physical representation of the processes associated with the reflection of radio waves from the Moon's surface. The author believes that the experimental small values of the reflection coefficient R derived from reflection from the Moon's surface can be explained by the additional reduction of the reflection coefficient, which is caused by the unevenness of the Moon's surface. The process associated with the reflection of short radio pulses is described next. In the case of pulses of a duration of more than one millisecond, the fundamental reflection is superposed by additional reflections, thus causing an increase in the intensity of reflection. It is noted that this is obviously the reason of the "modulation losses", i.e., the intensity of reflection decreases with an increase in the duration of the pulse. There are 3 figures and 3 non-Soviet references.

VA

Card 3/3 Submitted Apr. 1959

S/107/61/000/005/002/004
E192/E382

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AUTHOR: Dolukhanov, M., Doctor of Technical Sciences

TITLE: Use of Artificial Earth Satellites for Ultrashort-wave Communications

PERIODICAL: Radio, 1961, No. 5, pp. 21 - 22

TEXT: The possibility of applying artificial Earth satellites (AES) as the means of extending the communication range at ultrashort waves was first indicated (as far as is known) by Professor P.V. Shmakov on May 27, 1950 at the Lecturers' Conference at the Leningradskiy elektrotekhnicheskiy institut svyazi (Leningrad Electrotechnical Communications Institute). At the time, no practical possibilities existed of arranging such a communications system but the situation changed on October 4, 1957, when the first Soviet AES, weighing 83.6 kg, was succesfully launched into space. Two methods of using AES for purposes of communications are possible: passive transmission and radio-relaying. In the first case, an AES is in the form of a metallised sphere having a diameter of several tens of metres and this acts as a reflector for a powerful

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Use of ....

transmitter situated on the Earth. An example of such a system is the American project "Echo". In the second case, an AES is equipped with a receiver and a transmitter and suitable aerials and supply sources. The satellite thus behaves as a radio-relaying station. The problems encountered in the above communications links are explained, the theory being based on two articles published in the American technical press (Ref. 2 - F.R. Pierce and R. Kompfner - Proc. IRE, v.47, March, 1959, pp. 372-380; Ref. 3 - F.R. Pierce - Bell Lab. Record, Vol. 37, Sept., 1959, pp. 323 - 329). There are 3 tables and 3 references: 1 Soviet and 2 non-Soviet (quoted in text).

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PHASE I BOOK EXPLOITATION SOV/6052

Dolukhanov, Mark Pavlovich

Dal'neye rasprostraneniye ul'trakorotkikh voln (Distant Propagation of Ultrashort Waves) Moscow, Svyaz'izdat, 1962. 176 p. 20,000 copies printed.

Resp. Ed.: N. V. Osipov; Ed.: L. I. Vengrenyuk; Tech. Ed.: A. A. Slutskin.

PURPOSE: This book is intended for scientists and radio engineers concerned with the propagation of ultrashort radio waves and with the equipment used in this field. It may also be used as a textbook by students in schools of secondary and higher technical education.

COVERAGE: The book deals with presently known methods of long-distance communications by means of utilizing some special features of distant ultrashort-wave propagation. All of the discussed methods of designing ultrashort-wave lines of communication are based on the extensive utilization of the "divergence-loss" idea. The recommended methods of design are illustrated by numerical

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examples. The enclosed list of conventional symbols will assist the reader in making use of the mathematical presentation of various phenomena. A special expression of the power level in relation to a watt chosen as a reference level (dbw) has been introduced in the book. The author thanks N. V. Osipov for his assistance. There are 40 references: 12 Soviet (including 1 translation), 27 English, and 1 French.

TABLE OF CONTENTS:

SEMENOV, Aleksandr Aleksandrovich; DOLUKHANOV, M.P., prof., retsenzent; KARPEYEV, G.A., red.; GEORGIYEVA, G.I., tekhn. red.

[Theory of electromagnetic waves; lecture course for radio physisists] Teoriia elektromagnitnykh voln; lektsionnyi kurs dlia radiofizikov. Moskva, Izd-vo Mosk. univ., 1962. 255 p. (MIRA 15:3)

(Electromagnetic waves) (Radio)

DOLUKHANOV, M., doktor tekhn.nauk, prof.

Artificial satelites are probing the ionosphere. Radio no.11:10-11 N '62. (MIRA 15:12)
(Ionospheric research)

DOLUKHANOV, M., doktor tekhn.nauk

Radio communications in the optical frequency band. Radio no.5: 50-51, 54 My '63. (MIRA 16:5)
(Masers) (Radio)

L 26374-66 EWT(d)/FSS-2

ACC NR: AM5018[illegible] Monograph UR/ 57 B-1

Dolukhanov, Mark Pavlovich

Optimal methods of signal transmission along radio communication paths (Optimal'nyye metody peredachi signalov po liniyam radiosvyazi) Moscow, Izd-vo "Svyaz'," 1965. 171 p. illus., biblio. Errata slip inserted. 6625 copies printed.

TOPIC TAGS: data transmission, radio transmission, facsimile transmission, radio signal, telegraph signal, signal analysis, signal processing, communication channel, binary code

PURPOSE AND COVERAGE: This book is intended for technicians concerned with transmissions over radio telegraph, radio telephone, and radio-facsimile communication lines and with data transmission over radio channels. The book studies and analyzes present methods for achieving transmissions in which the distortions caused by short and ultrashort radio wave propagation are suppressed and the maximal carrying capacity of the communication channel is attained.

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Ch. I. Evaluation of signal transmission methods from the standpoint of utilizing

Card 1/3 UDC: 621.396

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ACC NR: AM5018513

SUB CODE: 17/ SUBM DATE: 09Mar65/ ORIG REF: 039/ OTH REF: 026

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ACC NR: AM5020526 Monograph UR/

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B+1

Dolukhanov, Mark Pavlovich

Radio wave propagation (Rasprostraneniye radiovoln) 3d ed. Moscow, Izd-vo "Svyaz", 1965. 399 p. illus., biblio. 18,000 copies printed.

TOPIC TAGS: signal propagation, radio wave propagation, ionosphere propagation, millimeter wave propagation

PURPOSE AND COVERAGE: This book is intended for engineers and technicians concerned with radio communications and the design of communication lines either on the gound or in space. It may also be useful to students in schools of higher technical education and readers interested in radio-wave transmission, propagation, and reception. This is the third revised edition, and it contains a new chapter on "Problems of space radio-communication." Changes have been made in several chapters to reflect recent achievements in the field of radio wave propagation. For instance, the radio waves of sonic and subsonic frequencies up to a frequency of 1 Mc are discussed, as well as the propagation of millimeter and visual range frequency radio waves to to 3000 Tc. In connection with the development of space radio communications, the concept of direct radio waves has been introduced. New methods of obtaining information on the ionosphere structure by means of equipment aboard Soviet geophysical rockets, artificial Earth satellites, and spaceships are described.

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Ch. VI. Atmospheric and cosmic noises — 365

Ch. VII. Problems of space radio communications — 381

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SUB CODE: 09, 17/ SUBM DATE: 24May65/ ORIG REF: 061/ OTH REF: 046

Card 3/3 CC

DOLUKHANOV, M., prof., doktor tekhn. nauk

Radio waves of sonic and infrasonic frequencies. Radio no.3: 17-18 Mr '65. (MIRA 18:6)

L 63449-65 EWG(v)/EWT(l)/FCC GW
ACCESSION NR: AP5020930 UR/0142/65/008/003/0364/0366
621.391.81

AUTHOR: Dolukhanov, M. P. (Professor) 59

TITLE: The relationship between the visibility range and tropospheric absorption

SOURCE: IVUZ. Radiotekhnika, v. 8, no. 3, 1965, 364-366

TOPIC TAGS: optical meteorology, radiation absorption, tropospheric absorption, troposphere, visibility range, fog, turbid medium, laser beam, beam scattering

ABSTRACT: The relationship between the visibility range and the absorption coefficient δ was derived. The visibility range at night was determined under the following assumptions: 1) the light source (a 100-w incandescent lamp) represents an isotropic radiator, and 2) the relationship between the light and electromagnetic radiation can be expressed by the coefficient M, the so-called light equivalent of power. Assuming that a single 100-w lamp emits 1000 lumens, which corresponds to 1.4 w, and that the average response of a human eye to a light flux of 10^{-6} Lx is 1.4×10^{-9} w/m^2 (see Fig. 1 of the Enclosure), the visibility range (in km) was computed graphically for five values of δ (in db/km) and is shown in Table 1. The results were derived in the units used in radio engineering and optics. The above

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method can be used successfully in determining the absorption of light by rain and fog. The results indicate that in the case of a decrease in visibility below 0.6 km, neither an increase in the power of the light source, nor a corresponding increase in directivity of the radiator affect appreciably the range of visibility. Orig. art. has: 1 table, 1 figure, and 5 formulas. [VK]

ASSOCIATION: none

SUBMITTED: 19Jun64 ENCL: 01 SUB CODE: ES, OP

NO REF SOV: 002 OTHER: 000 ATD PRESS: 4067

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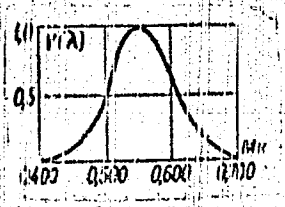
ACCESSION NR: AP5020930

ENCLOSURE: 01

Table 1. Relationship between the visibility range of a 100-w lamp and the absorption coefficient in fog

δ(db/km)	0	1	10	100	1000	10,000
r(km)	8.8	5.0	1.6	0.5	.045	0.006

Relative spectral sensitivity of the eye



Frequency, μ

Fig. 1. Visibility curve

Card 3/3

L 8566-66 EWT(d)/FSS-2

ACC NR: AP5011565 SOURCE CODE: UR/0106/65/000/004/0009/0014

AUTHOR: Dolukhanov, M. P.

69

E

ORG: none

TITLE: Physical content of the entropy concept in information theory

SOURCE: Elektrosvyaz', no. 4, 1965, 9-14

TOPIC TAGS: information theory, entropy, statistical thermodynamics, communication channel

ABSTRACT: The author shows that there is a close relationship between informational and thermodynamic entropy. The mathematical expression for entropy in statistical physics coincides exactly with the entropy expression in a finite probability system for the case of arbitrary probability values of the individual events which make up this system. For the case where information is transmitted along wires and through radio channels, the expression for the transmitting capacity of the communication channel may be determined from thermodynamic considerations on the assumption that the communications system is thermally insulated. Transmission of information is accompanied in all cases by an increase in the thermodynamic entropy of the communications system. Transmission of a single binary unit of information increases the entropy by at least $0.844 \cdot 10^{-23}$ joules per degree, which is the lower limit for the ratio be-

UDC: 621.391.12

Card 1/2

L 8566-66

ACC NR: AP5011565

tween increase in entropy and quantity of transmitted information. When thermal insulation is poor or entirely lacking, the entropy increases by a still greater value. All this shows the close relationship between probabilistic and thermodynamic entropy and indicates that the process of information transmission is directly associated with the thermodynamic phenomena which take place in the communications system. Orig. art. has: 13 formulas.

SUB CODE: EC,DP,TD/ SUBM DATE: 08Sep64/ ORIG REF: 005/ OTH REF: 002

jw

Card 2/2

L 1944-66 EWT(d)/FSS-2/EEC(k)-2 RR/GS/WS-2

ACCESSION NR: AT5018645 UR/0000/65/000/000/0169/0189

AUTHOR: Dolukhanov, M. P. (Doctor of technical sciences)

TITLE: Radio wave propagation

SOURCE: Radio 70 let (Seventy years of radio); nauchno-tekhnicheskiy sbornik. Moscow, Izd-vo Svyaz', 1965, 169-189

TOPIC TAGS: radio wave propagation

ABSTRACT: The development of the theory of radio-wave propagation for the last 10 years is reviewed with particular emphasis on Soviet contributions. Ground, tropospheric, ionospheric, direct, and subterranian waves are discussed. Ground waves: a map of electric conductivity of the ground of USSR has been compiled by V. Ye. Kashprovskiy; radio-wave propagation over a semiconducting Earth surface and some problems of wave diffraction are noted. Tropospheric radio waves: effect of altitude on refraction index; antenna directive gain; fading; engineering method of design of tropospheric lines; type of modulation and multipath propagation; vhf propagation in tropospheric waveguides; millimeter and optical waves, their absorption; potentialities of laser-wave transmissions.

Card 1/2

L 1944-66
ACCESSION NR: AT5018645

Ionospheric radio waves: structure and characteristics of the Earth's atmosphere as revealed by modern cosmic studies; electron concentration; radiation belts; riometers. Audio and subsonic radio waves: magneto-hydrodynamic waves from 3 milli-cps to 3 kc; whistling atmospherics. Superlong (10000--100000 m) waves; spherical Earth "waveguide." Medium waves: median field within 200--2000 m. Short waves: methods of calculating the field strength; backwave-oblique ionospheric sounding; aurora-borealis none. Meter waves: D- and E-layer scatter propagation. Direct waves for cosmic radiocommunications. Subterranean waves, their potentialities. Matching the method of signal transmission with the peculiarities of radiowave propagation. Orig. art. has: 6 figures and 6 formulas.

ASSOCIATION: none

SUBMITTED: 04May65 ENCL: 00 SUB CODE: EC

NO REF SOV: 011 OTHER: 007

Card 2/2

BOGDANOV, Idn Stepanovich; DOLUKHANOVA, Klimora Ivanovna; FLORINSKIY, I.I., red. izd-va; GRECHANINOVA, A.A., tekhn. red.

Sumgait. Red. kollegiia: P.V. Abrosimov i dr. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1958. 20 p. (MIRA 11:7)

1. Soyuz arkhitektorov SSSR. (Sumgait--Description)

DOLUKHANOVA, N.I.

Mineral springs in the region of Miskhana in the Akhta District of the Armenian S.S.R. Izv.AN Arm.SSR.Est.nauki no.8:53-62 '47.
(MLRA 9:8)

(Akhta District--Mineral waters)

DOLUKHANOVA, N.I.

Classification of mineral waters and a graphic presentation of their composition. Izv.AN Arm.SSR.Ser.FMET 1 no.7:543-550 '48.
(MLRA 9:8)

1. Institut geologicheskikh nauk Akademii nauk Armyanskoy SSR.
(Mineral waters)

DOLUKHANOVA, N.I., otvetstvennyy redaktor; YEGOYAN, V.L., otvetstvennyy redaktor; AZIZBEKYAN, L.A., tekhnicheskiy redaktor

[Problems of geology and hydrogeology in Armenia] Voprosy geologii i gidrogeologii Armianskoi SSSR. Erevan, 1956. 231 p. (MLRA 10:5)

1. Akademiya nauk Armyanskoy SSR, Yerevan. Institut geologicheskikh nauk.
(Armenia--Geology) (Armenia--Hydrology)

5(4,5) PHASE I BOOK EXPLOITATION SOV/2133

Dolukhanova, Nina Ivanovna

Opyt primeneniya gidrokhimicheskoy s"yemki na medno-molibdenovykh mestorozhdeniyakh Armyanskoy SSR (Case History of a Hydrochemical Survey of Copper and Molybdenum Deposits in the Armenian SSR) Yerevan, Izd-vo AN Armyanskoy SSR, 1958. 88 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Armyanskoy SSR. Institut geologicheskikh nauk.

Resp. Ed.: E. A. Khachaturyan; Tech. Ed.: M. A. Kaplanyan.

PURPOSE: This book is intended for geologists and geochemists interested in chemical exploration techniques, and particularly those concerned with the geology and mineralogy of the Armenian area.

COVERAGE: This book reports on the results of the first systematic study of Armenia based on the chemical analysis of the waters present in ore deposits. The study was undertaken by the Institute of Geological Sciences of the Academy of Sciences of the Armenian SSR in 1950. The copper-molybdenum deposits of the Zangezurskiy Range (Kadzharanskoye and Agarakskoye deposits), the Bargushatskiy Range (Dastakertskoye deposits) in southeastern Armenia, and the Pambakskiy Range (Ankavanskoye deposits) in Central Armenia were studied. The author reports

Card 1/4

on new techniques of hydrochemical surveying based on the migration characteristics of molybdenum and the geochemical analyses of associated waters. The author thanks E.A. Kyuregyan, Candidate of Chemical Sciences, who conducted the chemical analyses of the waters and aqueous solutions in the alluvial deposits and who also developed a rapid and accurate field technique for determining the content of molybdenum in the aqueous solutions. Much of his investigations were performed at the Hydrochemical Laboratory of the Institute of Geological Sciences. He also thanks N. I. Khitarova, Candidate of Geological and Mineralogical Sciences. There are 46 references: 45 Soviet and 1 German.

TABLE OF CONTENTS:

Case History of a Hydrochemical Survey (Cont.) SOV/2133

Card 3/4

Case History of a Hydrochemical Survey (Cont.) SOV/2133

AVAILABLE: Library of Congress (TN445.R9M65)

MM/ fal
8-5-59

Card 4/4

DOLUKHANOVA, N.I.; GRIGORYAN, L.A.

Leaching processes in the Tandzut sulfur pyrite deposit.
Izv. AN Arm. SSR. Geol. i goeg nauki 14 no.1:57-63 '61.
(MIRA 14:3)

1. Institut geologicheskikh nauk AN Armyanskoy SSR.
(Kirovakan region—Leaching)

MKRTCHYAN, S.S., glav. red.; MALKHASYAN, E.G., otv. red.;
DOLUKHANOVA, N.A., red.; KHACHATURYAN, E.A., red.

[Problems of the geology of the Caucasus] Voprosy geologii Kavkaza. Erevan, Izd-vo AN Arm.SSR, 1964. 255 p.
(MIRA 17:10)

1. Akademiya nauk Armyanskoy SSR, Erivan, Institut geologicheskikh nauk.

15.1124 1407 2209

29615
S/120/61/000/004/027/034
E194/E355

AUTHORS: Samoylov, V.P. and Dolya, G.P.

TITLE: The use of epoxide compound as vacuum-tight material

PERIODICAL: Pribory i tekhnika eksperimenta, no. 5, 1961, pp. 160 - 161

TEXT: Compounds based on epoxide resins ЭД-6 (ED-6) and ЭД-7 (ED-7) were used as vacuum-tight materials in the development of a single electrode focusing lens for an ion source. The evolution of gas from cured specimens was first assessed by tests in a vacuum chamber with an initial vacuum of 5×10^{-7} mm Hg. Without specimens the rate of leakage over 24 hours was 0.03 cc/hour. Two specimens of 1 kg were then placed in the chamber; they were made of cured compound based on rosins Э-37 (E-37) and ЭД-6 (ED-6), polymerised at a temperature of 150 °C for twenty-four hours. The compound based on resin E-37 was loaded with dust of high-voltage porcelain, ground to give 10% residue on a number 100 sieve. The filler in the compound based on resin ED-6 was quartz sand, ground to give a

Card 1/3

The use of epoxide compound ....

residue of 10.5%. The proportions used were epoxide resin 100 parts by weight, filler 250 parts by weight, phthaleic anhydride 30 parts by weight. The presence of these samples did not alter the rate of leakage into the chamber in tests carried out at a temperature of 18 - 20 °C. A single-electrode focusing lens was then constructed but the usual ceramic insulators were completely replaced by insulators of epoxide compound in which, however, the filler was reduced to 165 parts by weight. Particular care was taken to avoid excessive heating of the mixture in the early stages of curing, which might have caused cracking. During the course of a year's operation the lens was periodically heated to a temperature of 80 - 85 °C and during this time the vacuum dropped to 1×10^{-6} mm Hg; this was probably due to the presence of a rubber packing between the quartz tube and electrode of the lens. During this service life there were neither cracks nor leakages.

Card 2/3

The use of epoxide compound ....

There are 1 figure and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc. The three English-language references quoted are: Ref. 4 - C.A. Harper - Plastics Technol., 1957, 3, No. 10, 811; Ref. 5 - V.G. McIntosh, W.H. Bostick - University of California Radiation Laboratory, 4688, 1956, Livermore; Ref. 8 - H.L. Loucks. Mater. and Methods, 1956, 43, No. 2, 90.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR
(Physicotechnical Institute of the AS UkrSSR)

SUBMITTED: December 3, 1960

Card 3/3

ACC NR: AP6013487 UR/0120/66/000/002/0019/0022

AUTHOR: Dolya, G.P.; Samoylov, V.P.

ORG: Physical-Technical Institute, UkrSSR, Khar'kov (Fiziko-tekhnicheskiy institut UkrSSR)

TITLE: Accelerating tube of a neutron generator, made from an epoxy compound

SOURCE: Pribory i tekhnika eksperimenta, no. 2, 1966, 19-22

TOPIC TAGS: neutron ~~generator, neutron~~ electric generator, ~~tube~~, ~~ion tube material~~ epoxy plastic, ~~filled epoxy plastic property~~, ion accelerator tube

ABSTRACT: This paper describes an accelerator tube of a neutron generator with walls made of filled epoxy compound rings, glued together with epoxy adhesive, Fig. 1. Mechanical and electrical properties of the hardened epoxy compound are investigated and described as functions of filler grain size, filler proportion etc. Tests showed that, at equal filler purities, fillers of quartz sand and aluminum oxide deliver an electrical strength which is practically independent of particle size, filler proportion or filler material. However, bending strength noticeably increases with a decrease of particle size and the ratio of epoxy to filler. The process of accelerator tube construction is described. In a two-year test operation, with a tube length of .5 meter, operated in air, the operating voltage across the tube was maintained between 150 and 160 kilovolts. At an outside temperature of 20°C., a vacuum of $(4 - 5).10^{-7}$ torr was attained. No leaks were observed during the two years of operation. Gas development

Card 1/2 UDC: 539.1.076

ACC NR: AP5013487

did not exceed that of a similar porcelain tube of conventional construction, run in parallel for comparison. It is concluded that epoxy composite compounds can compete favorably with the conventional materials in the production of accelerator tubes and have a number of advantages, such as simplicity and constructional flexibility in the creation of various configurations. Orig. art. has: 3 figures.

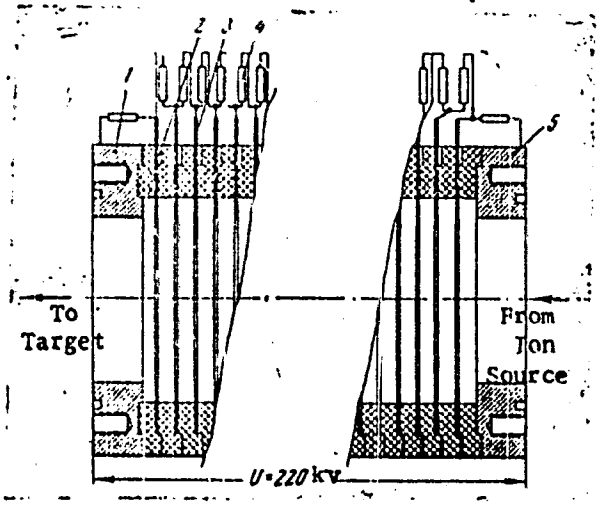


Fig. 1. Accelerating tube of a neutron generator.
1 & 5 -flanges. 2 - space for electrode contacts. 3 - electrodes; 4 - voltage divider.

SUB CODE: 20,18/ SUBM DATE: 3Apr65 ORIG REF: 012

Card 2/2

NOSOVITSKAYA, S.A.; EYDEL'MAN, K.L.; DOLYA, L.V.

Some methods to improve utilization of the industrial capacity of tablet plants. Med. prom. 17 no.6:17-19 Je '63 (MIRA 17:4)

1. Khar'kovskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut.

NIKITIN, D.G., inzh.; LYUBAVSKIY, K.V., doktor tekhn.nauk, prof.;
Prinimali uchastiye: DOLYA, N.A.; VOL'VACH, Ya.I.

Effect of the composition and the continuity of a joint metal on the quality of an enamel coating. Svar. proizv. no.3:4-8 Mr '63. (MIRA 16:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut khimicheskogo mashinostroyeniya (for Nikitin). 2. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (for Lyubavskiy).
(Welding—Testing) (Enamel and enameling)

YURCHENKO, V.Yu., inzh.; NIKITIN, D.G., inzh.; DOLYA, N.A., inzh.

Mechanized deposition of lead on steel chemical apparatuses by gas welding. Svar.proizv. no.2:29 F '64. (MIRA 18:1)

1. Ukrainskiy nauchno-issledovatel'skiy institut khimicheskogo mashinostroyeniya.

YURCHENKO, V. Yu., inzh.; NIKITIN, D.G., inzh.; DOLYA, N.A., inzh.

Mechanized method of lead plating chemical equipment. Khim. i neft. mashinostr. no.6:30-31 D '64 (MIRA 18:2)

DOLYA, N. I.

"Preparation of Ash Seeds Normal for Seeding, and Factors Which Inhibit Their Growth." Cand Agr Sci, Kar'kov Agricultural Inst, Kar'kov, 1953. (RZhBiol, No 7, Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

1. DOLYA, N. I.

2. USSR (600)

4. Ash (Tree)

7. Physiology of the germination of seeds of the ordinary ash. Dokl. AN SSSR 88, no. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

K

COUNTRY : USSR
CATEGORY : Forestry. Forest Cultures

ABS. JOUR. : RZhBiol., No. 2, 1959, No. 6177

AUTHOR : Dolya, N.I.
INST. : Kharkov Agric. Inst.
TITLE : Influence of Temperature on Seed Germination and Growth of Sprouts of the Common Ash.

PUBLISHED : Zap. Khar'kovsk. s.-kh. in-ta, 1957, 16 (53), 229-232

ABSTRACT : Seed of the ash, gathered in various geographical regions, were stratified for 90 days at 1o - 22 degrees, and then they were divided into 3 parts and were stratified in a multiple incubator for 150 more days. The average temperature of the cold period of stratification in the first variant was 0 degrees, in the second + 2.2 degrees, and in the third +4.5 degrees. The seed begins to chip in the second variant after 160 days

CARD: 1 /3

45

COUNTRY :
CATEGORY :

ABS. JOUR. : RZhBiol., No. 2, 1959, No. 6177

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : and in the third variant after 150 days of the total period of stratification. In the first variant after 250 days of the total period of stratification there was negligible changing of the seed only on two spots of the selection. When the seed were maintained at - 8, 9 - 12, and 20 - 22 degrees. The most spontaneous germination was noted at - 8 degrees; the slowest at 20 - 22 degrees. The author believes that it is neces-

CARD: 2/3

USSR / Forestry. Forest Crops. K-5

Abs Jour: Ref Zhur-Biol., No 16, 1958, 72824.

Author : Dolya, N. I.
Inst : Kharkov Agricultural Institute.
Title : Determining the Degree of Readiness for Germination of Seeds of F. excelsior L.

Orig Pub: Zap. Khar'kovsk. s.-kh. in-ta, 1957, 16(53), 233-242.

Abstract: It is noted that the seeds of Fraxinus excelsior L. belong to a group which requires 160-180 days of stratification in order to germinate beginning with increased and then with decreased temperatures. Known methods of determining the readiness of seeds for planting are reviewed and their unsuitability is shown for seeds of F. excelsior L. Positive results were obtained through germination of isolated

Card 1/2

USSR / Forestry. Forest Crops. K-5

Abs Jour: Ref Zhur-Biol., No 16, 1958, 72824.

Abstract: seed buds of stratified seeds. It was established that seed buds prepared for planting sprout a rootlet, and in seeds not prepared for planting, cotyledons. Germination of seed buds can be carried out in darkness on moist filter paper at 22°. On the third day after the staft of germination, the percentage of seed buds which sprout rootlets appears and the time is determined that is necessary for terminating the seed preparation for planting. A graph is cited, obtained as a result of germination of isolated seed buds in 56 seed samples of F. excelsior L. which were stratified at different temperatures in different medium (turf, sand, forest bed) and were collected at various geographical points (from the Southern Crimea to Moscow Oblast and from the Carpathians to the Volga). -- N. Ye. Skripitsyna.

Card 2/2

USSR/Cultivated Plants - Potatoes. Vegetables. Melons. M-3

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29794

Author : Vlasyuk, P.A., Dolya, V.S.

Inst : Institute for Plant Physiology and Agrochemistry of the Academy of Sciences, Ukrainian SSR.

Title : The Effect of Micronutrients and Bacterial Fertilizers on the Output of Vegetable Pot Cultures.

Orig Pub : Dopovidi AN URSR, 1956, No 6, 584-587 (ukr.; rez. russk.)

Abstract : It has been established as a result of experiments made by the Institute for Plant Physiology and Agrochemistry of the Academy of Sciences Ukrainian SSR in 1954-1955 that the application of micronutrients and phosphorus bacteria during the sprouting period considerably increases the growth of the vegetable cultures, shortens the budding time, that of flowering, of fruit ripening and

Card 1/2

DOIYA, V. (g.Rezekne); VLASOV, A. (g.Sverdlovsk); BULEGA, F. (s.Kurashevtsy, Vinnitskaya obl.); MIRONOV, Ye. (sovkhoz Neyelovo, Smolenskaya obl.); VOLKOV, V. (s.Kazanka, Nikolayevskoy oblasti); BRUDKIN, A. (Khabarovskiy kray)

Suggestions of the wire broadcasting workers. Radio no.2:49-50 F '62. (MIRA 15:1)
(Wire broadcasting--Equipment and supplies)

Country : USSR M
Category: Cultivated Plants. Potatoes. Vegetables. Melons

Abs Jour: RZhBiol., No 11, 1958, No 48935

Author : Dolya, V.S.
Inst : Inst. of Plant Physiology and Agricultural Chemistry, AS UkrSSR.
Title : On the Top-Dressing of the Vegetable Cultures.

Orig Pub: Sad i ogorod, 1957, No 4, 29-30

Abstract: By spraying a 0.5% solution of cobalt nitrate, tomatoes matured 8 days earlier and increased their yield by 34%. The cabbage crop of the Moner Pervyy variety increased by 43% by being sprayed with 0.05% solution of manganese sulfate. It increased by 30% when sprayed with the 0.001% solution of potassium iodide, by 28% when sprayed

Card : 1/2

M-56

DOLYAKOV, V.

Organizing control over the quality of merchandise. Vnesh. torg. 41 no.8:35-37 '61. (MIRA 14:8)

1. Nachal'nik Gosudarstvennoy inspektsii po kachestvu eksportnykh tovarov.
(Russia—Commerce)
(Quality control)

DOLYAKOV, V.

Soviet machines should be the best in the world. Vnesh. torg. 42 no.4:32-33 '62. (MIRA 15:4)

1. Nachal'nik Gosudarstvennoy inspektsii po kachestvu eksportnykh tovarov.

(Odessa--Milling machines)

Dolyanovskiy, V.K.

PUKHAL'SKIY, G.V., kandidat tekhnicheskikh nauk; DOLYANOVSKIY, V.K., inzhener.

Using blast furnace waste slag in building. Stroi.prom. 35 no.3:34-37 Mr '57. (MLRA 10:4)

1. Yuzhnyy nauchno-issledovatel'skiy institut po stroitel'stvu (for Pukhal'skiy). 2. Trest Kerch'metallurgstroy (for Dolyanovskiy).
(Slag) (Concrete)

ACCESSION NR: AP4044838 S/0280/64/000/004/0187/0190

AUTHOR: Dolyatovskiy, V. A., Sotnikov, Ye. M.

TITLE: One class of teaching machines

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 4, 1964, 187-190

TOPIC TAGS: teaching machine, learning process, computer programming, teaching program

ABSTRACT: The authors discuss the teaching process and examine the general theory of teaching machines. They recommend that the program of a teaching machine should explain the concepts studied from many aspects, point out to the student his mistakes in the process of learning, and provide means for correcting mistakes and for the formation of logical thought. Such requirements are satisfied by a machine whose teaching program is divided into several branches and which also has a controlling and correcting program. The program for machines of this type has a definite structure whose elements are specific concepts, the branching system of the program, and the system for evaluating the answers. Such machines can be constructed quite simply on the basis of a general-purpose digital computer. A relatively simple machine of this type is briefly described.

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ACCESSION NR: AP4044838

Its block diagram is shown in Fig. 1 of the Enclosure. The machine was built in the form of a table model, and can teach 6 persons a section per hour. A teaching machine of this type can find wide use in colleges for teaching and testing purposes, as well as for investigating various problems in teaching by machines. Orig. art. has: 2 figures and 4 formulas.

ASSOCIATION: none

SUBMITTED: 21Nov63 ENCL: 01

SUB CODE: DP NO REF SOV: 005 OTHER: 000

Card 2/3

ACCESSION NR: AP4044838

ENCLOSURE: 01

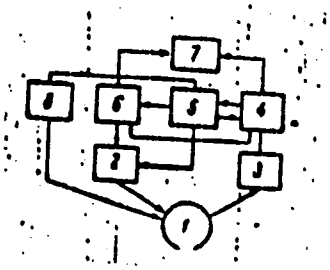

Fig. 1. Block diagram of a teaching machine. 1 - student, 2 - unit giving the teaching program, 3 - device for accepting the answers, 4 - unit for logical analysis and decision, 5 - controlling device, 6 - timing unit, 7 - unit indicating the results, 8 - unit giving the correcting program.

Card 3/3

L 5128-66 EWT(d)/EWT/EWP(1) IJP(c) BB/GG

ACCESSION NR: AP5026302 UR/0144/65/000/008/0881/0890 53 49 03

681.142+62-50

AUTHOR: Dolyatovskiy, V. A. (Aspirant); Sotnikov, Ye. M. (Assistant) 44 44

TITLE: Certain principles of learning and machine teaching 16 44

SOURCE: IVUZ. Elektromekhanika, no. 8, 1965, 881-890

TOPIC TAGS: teaching machine, circuit design, cybernetics, learning mechanism

ABSTRACT: The number of students at the institutions of higher learning of the Soviet Union increased in 1963 by 1.4 times as compared with the enrollment in 1957. This puts a great stress on the teaching staff and leads to the need for the rationalization of the teaching process. After outlining the basic principles of the learning process, the present authors describe the teaching program for the students of the Industrial Electronics course (which is the fourth in the Automation and Telemechanics curriculum) which then served as the basis for the construction of the appropriate table model electronic teaching machine. The entire course was divided into eight sections each of which was further subdivided into

Card 1/2

09010222

L 5128-66

ACCESSION NR: AP5026302

three subsections or information units. The article describes the program as well as the design and operation of the teaching machines. This simple teaching machine was used with success in the teaching process. Orig. art. has: 4 formulas, 6 figures, and 2 tables.

ASSOCIATION: [Dolyatovskiy] Institut kibernetiki AN UkrSSR (Institute of Cybernetics, AN UkrSSR); [Sotnikov] Kafedra avtomatizatsii proizvodstvennykh protsessov Rostovskogo instituta sel'khozmashinostroyeniya (Department of Automation of Production Processes, Rostov Institute of Agricultural Machine Construction)

SUBMITTED: 23Nov63 ENCL: 00 SUB CODE: DP, GO

NO REF SOV: 004 OTHER: 000

Card 2/2

L 5129-66 EWT(d)/EXT/EWP(1) IJP(c) EB/GS

ACCESSION NR: AP5026303 UR/0144/65/000/008/0891/0894
681.142.33

AUTHOR: Dolyatovskiy, V. A. (Aspirant); Sotnikov, Ye. M. (Assistant)

TITLE: Electromechanical teaching machine

SOURCE: IVUZ. Elektromekhanika, no. 8, 1965, 891-894

TOPIC TAGS: cybernetics, teaching machine, semiconductor device, algorithm

ABSTRACT: In recent years, the teaching process has been investigated from the viewpoint of cybernetics. The theoretical foundations of algorithmic formulation of the learning processes were laid down earlier by various authors. The realization of the proposed algorithms was carried out on various machines developed for that purpose. The present article describes one of such machines which was developed and put to use by the authors and was shown at the VDNKh exposition of teaching machines in 1964. The programmed course "Industrial Electronics" was divided into 24 sections. The associated 15 - 20 control questions approached the programmed materials from various angles. The material

Card 1/2

0901224

L 4129-66

ACCESSION NR: AP5024689

field and the measured "resonance" field at the surface. The outer magnetic field, of the order of 3000 oersteds, was parallel to the specimen disk planes. Specimens were initially cooled in zero outer field to 4.2K and $T > T_c$, with subsequent field increase to the point of resonance. Resonance frequencies were of the order of 9200 mc. A substantial discrepancy was found in local fields calculated on the ellipsoid approximation to the disk specimen surface fields, and vs. those measured. Local field strength of the superconductor was found to depend upon magnetization history and thus is apparently generated by internal currents induced in the superconductor by outer field variations. Orig. art. has: 2 figures and 1 table. [18]

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences, SSSR)

SUBMITTED: 01Apr65 ENCL: 00 SUB CODE: EM

NO REF SOV: 004 OTHER: 002 ATD PRESS: 4127

Superconducting alloy

Card 2/2

L 13965-66 EWT(d)/EWP(1) IJP(c) BB/GG/GS

ACC NR: AT6003458 SOURCE CODE: UR/0000/65/000/000/0104/0114

AUTHOR: Dolyatovskiy, V. A.

ORG: Institute of Cybernetics, AN UkrSSR, Kiev (Institut kibernetiki AN UkrSSR)

TITLE: A method for recognition of a limited set of words

SOURCE: AN UkrSSR. Issledovaniya po bionike (Research in bionics). Kiev, Naukova dumka, 1965, 104-114

TOPIC TAGS: speech recognition, ~~automatic control theory~~, speech signal, pattern recognition

ABSTRACT: The problem of recognizing speech signals is considered as a special case in the general problem of pattern recognition. The physiology of the human auditory analyzer is discussed with regard to the characteristics of electrical potentials generated in various sections under acoustic stimulation. The spectral and time characteristics of speech signals were studied to gather data for constructing a speech recognition system. 41 phonemes and sets of words were studied including the names of the numbers pronounced by seven different speakers. The time characteristics of speech signals were used for determining the invariant features of

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individual words. It is shown how these data may be used to represent each word in digital form by quantization with respect to amplitude and time. Numerical descriptions are given for the low frequency envelopes of a set of speech signals using five levels of quantization with respect to amplitude and ten moments of quantization with respect to time. These data, taken for speakers with various vocal characteristics, indicate that pattern recognition of these speech signals is possible since the numerical descriptions of the set differ. A brief description is given of a device which can be used for decoding these numerical representations. Orig. art. has: 7 figures, 2 tables.

SUB CODE: 06,17,09/ SUBM DATE: 25Aug65/ ORIG REF: 009/ OTH REF: 011

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ACC NR: AP6022056 SOURCE CODE: UR/0146/66/009/003/0063/0067

23

AUTHOR: Dolyatovskiy, V. A.

ORG: Institute of Cybernetics, AN UkrSSR (Institut kibernetiki AN UkrSSR)

TITLE: Transistorized pulse-height selector

SOURCE: IVUZ. Priborostroyeniye, v. 9, no. 3, 1966, 63-67

TOPIC TAGS: pulse height selector, transistorized circuit, pulse height analyzer

ABSTRACT: A pulse-height selector developed for an electronic word-recognizing device is briefly described. Its distinguishing features are: (1) A set of threshold circuits with logically separated outputs is used; (2) The logical output separation is based on sending a blocking pulse from the higher-level threshold-circuit output to the lower-level threshold circuit; this pulse prevents undesirable operation of lower-level circuits; (3) A new pulse-type threshold

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element (trigger circuit, emitter coupling) used in the selector is claimed to be simpler than conventional d-c - amplifier-type threshold elements (e.g., S. B. Akers et al., Wescon Techn. Pap., 1963, no. 4). The selector requires stabilized power-supply sources. Orig. art. has: 4 figures and 2 formulas.

SUB CODE: 09 / SUBM DATE: 29Sep65 / ORIG REF: 003 / OTH REF: 001

Card 2/2 nst

DOLYMIN, B.P., redaktor; VOLYNTSEVA, V.A., tekhnicheskiy redaktor.

[The story about precast reinforced concrete] Rasskaz o sbornom zhelezobetone. Moskva, Iskusstvo, 1956. 13 p. (MLRA 9:6)
(Precast concrete)

DOLYUK, R.P., insh.

Errors of measuring pulsating overvoltages in transformers. Energ. i elektrotekh. prom. no.4:31-33 O-D '64. (MIRA 18:3)

DOLYUK, R.P., insh.

Impulse overvoltage in valve protected dischargers in transformer neutral lines. Energ. i elektrotekh. prom. no.2:26-28 Ap-Je '65. (MIRA 18:8)

DOLYUK, R.P., inzh.

Pulsed current in the neutral line of a transformer.
Izv.vys.ucheb.zav.; energ. 8 no.12:91-93 D '65.
(MIRA 19:1)

1. Vsesoyuznyy institut transformatorostroyeniya.
Submitted March 9, 1965.

ACC NR: AP7004639 (N) SOURCE CODE: UR/0288/66/000/003/0098/0103

AUTHOR: Rutberg, F. G.; Kiselev, A. A.; Dolyuk, V. A.

ORG: none

TITLE: Three-phase alternating current plasmatrons

SOURCE: AN SSSR. Sibirskoye otdeleniye. Izvestiya. Seriya tekhnicheskikh nauk, no. 3, 1966, 98-103

TOPIC TAGS: plasma generator, gas discharge plasma, plasma device, ~~plasma physics~~ low temperature plasma, plasmatron

ABSTRACT: The author presents two designs of three-phase alternating current plasmatrons intended for obtaining low temperature plasmas. The design of these plasmatrons differs by the number of electrodes (three and six), cooling system arrangement, and dimensions. Both types were tested using argon, nitrogen, hydrogen, and helium gases at pressures between 1.5 and 15 atm. The plasmatrons were operated continuously for no more than 15 min due to limiting gas supply. The minimum currents at which they operated stably were 30 and 80 amp for 3-electrode and 6-electrode versions, respectively. The elctrodes were made of tungsten 5--10 mm in diamter. Maximum test current and current density was 520 amp and 660 amp/cm^2, respectively. The plasmatrons were cooled by water and their temperatures did not rise above 40--50C. Tables 1 and 2 show test results of 6-electrode and 3-electrode plasmatrons, respectively. Orig. art. has: 7 figures and 3 tables.

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ACC NR: AP7004639

	Gas	Arc voltage	Arc current amp	Arc power kw	Gas discharge gm/sec	Temperature at nozzle discharge k	Gas enthalpy kw/sec	Arc efficiency
Table 1	Argon	38	360	20,5	12	2000	12,3	0,6
	Nitrogen	140	300	61,0	20	2000	40,0	0,65
Table 2	Helium	80	150	18	0,6	3500	11	0,6
	Hydrogen	200	150	45	0,7	3500	35	0,8

SUB CODE: 20/ SUBM DATE: none

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000410830005-0"

ACCESSION NR: AP4040498 S/0136/64/000/006/0063/0066

AUTHOR: Dolzhenkov, F. Ye.; Krivonosov, Yu. I.

TITLE: Adhesion strength between cladding and steel base in vacuum rolled titanium steel

SOURCE: Tsvetnyye metally, no. 6, 1964, 63-66

TOPIC TAGS: titanium clad steel, vacuum clad steel, titanium cladding, cladding adhesion strength

ABSTRACT: The adhesive strength of the cladding in titanium clad steel produced by vacuum rolling was found to depend upon the rolling temperature, the reduction, and the carbon content of the steel. Tests showed that rolling at 1000—1050C yields the highest adhesive strength of cladding. A 15—20% reduction in single pass rolling ensures strong adhesion which reaches 20—25 kg/mm^2 with a 20% reduction; further increase to 50% reduction has almost no effect on the adhesive strength. With a carbon content of 0.028 the adhesion strength was 26 kg/mm^2; it dropped to 14 kg/mm^2 with carbon content of 0.45%. Some alloying elements improve adhesive strength; in the case of 09G2 steel which had 0.12%C, the adhesive strength was equal

Card 1/2

1. DOLZHANOV, P., Eng.

2. USSR (600)

4. Painting, Industrial

7. Painting operations in the milk plant. Moloch. prom. 14, No. 5, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

CA

12

Plate pasteurizers with centrifugal milk purifiers. P. Dolzhanov. *Molochnaya Prom.* 12, No. 11, 12–14(1951).—A brief description is given with line diagrams of plant installations; the principles of operation are included
G. M. Kosolapoff

1. DOLZHANOV, P., ENG.

2. USSR (600)

4. Dairy Plants

7. Mechanizing municipal dairy plants. Mol. prom. 12, no. 12, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

CA

12

Construction and quality of technical equipment in dairy plants. P. Dolzhanov. *Molochnaya Prom.* 13, No. 1, 15-17(1952).—A brief description is given of modern equipment and methods of installation. Common practices in U.S.S.R. are mentioned. G. M. Kosolapoff

DOLZHANOV, P. B., ed.

Mechanical equipment for enterprises of the dairy industry Moskva, Pishchepromizdat, 1953. 594 p. (55-20676)

SF247.K7

1. Dairying - Apparatus and supplies. 2. Dairying - Russia. I.Kuk, G.A., ed. II. Dolzhanov, P.B., ed.