KALININ, Ye.V., dotsent, kand.tekhn.nauk

Study of certain regularities of a pulse discharge. Elektrichestvo no.3:89-92 Mr '62. (MIRA 15:2)
(Electric discharges)

KALININ, Ye.V.; KARPOVA, O.V.; TSEPAKINA, L.P.

Dependence of the discharge potential of wet insulators on the duration of applied voltage and intensity of the rain. Izv. NIIPT no.8:343-350 '61. (MIRA 15:7)
(Electric lines—Overhead)

KALININ, Ye.V., kand.tekhn.nauk; KARPOVA, O.V., inzh.; TSEPAKINA, L.P., inzh.

Dependence of the discharge potential of wet insulators on the time duration the insulator being subject to the action of the potential and on the intensity of the rain. Elek.sta. 33 no.2:59-62 F '62.
(MIRA 15:3)
(Electric lines--Overhead)(Electric insulators and insulation)

KALININ, Ye.V., kand.tekhn.nauk, dotsent; KARPOVA, O.V., [illegible].

Increase in the accuracy of the measurement of wet discharge potentials at commercial frequencies. Elektrichestvo no.11:22-26 N '64. (MIRA 18:2)

1. Nauchno-issledovatel'skiy institut postoyannogo toka.

ACCESSION NR: AP5000963 S/0104/64/000/009/0068/0073

AUTHOR: Kalinin, Ye. V. (Candidate of technical sciences); Tikhodayev, N. N. (Candidate of technical sciences); Kelnar, O. (Candidate of technical sciences); Kogoutova, D. (Engineer)

TITLE: Wet flashover voltages of long insulator strings

SOURCE: Elektricheskiye stantsii, no. 9, 1964, 68-73

TOPIC TAGS: insulator string, flashover voltage, insulator test

ABSTRACT: The results of wet flashover tests of superhigh-voltage string insulators are reported. A 2 x 750-kv cascade transformer supplied from a 350-kva synchronous generator was used as a source of test voltages. Strings 3v 10—32 PM-4,5 insulators and 12—30 P-8,5 insulators were sprayed with chemically purified (10,000 ohm·cm) water at a rate of 3 mm/min and tested for flashove up to 1,200 kv. numerical data is tabulated. At lower voltages flash

ACCESSION NR: AP5000963

overs cascaded the string. At higher voltages, some arcs struck the supporting steel girder, away from the string; at still higher voltages, when dry and wet flashover voltages came close to each other, practically all discharges occurred between the shield ring and the girder. It is concluded that for superhigh-voltage lines, the number of units in the string can be selected on the basis of the dry flashover voltage. Orig. art. has: 9 figures, 5 formulas, and 1 table.

ASSOCIATION: NIIPT; NII energetiki ChSSR (Scientific Research Power-Engineering Institute, ChSSR)

SUBMITTED: 00 ENCL: 00

SUB CODE: EE, PR NO REF SOV: 007 OTHER: 003

Card 2/2

AT4045616 S/0000/64/000/000/0184/0190

AUTHOR: Bronfman, A. I.(Head of high voltage laboratory); Kalinkin, Ye. V. (Candidate of technical sciences, Supervisor of a sector of high voltage laboratory); Solomonov, N. M. (Candidate of technical sciences, Senior research associate)

TITLE: Investigation of the discharge characteristics of magnetic valve discharges for 500 kv lines

SOURCE: Dal'niye elektroperedachi 500 kv (long-distance transmission of 500 kv. electric power); sbornik statey. Moscow, Izd-vo Energiya, 1964, 184-190

TOPIC TAGS: high voltage line, power line, electric power transmission, voltage overshoot, voltage discharge, magnetic valve discharger, lightning arrester, breakdown voltage

ABSTRACT: The discharge characteristics of two types of magnetic dischargers used on 500 kv lines were investigated: the lightning arrester, described previously by the

Card 1/6

ACCESSION NR: AT4045616

thus necessary to investigate the magnitude and the nature of the voltages across various elements and to ascertain that a correct coordination exists between the spark gap breakdown voltage and the voltage across the valve elements. Specifications call

ACCESSION NR: AT4045616

1250-1230 kv. The external insulation of the dischargers must be kept clean in order to prevent deterioration of the breakdown voltage. Orig. art. has: 2 equations and 11 figures.

ASSOCATION: Vy*sokovol'tnaya laboratoriya zavoda "Proletariy" (High Voltage Laboratory of the "Proletariy" Plant); Vy*sokovol'tnaya laboratoriya NIIPT (High Voltage Laboratory of NIIP'T)

SUBMITTED: 13Mar64 ENCL: SUB CODE: EE

NO REF SOV: 006 OTHER: 000

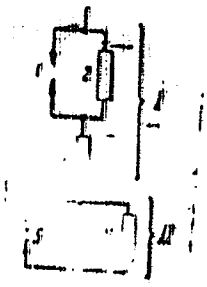


Fig. 1. Simplified diagram of a combined 500 kv discharger: I - lightning arrester part (1-multiple spark gap, 2-large nonlinear resistance, 3-tervita nonlinear resistance) II - switching overshoot protector 4-valve elements

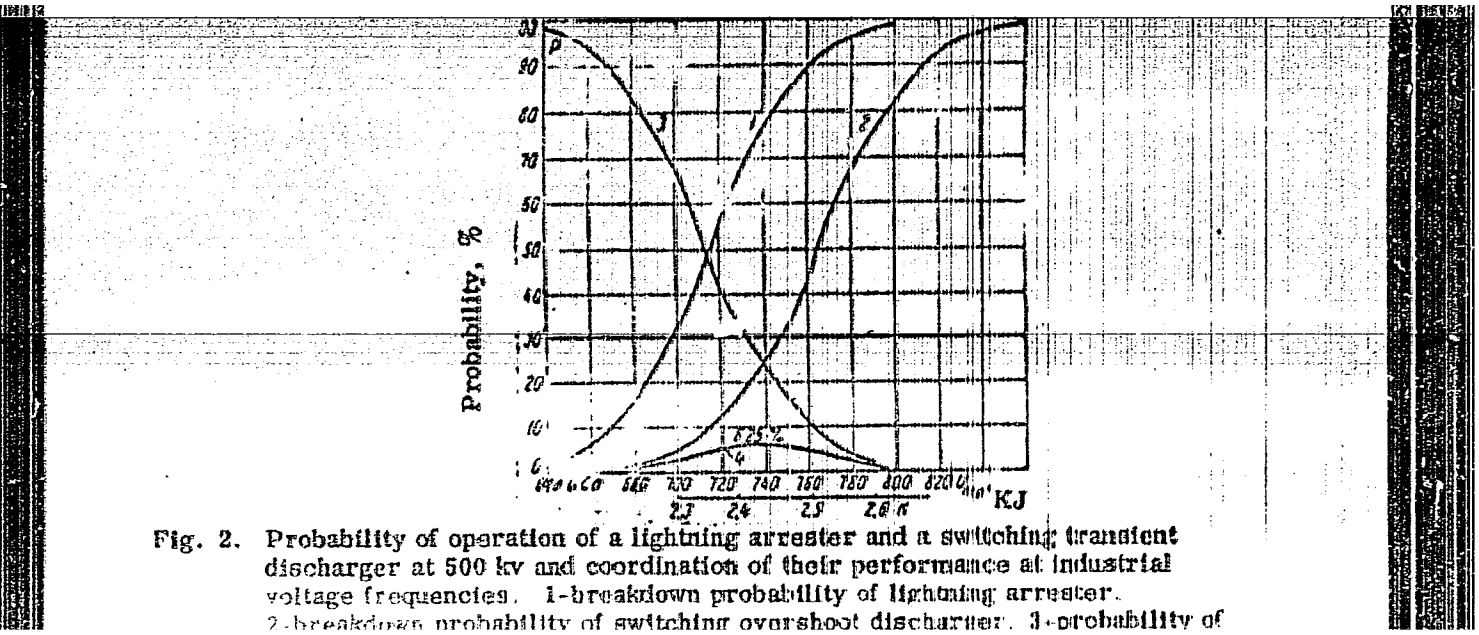
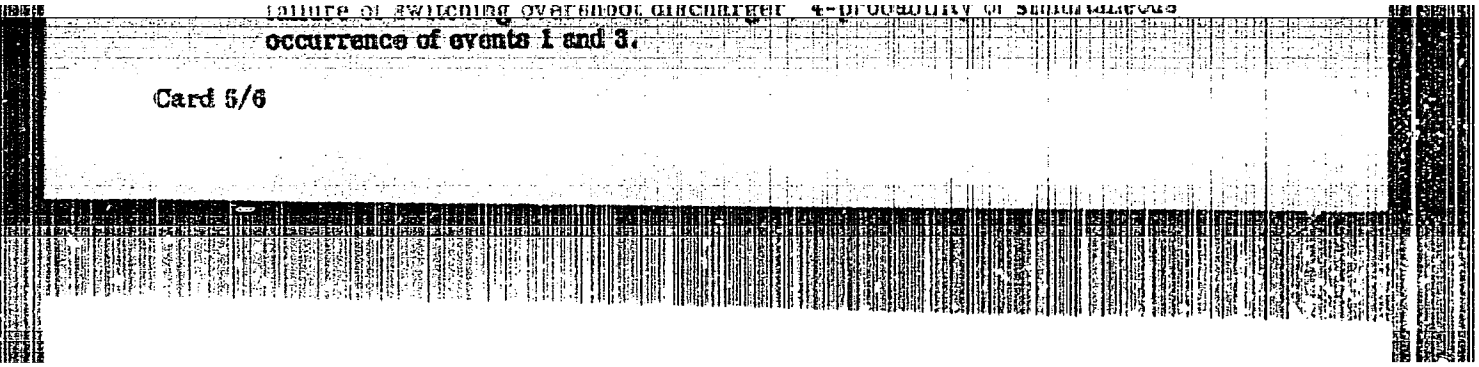


Fig. 2. Probability of operation of a lightning arrester and a switching transient discharger at 500 kv and coordination of their performance at industrial voltage frequencies. 1-breakdown probability of lightning arrester. 2-breakdown probability of switching overshoot discharger. 3-probability of



KALININ, Ye.V., kand. tekhn. nauk; KARPOVA, O.V., inzh.

Design of flare-type line insulators and wet discharge potential of suspension insulator chains. Elek. sta. 36 no.6:63-66 Je '65.
(MIRA 18:7)

KALININ, Ye.V., kand. tekhn. nauk

Construction of suspension insulators with wedge-shaped pins and methods for testing them. Elek. sta. 36 no.2:63-68 F '65. (MIRA 18:4)

KALININ, Yu., inzh.

Optical calculating machines. IUn.tekh. 6 no.1:26-32 Ja '62.
(MIRA 15:2)
(Polarization (Light))
(Magnetic memory (Calculating machines))

KALININ, Yu., inzh.; RYABOV, L., inzh.

Aimed into space. Znan.-sila 37 no.11:12-13 N '62. (MIRA 16:1)
(Antennas (Electronics))

KALININ, Yu., inzh.

Horse in the wind tunnel. Znanie-sila 38 no.1:8-9 Ja '63.
(MIRA 16:3)

(Wind tunnels)

AZERNIKOV, V.; ARLAZOROV, M.; ARSKIY, F.; BAKANOV, S.; BELOUSOV, I.; BILENKIN, D.; VATEL', I.; VLADIMIROV, L.; GUSHCHEV, S.; YELAGIN, V.; YERESHKO, F.; ZHURBINA, S.; KAZARNOVSKAYA, G.; KALININ, Yu.; KELER, V.; KONOVALOV, B.; KREYNDLIN, Yu.; LEBEDEV, L.; PODGORODNIKOV, M.; RABINOVICH, I.; REPIN, L.; SMOLYAN, G.; TITARENKO, V.; TOPILINA, T.; FEDCHENKO, V.; EYDEL'MAN, N.; EMME, A.; NAUMOV, F.; YAKOVLEV, N.; MIKHAYLOV, K., nauchn. red.; LIVANOV, A., red.

[Little stories about the great cosmos] Malen'kie rasskazy o bol'shom Kosmose. Izd.2., Moskva, Molodaia gvardiia, 1964. 368 p. (MIRA 18:4)

N L 13179-66

ACC NR: AP6001853 SOURCE CODE: UR/0310/65/000/009/0048/0048

AUTHOR: Tuv, I. (Candidate of technical sciences); Kalinin, Yu. (Engineer)

ORG: None

TITLE: A device for the purification of waste water

SOURCE: Rechnoy transport, no. 9, 1965, 48

TOPIC TAGS: water purification, fresh water, water purification equipment, ship, ship component

ABSTRACT: The Leningrad Institute of Water Transportation (Leningradskiy institut vodnogo transporta) developed a new design of a standard shipborne device for the removal of petroleum products from the ship's waste water. The device, shown in Fig. 1, is designated for Diesel ships of the river fleet. The capacity of the unit is 300 liter/hr. The device was tested successfully on the motor ship "Sochi" (SZRP) and motor ship "Reshma" (VORP). Orig. art. has: 1 figure.

1/2 UDC: 629.128:628.16.004

Card

L 13179-66

ACC NR: AP6001853

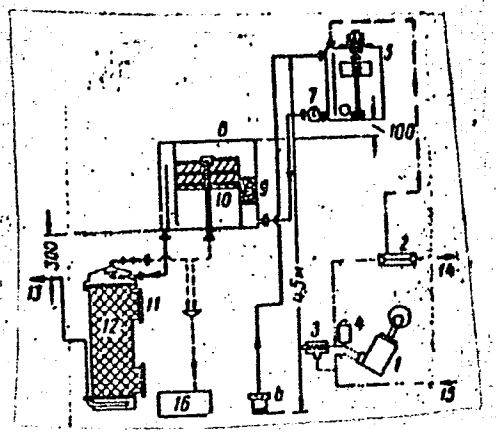


Fig. 1. Block diagram of the unified shipborne device for the removal of petroleum products from waste water (LIVT design). -- waste water; -- separated petroleum products; -.-. air; -..-..- outside water; 1 - pump with a 2 t/hr capacity, $p = 2$ kg/cm^2; 2 - water jet pump; 3 - discharge valve; 4 - air chamber; 5 - vacuum tank; 6 - input chamber; 7 - one way valve; 8 - coarse purification filter; 9 - coke insert; 10 - petroleum layer; 11 - fine purification filter; 12 - wood chips with sawdust; 13 - purified water for the ship; 14 - water over the side; 15 - water from over the side; 16 - petroleum collecting tank.

SUB CODE: 13 / SUBM DATE: none

Card 2/2

L 46817-65

ACCESSION NR: AP5008332 S/0115/65/000/001/0005/0008

AUTHOR: Kubarev, A. V.; Leskov, A. S.; Kainrikus, Kh. Y.; Kalinin, Yu. A.

TITLE: Some metrological problems in quantum radiophysics

SOURCE: Izmeritel'naya tekhnika, no. 1, 1965, 5-8

TOPIC TAGS: metrology, quantum radiophysics

ABSTRACT: A brief general review of the measurement problems occurring in modern devices based on quantum-mechanics phenomena is presented. These topics are touched upon: precision radio spectroscope with phase AFC; x-ray luminescence; quantum paramagnetic amplifiers, measuring of their gain, saturation power, and noise temperature; lasers, and their energy and power measurements; use of quantum devices in developing standards and precision measurement methods; standard meter unit of magnetic field strength. Principles and approaches are discussed. Orig. art. has: no formulas, no figure, and no table.

Card 1/2

L 48617-65

ACCESSION NR: AP5008332

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: GP

NO REF SOV: 003 OTHER: 003

Card 2/2

VALITOV, R.A.; KALININ, Yu.A.; KUZ'MICHEV, V.M.

Measuring the energy and power of optical quantum oscillators.
Izm. tekh. no.5:37-41 My '65. (MIRA 18:8)

L 22138-66 EWT(d)/FBD/EWT(l)/EEC(k)-2/T/EWP(k)/EWA(h) IJP(c) WG

ACC NR: AP6012935 SOURCE CODE: UR/0115/65/000/005/0037/0041

AUTHOR: Valitov, R. A.; Kalinin, Yu. A.; Kuz'michev, V. M.

ORG: none

TITLE: Measurement of energy and power of optic quantum lasers

SOURCE: Izmeritel'naya tekhnika, no. 5, 1965, 37-41

TOPIC TAGS: laser, ruby laser, calorimeter, elastic oscillation, gaseous state laser, photoelectric effect, thermal effect

ABSTRACT: A survey of presently known methods of measuring the electrical characteristics of lasers. Types of measuring devices must vary for measurement of the various types of laser outputs which vary from low power, continuous operating He-Ne gas lasers to very high power, very short pulse duration ruby lasers. The effects used in measurement are the thermal, pondermotive and photoelectric effects. A typical calorimeter for power measurement is described, its operation and principle sources of error (errors in calibration of dc or condensor energy, transparency of calorimeter sections, degree of "blackness" of black body, readout, and energy loss compensation) are discussed. A drawing of a pondermotor power measuring device is presented and its

Card 1/2

UDC: 621.375.9

L 22138-66

ACC NR: AP6012935

operation briefly outlined. Main sources of error listed are: error in measurement of specific moment of rotation of thread and of inertia of mobile system; inaccurate beam aiming; readout error; radiometric effects; inaccurate determination of angle of fall on reflecting surface and of reflecting capacity of the surface. The formation of elastic oscillations and other effects are also noted as having been suggested as bases for measurement of laser power. Orig. art. has: 2 figures. [JPRS]

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 016 / OTH REF: 020

Card 2/2 BK

KALININ, Yu. D.

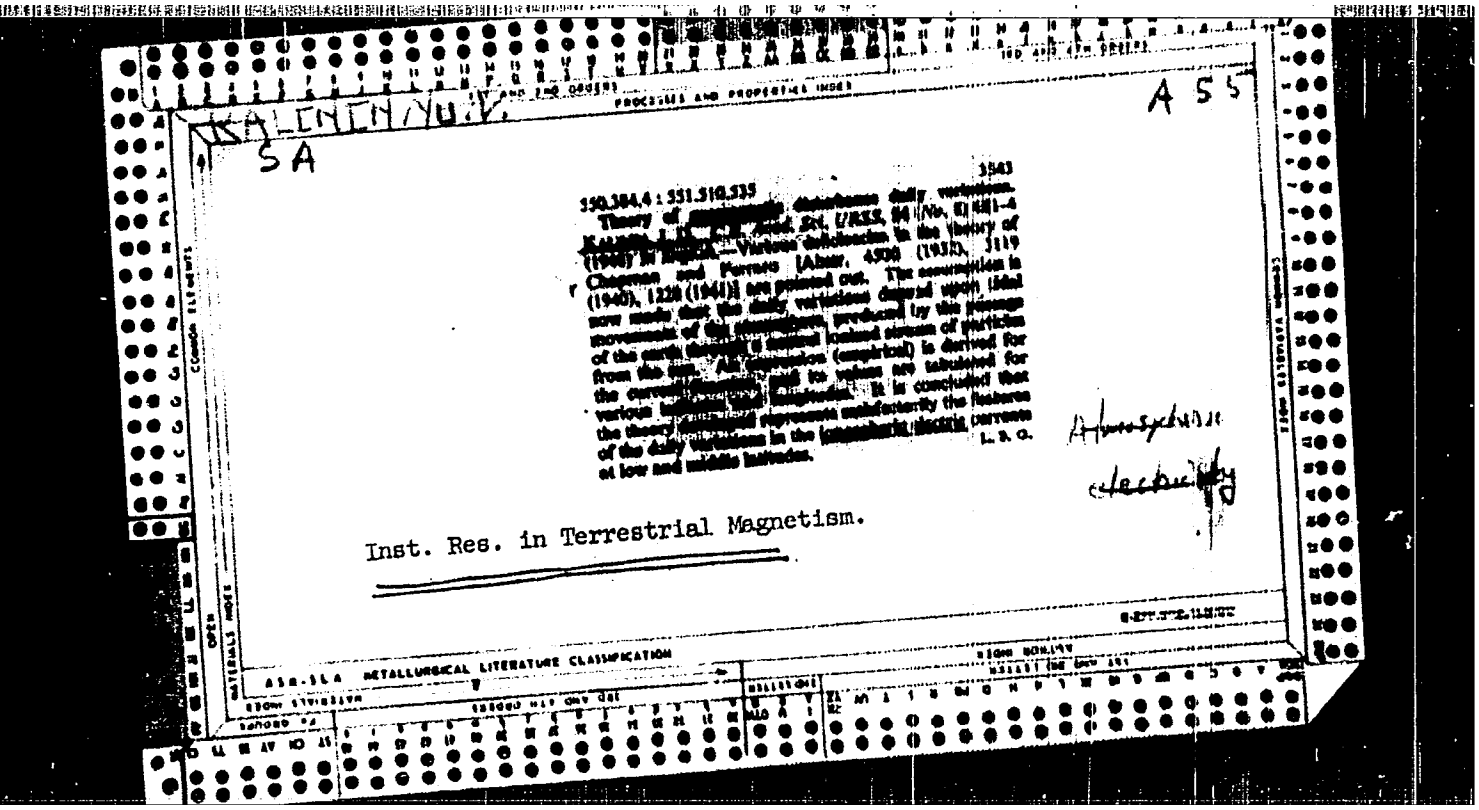
Geomagnetic Secular Variations in the USSR and the Earth's Internal Structure. (Geromagnitnyye vekovyye variatsii v SSSR i vnutrenneye stroyeniye zemli.) Works of Sci-Res Institutions of the Main Administration of the Hydrometeorological Service USSR, Series VI, No. 6. Hydrometeorological Press, Moscow/Leningrad: 1946. 48 pp with Maps. (Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

TP ANS - 563934

Also: Dok. AN 53, No. 1, 1946

Inst. of Terrestrial Magnetism.



SA

A 55

3543

550.384.4 : 551.510.535

Theory of [illegible] daily variations. [illegible] Sci. URSS, 54 (No. 6) 481–4 (1946) In English.—Various definitions in the theory of Chapman and Ferraro [Amer. 4506 (1933). J119 (1940), 1228 (1941)] are pointed out. The assumption is now made that the daily variations depend upon ideal movements of the atmosphere, produced by the passage of the earth through a normal ionized stream of particles from the sun. An expression (empirical) is derived for the current [illegible] and its values are tabulated for various [illegible] latitudes. It is concluded that the theory presented represents satisfactorily the features of the daily variations in the [illegible] electric currents at low and middle latitudes. L. B. O.

Inst. Res. in Terrestrial Magnetism.

KALININ, YU. D.

"Normal Geomagnetic [illegible] of the USSR", Trudy NIIZM, N . ., 1947 (3-[illegible])

SO: U-3033, 11 Mar 1953

KALININ, YU. D.

PA 66T63

USSR/Geophysics May/Jun 1948
Magnetism, Terrestrial
Magnetic Fields

"Heterogeneity of the Depth of the Earth and Geomagnetic Variations," Yu. D. Kalinin, Sci Res Inst of Terrestrial Magnetism, 4 pp

"Iz Ak Nauk SSSR, Ser Geograf i Geofiz" Vol XII, No 3

Studies of the fixed geomagnetic field and its secular variation led author to the conclusion that inside the earth at depths approximately equal to half of the earth's radius there is unequal distribution of electrical conductivity. Question is explained on the

[redacted] 66T63

USSR/Geophysics (Contd) May/Jun 1948

basis of solar-diurnal variations. Submitted by Academician L. S. Leybenzon 2 Jun 1947.

[redacted]. 66T63

KALININ, YU. D.

"Secular Geomagnetic Variations and Fluctuations of the Length of Day," by Yu. D. Kalinin, is included in a list of translated titles of articles on geophysics appearing in Meterologiya i Gidrologiya, No 3, 1949.

SO: U-2551, 30 Oct 52.

KLIMOV, V. P.

Magnetism, Terrestrial

One characteristic of geographic distribution of the field of a magnetic storm. Dokl. AN SSSR 82, No. 3, 1952.

Institut Zemnogo Magnetizma rec'd. 5 July 1951

SO: Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

KALININ, Yu. D.

KOZIK, S.M.; KALININ, Yu.D., professor; AFANAS'YEVA, V.I., kandidat fiziko-matematicheskikh nauk; PENKEVICH, M.S., kandidat fiziko-matematicheskikh nauk; GLUSHKOVA, Ye.P.; KUZNETSOVA, Z.S.; BELOUSOVA, M.A.; SOLOVEYCHIK, A.A., tekhnicheskiy redaktor

[Manual on variation in the magnetic field of the U.S.S.R.] Spravochnik po peremennomu magnitnomu poliu SSSR. Pod red. V.I. Afanas'evoi. Leningrad, Gidrometeor.izd-vo, 1954. 265 p. (MLRA 10:7)

1. Leningrad. Nauchno-issledovatel'skiy institut zemnogo magnetizma. 2. Nauchno-issledovatel'skiy institut zemnogo magnetizma (for Kalinin, Afanas'yeva, Belousova) 3. Tashkentskaya nauchno-issledovatel'skaya geofizicheskaya observatoriya (for Kozik). 4. Glavnaya Geofizicheskaya observatoriya (for Penkevich, Glushkova, Kuznetsova) (Magnetism, Terrestrial)

AFANAS'YEVA, V.I.; KALININ, Yu.D.

Some problems of magnetic cartography. Trudy NIIZM no.11:33-80 '55.
(Magnetism, Terrestrial)

KALININ, Yu. D.

"Forecasting Secular Geomagnetic Variations."

The International Asscoaiation of Geomagnetism and Aeronomy; Abstracts of the Reports at the XI General Assembly of the International Union of Geodesy and Geophysics) Moscow, Izd-vo AN SSSR, 1957. 46 p.

Abstract: Variation in annual values of geomagnetic elements is the summary effect of changes in the geomagnetic field caused by internal agents ( ) and by geomagnetic activity ( ). The latter could be completely eleiminated by taking average values for 10-11 year cycles. The mprphological examination of such factors leads to the establishment of space-time relationships. The effects of internal forces in Eurasia are ofa smooth, quasi-periodic character lastig a few decades and the geomagnetic activity follows an eleven year cycle. This makes it possible to forecast average values for a five year period with sufficient accuracy and to construct magnetic charts for the nearest epoch.

KALININ, Yu. D.

37-11-2/18

AUTHOR: Afanas'yeva, V.I., Kalinin, Yu. D.

TITLE: Some Problems of Magnetic Mapping (O nekotorykh voprosakh magnitnoy kartografii)

PERIODICAL: Trudy Nauchno-issledovatel'skogo instituta zemnogo magnetizma, 1957, Nr 11(21), pp. 33-80 (USSR)

ABSTRACT: The accuracy of collected data and methods of map mapping are discussed. The following authors are mentioned: Smirnov, I.N., Tillo, A.N., Trubyatchinskiy,N.N., Penkevich, M.S., Ivanov, M.M., Lazarev, P.P., Veynberg, B.P., Rykachev, M.A., Kuchinskiy, Ye.A. There are 11 figures, 10 tables, and 27 references of which 18 are USSR, 1 French, 2 German, 2 Japanese, and 3 English.

AVAILABLE: Library of Congress

Card 1/1

KALININ, Yu.D

AUTHOR: Kalinin, Yu.D. 49-12-4/16

TITLE: Organisation of the Network of Magnetic Observatories in the USSR during the Last 40 Years (Organizatsiya seti magnitnykh observatoriy v SSSR za 40 let)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, No.12, pp. 1469 - 1477 (USSR)

ABSTRACT: The history of the organisation of the network of magnetic observatories is dealt with from the early beginnings up to 1957, outlining also the main results achieved. Para. 1 deals with magnetic observatories in Russia prior to 1917. Para. 2 deals with the network of magnetic observatories organised between 1917 - 1930. Para. 3 deals with the network of magnetic observatories organised in the period 1931 - 1940. In 1941, 18 magnetic observatories were in operation in the Soviet Union. Of these, 5 were subordinated to the Main Administration of the Northern Sea Route (Glavnoye upravleniye Severnogo Morskogo puti), but their scientific work was controlled by the Arctic Research Institute (Arkticheskiy nauchno-issledovatelskiy Institut); 10 observatories were subordinated to the Hydro-meteorological Service (Gidrometsluzhba), etc. The most important achievement of the Soviet magnetic observatories between 1917 and 1941 is stated to be the successful

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Organisation of the Network of Magnetic Observatories in the USSR during the Last 40 Years.

participation in the Second International Polar Year, participation in carrying out general magnetic mapping (about 100 expeditions amounting to about 25% of the total number of such expeditions) and also supplying data on magnetic variations. Para. 4 deals with the network of magnetic observatories in existence between 1941 and 1957, enumerating those damaged by the war and measures taken after the war to put them back into operation. The Pavlovo Observatory was completely destroyed and, therefore, it was decided, in 1946, to re-establish the Leningrad Magnetic Observatory (Leningradskaya Magnitnaya Observatoriya) somewhere else, in Voyeykovo. The destroyed observatory at Nizhnedevitsk was substituted by one in Krasnaya -Pakhra, where observations started in 1946 in temporary buildings, and the permanent buildings were completed in 1957. After the war, the Scientific Research Institute for the Earth's Magnetism (Nauchno-issledovatelskiy Institut zemnogo magnetisma) started organising its branch in Murmansk. From 1940 onwards, observations were resumed in Stepanovka.. Between 1949 and 1952, the magnetic observatory at L'vov was built and, in 1953, the Vladivostok Magnetic Observatory was moved from May-Tun to

Card2/7 Voroshilov, where it resumed work in 1952. The work of the

Organisation of the Network of Magnetic Observatories in the USSR during the Last 40 Years.

reconstructed after the war and, at present, it can be used for measuring the horizontal component with an accuracy of $\pm 10^{-5}$ Oe [Ref. 5]. V.N. Bobrov [Ref.6] investigated the influence of humidity on the operation of magnetic variometers; V.F. Shel'ting developed a number of designs of magnetic variometers in which the magnet is suspended on quartz tensioning elements [Ref.7]. In addition, some new designs of magnetic variometers and magnetic variational stations were evolved (B.E. Bryunelli, Ref.8, and B.M. Yanovskiy, Ref.9) and also magnetic theodolites (K.G. Bronshteyn et al., Ref.10). The results of magnetic observations have not been fully published [Ref.11]. Some of the material has been published in publications of the Main Geophysical Observatory and of the Arctic Institute. After 1940, average hourly values of the magnetic measurements were not published and only generalised conclusions from such observations were. Generalised data of observations of almost all the Soviet observatories between 1938 and 1948 are contained in "Manual on the Variable Magnetic Field of the Soviet Union", edited by V.I. Afanas'ev and published in 1954 [Ref.12]. From 1937 onwards, data on magnetic activity are published systematically [Ref. 13 and 14]. A number of works are devoted to the

Organisation of the Network of Magnetic Observatories in the USSR during the Last 40 Years.

problems of the method of operation of magnetic observatories [Refs. 15, 16 and 17], these include: Annual Reviews of the Magnetic Activity (N.P. Ben'kova, M.A. Belousova et al. Ref.18); Catalogues of Magnetic Storms [Ref.19]; Statistical data on the Magnetic Activity (S.M. Kozik et al. Ref.20); Morphology of Sun-caused Daily Magnetic Variations (N.P. Ben'kova, V.N. Mikhalkov, Ref.21); Morphology of Long-term Geo-magnetic Variations Based on Magnetic Observatory Data (P.F. Kokovkin, N.F.Pushkin, Ref.22); Problems of the Theory of Magnetic Variometers (N.N. Trubyatchinskiy et al., Ref.23). The brief review given in para. 5 does not deal with the numerous theoretical works which were based on the results of the observations of the Soviet magnetic observatories. Para. 6 deals with the temporary, expedition-type magnetic, variational stations. Among these, the stations organised on drifting ice in the Central Arctic are of particular importance. In the north of the Asiatic part of the Soviet Union, an effort was made to organise groups of variational stations to operate for a season and to supply data for judging the local nature of the magnetic variations, (I.M. Pudovkin, Ref.24). A certain number of temporary variational

Organisation of the Network of Magnetic Observatories in the USSR during the Last 40 Years

stations were organised for shorter durations, for instance, for investigating the geo-magnetic effects of the eclipse of the sun in 1936 [Ref.25] and 1952, investigation of magnetic anomalies, etc. In 1956, a magnetic observatory was established in the Antarctic and the establishment of several more magnetic observatories is scheduled. The Scientific Research Institute for the Earth's Magnetism (Nauchno-issledovatel'skiy Institut zemnogo magnetizma), created in 1940, is at present a complex system controlling the work of all the permanent magnetic observatories of the Soviet Union, except those in the Arctic. An original method was evolved of critical analysis of data gained in observatories and it is claimed that no other State possesses such a method. This method is based on comparing results of observations of a large group of observatories (Comparison of the changes of the average yearly, average monthly, average daily and average hourly variations at various observatories - M.A. Belousova et al.) In recent years, a tendency has developed to build new types of magnetic apparatus, the introduction of which will permit, in the near future,

 dispensing with the expensive buildings of observatories without

Organisation of the Network of Magnetic Observatories in the USSR during the last 40 Years.

affecting the accuracy of the obtained results. In 1956, a number of new designs of magneto-metric apparatus have been passing through the last stages of production (V.F. Shel'ting, V.N.Bobrov and B.Ye.Bryunelli). It is claimed that the accuracy of the observations of the main group of permanent, magnetic observatories is higher than that of numerous non-Russian magnetic observatories. There are 25 Slavic references.

ASSOCIATION: Scientific Research Institute on the Earth's magnetism, the Ionosphere and Propagation of Radio Waves (Nauchno-issledovatel'skiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln)

SUBMITTED: May 3, 1957.

AVAILABLE: Library of Congress.

Card 7/7

AUTHOR: Kalinin, Yu.D. Professor (Moscow) 307-26-58-8-9/51

TITLE: Soviet Investigations of Geomagnetism (Sovetskiye issledovaniya po geomagnetizmu)

PERICODICAL: Priroda, 1958, Nr 8, pp 50-55 (USSR)

ABSTRACT: Research work into geomagnetism is carried out by magnetic observatories, artificial satellites, and the only non-magnetic ship in the world "Zarya". The results of these investigations are important not only for navigation, but also for aviation and radio communication. More than 250 magnetic observatories are operating throughout the world, half of which were organized for the IGY. The USSR has 31 such observatories. Two are on drifting stations in the Arctic region and 4 in the Antarctic region. They are nearly all equipped with series of magnetostatic magnetic variometers, and some of them with fluxmetric devices recording on photopaper. They are 100 times more sensitive than the magnetostatic variometers. On the third sputnik a magnetometer is installed which measures the value of the earth's magnetism. Solar activity at the present time causes many geomagnetic disturbances which are especially interesting. The sun ejects streams of electrically charged particles which affect the

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magnetic field of the earth. In the equatorial plane of the earth an electric ring current moves around the earth at a height of 10,000 - 20,000 km. The charged particles are then attracted by the two poles of the earth. The magnetic data gathered by the artificial satellites show that the electric conductivity of the ionosphere is distributed among the different layers. The electric currents are supposed to cause inductive interaction between these layers. The penetration of the magnetic lines into the interior of the earth is also studied during magnetic "storms". The magnetic pulsations of the magnetic field of the earth are recorded by the fluxmeters. Data gathered on this subject permits the connection of geomagnetism with electro-magnetic processes in interplanetary space. The non-magnetic ship "Zarya" measures the magnetic field on the ocean. It crossed the Atlantic 6 times and also conducts research in the Indian Ocean. The Institute of Earth Magnetism in Moscow is one of the four centers in the world in which the results of magnetic investigations

Soviet Investigations of Geomagnetism SOV-26-58-8-9/51

are being gathered during the IGY.
There are 2 maps and 2 diagrams.

1. Terrestrial magnetism---Analysis 2. Terrestrial magnetism ---Measurement 3. Satellite vehicles---Applications

Card 3/3

AFANAS'YEVA, V.I.; KALININ, Yu.D.

Method of forecasting secular geomagnetic variations for the nearest future years. Trudy Inst.geofiz.AN Gruz.SSR 17:7-31 '58. (MIRA 13:4)
(Magnetism, Terrestrial--Secular variation)

MALININA, Natal'ya Yevgen'yevna; KALININ, Yu.D., otv.red.; BASHCHUK, V.I., red.; KARABILOVA, S.F., tekhn.red.

[Terrestrial magnetic field] Magnitnoe pole zemli. Moskva, Gos.izd-vo lit-ry po voprosam sviazi i radio, 1959. 39 p. (MIRA 12:8)

(Magnetism, Terrestrial)

KALININ, Yu.D., doktor fiziko-mat. nauk, otv. red.; KUNIKOVA, M.F., red.; NOVICHKOVA, N.D., tekhn. red.

[Collection of articles]Sbornik statei. Moskva, Izd-vo Akad. nauk SSSR. No.1.[Magnetic and ionospheric disturbances]Magnitno-ionosfernye vozmushcheniia. 1959. 72 p. (MIRA 15:10)

1. Akademiya nauk SSSR. Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. III i V razdely programmy MGG: Zemnoi magnetizm i zemnye toki, ionosfera. (Magnetic storms) (Ionosphere)

KALININ, Yu.D., doktor fiz.-matem. nauk, otv. red.; VIRSIAK, G.V., red.

[Collection of articles] Sbornik statei. Moskva, Izd-vo AN SSSR. No.4. Geomagnitnye vozmushcheniia. 1960. 51 p. (MIRA 18:11)

1. Akademiya nauk SSSR. Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. III razdel programmy MGG. Zemnoy magnetizm.

KALININ, Yu.D., doktor fiziko-matem.nauk, otv.red.; KURYKOVA, M.F., red.; MAKUNI, Ye.V., tekhn.red.

[Disturbances of the earth's electromagnetic field; collection of articles] Vozmushcheniia elektromagnitnogo polia zemli; sbornik statei. III razdel programmy MGG (zemnoi magnetizm i zemnye toki). Moskva. No.2. 1960. 68 p. (MIRA 13:12)

1. Akademiya nauk SSSR. Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda.
(Magnetism, Terrestrial) (Earth currents)

29721
S/169/61/000/008/045/053
A006/A101

3,9120 (1121, 1482)

AUTHORS: Afanas'yeva, V.I., Kalinin, Yu.D.

TITLE: Very strong and strong geomagnetic storms and some problems of their theory

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 8, 1961, 36, abstract 8G251 (V sb. "Geomagn. vozmushcheniya, no. 4", Moscow, AN SSSR, 1960, 5-14, English summary)

TEXT: During the period from 1878 to 1959 a classification was made of 1603 magnetic storms, divided into three classes according to their force, (moderate, strong, very strong). For these three classes changes in the number (N) of storms from year to year are analyzed. Besides changes in the 11-year cycle, secular changes were revealed, which are synchronous with secular changes of solar activity, estimated by the relative number of sunspots (W). The authors discuss the problem pertaining to the cause of delay of the maximum N epoch from maximum W in the 11-year cycle. This is explained by the previously known latitudinal shift of the spot forming zone and by an increase in density of the interplanetary medium during the years of W maximum. The density of this medium

Card 1/2

Very strong and strong geomagnetic storms ...

is from 1 to 100 protons per 1 cm^3. In corpuscular streams interacting with the interplanetary medium, an external turbulent zone is formed where a magnetic field is developed because of the hundredfold amplification of the interplanetary field in the path from the Sun to the Earth. Active periods of storms correspond to the entrance of the Earth into the basic axial part of the stream.

V. Afanas'yeva

[Abstracter's note: Complete translation]

4

Card 2/2

KALININ, Yu.D.

An attempt to explain magnetic anomalies of the world. Izv. AN SSSR.Ser.geofiz. no.6:906-908 Je '60. (MIRA 13:6)

1. Akademiya nauk SSSR, Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln.
(Magnetic anomalies)

KALININ, Yu.D.

Geomagnetism. Mezhdunar. geofiz. god no.8:19-21 '60.
(MIRA 13:6)
(Magnetism, Terrestrial)

KALININ, V. D. (Prof.)

"Magnetic Observations by Artificial Sputniks and Rockets in Connection with the World Magnetic Survey."

report ~~to be submitted~~ presented at the Committee on Space Research, 2nd Intl. Symposium and Plenary Meeting, 7-18 April 1961, Florence Italy.

~~49-56464~~

S/030/61/000/003/008/013
B105/B215

AUTHOR: Kalinin, Yu.D.

TITLE: Examination of the alternating magnetic field of the earth

PERIODICAL: Vestnik Akademii nauk SSSR, no. 3, 1961, 109

TEXT: This is a report on a conference held by representatives of the USSR institutions concentrating on the examination of the alternating geomagnetic field. The conference was held in Moscow from December 8, to 12, 1960, and had been organized by the Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda (Interdepartmental Committee for the International Geophysical Year). It was attended by representatives of academic and departmental scientific research and training institutes. A summary was given on the research results collected in accordance with the program of the International Geophysical Year (IGY) and during the International Geophysical Cooperation in 1959. After their first evaluation, the majority of observations were submitted to the World Center of Data of the IGY in Moscow. The following reports were mentioned:

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S/030/61/000/003/008/013
B105/B215

Examination of the alternating ...

L.I. Dorman on the physics of cosmic radiation and the relation between its variations and the geometry of the approach between the earth and the corpuscular stream of the sun; E.I. Mogilevskiy on solar physics, the dependence of the flow of corpuscular streams of the sun on electromagnetic phenomena on the sun; V.A. Troitskaya on the examination of short-period oscillations of the electromagnetic field of the earth; R.G. Afonina gave a survey on the geomagnetic activity for the years 1952 - 1960; L.G. Mansurova gave general comparisons of the standards of USSR observatories for magnetism by a field magnetometer, and thus found that in some observatories corrections should be made; N.K. Osipov reported on programs for the calculation of electric currents in the ionosphere on the basis of observations made by observatories; M.I. Pudovkin: on the results obtained by comparing geomagnetic storms with ionospheric drifts. All reports which were heard at the conference will be published in a special edition of the series "Annaly MGG". Some comprehensive monographs on various problems of magnetic activity are planned. Collaborators of the Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln (Institute of Terrestrial Magnetism, Ionosphere and Wave Propagation), and the Arkticheskiy i antarkticheskiy nauchno-issledovatel'skiy institut (Arctic and Antarctic

Card 2/3

24601

27.6340

S/004/61/000/009/001/005
D264/D304

AUTHOR: Kalinin, Yu., Engineer

TITLE: Training of the brave. "Room" flight

PERIODICAL: Znaniye - sila, no. 9, 1961, 9-11

TEXT: The article describes the purpose and applications of flight trainers for simulating all the normal and abnormal features of actual flight. A brief account of Yuriy Gagarin's training in preparation for space flight is also given. Gagarin was accustomed to weightlessness in planes and was subjected on a centrifuge to stresses equal to those encountered in rocket take-off and braking. He parachuted onto land and into water and spent long periods alone in a soundproof chamber. He was subjected to vibration on a test stand and to prolonged exposure to cold and heat in hot and vacuum chambers. Gagarin learned to drink, eat and write in a space suit. His preparation also included instruction in a special trainer complete with instruments and controls and a computer to set the flight route. The author believes that such trainers will play a

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Training of the brave. "Room" flight

due part in space technique. They will be used for studying satellite communications in space, for simulating the meeting of satellites in orbit, for compiling "interplanetary stations" and for simulating landings on various planets, etc. There are 3 figures.

Card 2/2

31658
S/570/61/000/018/002/004
B116/B108

3.9120

AUTHORS: Afanas'yeva, V. I., Kalinin, Yu. D.

TITLE: Geomagnetic storms in the years 1878-1959 and the solar activity

SOURCE: Akademiya nauk SSSR. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln. Trudy, no. 18(28), 1961, 27-41

TEXT: The authors give results of studying the list of all geomagnetic storms in the years 1878-1959. This list is a compilation of data from the Leningradskaya magnitnaya observatoriya (b. Pavlovskaya, ili Slutskaya) (Leningrad Magnetic Observatory (previously Pavlovsk or Slutsk)) (N. P. Ben'kova i Yu. D. Kalinin, Katalog magnitnykh bur' Slutskoy magnitnoy observatorii. Kosmicheskiye dannyye, no. 125-128, 1941) for 1878-1940, the data from the Spravochnik po peremennomu magnitnomu polyu SSSR (Reference book on the variable magnetic field of the USSR). Published by V. I. Afanas'yeva L., Gidrometeoizdat, 1954 for 1938-1948 and of the catalogue for 1949-1959, compiled by one of the authors of this study on the basis of data in the periodical "Kosmicheskiye dannyye". The

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Geomagnetic storms in the years...

investigation is restricted to the cyclic (11 years) and secular variations of the number of geomagnetic storms as well as to the relationship between these variations and the corresponding fluctuations of the solar activity. It was tried to consider the possible effect of the variable density of interplanetary matter during an 11-year cycle. It is pointed out that the secular variations of the magnetic activity correspond to the secular variations of the solar activity. The authors considered the interplanetary matter. This made it possible to determine from the delay of the geomagnetic phenomena the velocities at which the corpuscular fluxes are emitted from the surface of the sun as well as the density of interplanetary matter. These velocities amount to $4 \cdot 10^2$-$8 \cdot 10^2$ km/sec, the density varies from 1 to 60 units of measurement. Both quantities vary periodically, corresponding to the cyclic variations of solar processes. The corpuscular fluxes are assumed to increase the density of interplanetary matter. The investigation showed that the cyclic variations of the delay of geomagnetic storms are mainly caused by the cyclic variations of the initial corpuscle velocities, and only partly by the density change of interplanetary matter. The shift of the maximum in the geomagnetic cycle, relative to the maximum in the solar cycle, is connected with the cyclic variation of the

Card 2/3

Geomagnetic storms in the years...

heliographic latitude of the active formations on the sun at a relatively small solid angle of the corpuscular fluxes. The corpuscular flows seem to be connected with the flocculi. The authors thank A. K. Bychkov, A. V. Seleznev and V. M. Treshchetkin for calculations and A. K. Bychkova for graphs. E. R. Mustel' and O. N. Mitropol'skaya (Astron. zh. 35, 1958 and 36, 1959) are mentioned. There are 6 figures, 7 tables, and 24 references: 20 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: S. Chapman and J. Bartels. Geomagnetism, 337, 1940; W. H. Bennet and E. O. Hulburt. Theory of the aurora based on magnetic self-focusing of solar ion streams. Phys. Rev. 95, no. 2, 315-319, 1954; W. H. Bennet and E. O. Hulburt. Magnetic self-focussed solar ion streams as the cause of aurora. J. Atmosph. Terr. Phys., 5, 211-218, 1954; W. H. Bennet. Auroral and magnetic-storm theory. Astroph., J., 127, No. 3, 731-742, 1958.

Card 3/3

KALININ, Yu.D.

Conference on geomagnetism. Geomag. i aer. 1 no.1:128-129 Ja-F '61. (MIRA 14:7)
(Magnetism, Terrestrial--Congresses)

KALININ, Yu.

Second International Symposium on the Exploration of the Cosmic Space. Geomag. i aer. 1 no.3:446-450 My-Je '61. (MIRA 14:9)
(Outer space--Exploration)

KALININ, Yu.D.

Magnetic observations from artificial satellites and rockets in connection with the world-wide magnetic survey. Geomag. i aer. 1 no.4:618-619 Jl-Ag '61. (MIRA 14:12)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.
(Magnetism, Terrestrial) (Artificial satellites)

KALININ, Yu.D.

Secular geomagnetic variations, irregularities of the earth's rotation, and radiation zones of the earth. Geomag. i aer. 1 no.5: 795-802 S-O '61. (MIRA 15:1)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.
(Magnetism, Terrestrial--Secular variation)
(Earth--Rotation)

KALININ, Yu.D.

Observations of the magnetic field from the American satellite "Explorer X." Geomag. i aer. 1 no.5:844 S-O '61. (MIRA 15:1)
(Magnetism, Terrestrial)

KALININ, Yu.D.

Fifth Conference of the Special Committee for Antarctic Research. (MIRA 15:2)
Geomag. i aer.1 no.6:1018-1019 N-D '61.
(Antarctic regions—Geophysical research—Congresses)

KALININ, Yu.D.

Anniversary of the Kazan Magnetic Observatory. Geomag. i aer. 2 no.2:370 Mr-Ap '62. (MIRA 15:6)
(Kazan—Geophysical observatories)

42145
S/203/62/002/004/006/018
I046/I242

3.2430

AUTHORS: Afanas'yeva, V.I., Mogilevskiy, E.I., and Kalinin, Yu.D.

TITLE: Internal structure of solar corpuscular streams from geomagnetic data

PERIODICAL: Geomagnetizm i aeronomiya, v.2, no.4, 1962, 659-662

TEXT: According to Ref. 1 (E.I.Mogilevskiy. Geomagn. i aeronomiya, 1962, 2, No. 1, 48-55), the steady geoeffective solar corpuscular stream is a sequence of plasma clouds of $\sim 5.10^{11} - 10^{12}$ cm in diameter moving away from the sun. The geomagnetic disturbances result from the interaction between the terrestrial magnetosphere and the magnetic field (definitely not the plasma) of the stream which is forceless ($\overline{H} \cdot \mathrm{rot} \overline{H} = 0$) and essentially restricted to the surface of the plasma clouds: the field of the corpuscular stream, moving with a supersonic velocity with respect to the magnetosphere ($M \geq 10$), generates magnetoacoustic shock waves in the magnetosphe-

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S/203/62/002/004/006/018
I046/I242

Internal structure of solar...

ric plasma. The energy transported by these low-frequency ($T \gtrsim 0.1$-10 sec) waves ($\sim 2 \cdot 10^5$ erg/cm^2.sec) provides an energy flux sufficient to produce magnetic disturbances ($\gtrsim 10^{22}$ erg/sec). The earth passing through the corpuscular stream twice crosses its magnetic field, and since within the stream the magnetic field is almost zero, each major magnetic storm should have two intensity maxima with a relative lull in between. From the way geomagnetic disturbances are generated, the time dependence of their intensity should vary with the geomagnetic latitude. Experimental results for moderate, large and very large storms confirm these theoretical conclusions.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR (Institute of Terrestrial Magnetism, the Ionosphere and Propagation of Radio Waves, AS USSR)

SUBMITTED: April 26, 1962

Card 2/2

KALININ, Yu.D.

Siberian conference on geomagnetism and aeronomy. Geomag.i aer. 2 no.1:182-183 Ja-F '62. (MIRA 15:11)
(Siberia—Geophysical research--Congresses)

KALININ, Yu.D.

Expression in spherical coordinates of the magnetic dipole potential situated at any point in space and having a magnetic moment of any direction. Geomag. i aer. 3 no.6:1089-1093 N-D '63.
(MIRA 16:12)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.

AFANAS'YEVA, V.I.; ZHULIN, I.A.; KALININ, Yu.D.; MOGILEVSKIY, E.I.

Energy of geomagnetic disturbances. Geomag. i aer. 4 no.6:1127-1130 N-D '64. (MIRA 18:1)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.

L 52766-65 EWT(1)/EWG(v)/FCC/EEC-4/EEC(t)/EWA(h) Pd-4/Pe-5/Pq-4/Pae-2/
Peb/Pi-4 JG

ACCESSION NR: AT5009973 UR/3010/65/000/014/0045/0054

AUTHOR: Afanas'yeva, V. I.; Kalinin, Yu. D.

TITLE: Results of investigations of magnetic activity during the IGY

SOURCE: AN SSSR. Mezhduvedomstvennyy geofizicheskiy komitet. Geofizicheskiy byulleten', no. 14, 1965, 45-54

TOPIC TAGS: IGY magnetic research, Arctic magnetic activity, Antarctic magnetic activity, magnetic storm, geomagnetic field, solar corpuscular current, radiation belt

ABSTRACT: After presenting some general information about the international cooperative [illegible] during the IGY, the authors concentrate on Soviet

Card 1/2

L 52768-65

ACCESSION NR: AT5009973

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

NO REF SOV: 000 OTHER: 000

Card 2/2

L 3283-66 EWT(1)/FCC/EWA(h) GS/GW

ACCESSION NR: AT5023606 UR/0000/65/000/000/0368/0381

AUTHOR: Kalinin, Yu. D.; Mogilevskiy, E. I.

TITLE: Structure of the solar corpuscular stream and interaction of this stream with the earth's magnetosphere

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 368-381

TOPIC TAGS: geomagnetic field, solar plasma, solar radiation, solar wind, satellite data analysis

ABSTRACT: A model is proposed for the structure of the solar corpuscular stream in an attempt to determine the mechanism by which energy is transferred from this stream to the magnetosphere of our planet. The theory proposed in the paper is based on magnetic vector observations made by "Mariner-2," "IMP-1" and other satellites and rockets. It is assumed that the magnetic field (and probably the plasma) of the corpuscular stream corresponds to a flow model consisting of several discrete large-scale plasmoids ("M-elements") which have an intrinsic quasi-forceless

Card 1/2

L 3283-66

ACCESSION NR: AT5023606

magnetic field. This structure is a direct consequence of the magnetic fields observed on the sun, and of the mechanism responsible for emission of the corpuscular stream in the active regions. Present theories for the interaction between the solar corpuscular stream and the earth's magnetosphere are examined in the light of "sounding" observations of the magnetic vector at the periphery of the magnetosphere and close to the earth, which show that the magnetic field of the solar stream plays a considerable (if not decisive) part in the energy transfer between the stream and the magnetosphere. A comparison of "sounding" and surface observations shows that there is a direct relationship between D_t-variations in the geomagnetic field and variations in the field beyond the earth's magnetosphere. "In conclusion, the authors are sincerely grateful to V. I. Afanas'yeva who directed the preparation of much of the information from surface magnetic observatories used in this paper, and who was also responsible for several of the illustrations using these data and data from "IMP-1." Orig. art. has: 11 figures, 2 formulas. [14]

ASSOCIATION: none

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: AA, ES

NO REF SOV: 016 OTHER: 018 ATD PRESS: 4104

Card 2/2

L 11252-66 EWT(1)/ECC/EWA(h) GW

ACC NR: AP6002756 SOURCE CODE: UR/0203/65/005/006/1098/1099

55 55 55 55

AUTHOR: Afanas'yeva, V. I.; Kalinin, Yu. D.; Mogilevskiy, E. I.

ORG: Institute of Terrestrial Magnetism, Ionosphere, and Propagation of Radio Waves, AN SSSR (Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR)

TITLE: Diurnal changes in the velocity of the earth's rotation and possible reasons for changes

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 6, 1965, 1098-1099

TOPIC TAGS: earth rotation, velocity vector, magnetic field, ~~corpuscular stream~~, magnetic moment, geomagnetism, solar corpuscular radiation

ABSTRACT: Data of the International Time Service on the irregular rotation of the earth is not an accurate enough source for judging the change in rotation from day to day. V. I. Afanas'yeva, Yu. D. Kalinin, and E. I. Mogilevskiy made an attempt to find the real source causing this irregular rotation. They imagined a metallic ball hanging on a thread. A magnet moves along this ball horizontally at a steady speed. Its magnetic moment coincides with the velocity vector. The change in the magnetic field caused by the moving magnet forces the ball to rotate. The rotation is stopped by the torsion of the thread. The direction of the ball's rotation depends upon the side along which the magnet moves. Solar corpuscular

Card 1/2 UDC: 525.35

L 11252-66

ACC NR: AP6002756

streams pass the earth either traveling in the opposite direction or overtaking it. When the corpuscular stream and the earth pass each other in opposite directions, this creates forces which decelerate the earth's rotation. In contrast, solar corpuscular streams overtaking the earth initiate forces which accelerate the earth's rotation. The experiment with the ball was applied to the earth with its magnetosphere. The experimenters developed a formula for computing the acceleration and deceleration of the earth's rotation when a corpuscular stream passes the earth at selected distances. Orig. art. has: 4 formulas. [EC]

SUB CODE: 08,03/ SUBM DATE: 12Aug65/ ORIG REF: 005/ OTH REF: 002/ ATD PRESS: 4174

EC

Card 2/2

ACC NR: AT6007142 (N) SOURCE CODE: UR/3148/60/000/004/0005/0014

AUTHOR: Afanas'yeva, V. I.; Kalinin, Yu. D. (Doctor of physico-mathematical sciences)

ORG: None

TITLE: Very large and large geomagnetic storms, and some topics of their theory

SOURCE: AN SSSR. Mezhduvedomstvennyy geofizicheskiy komitet. III razdel programmy MGG: Geomagnetizm i zemnyye toki. Sbornik statey, no. 4, 1960, 5-14

TOPIC TAGS: solar activity, magnetic storm, solar corpuscular radiation, interplanetary magnetic field, sunspot

ABSTRACT: This paper delves into the nature and theory of significant geomagnetic storms. The statistical basis was provided by observations of 1603 magnetic storms over a period of 82 years, - 1878 to 1959. Included were storms with at least one of the three elements exceeding 150 gammas (or 35'). Amplitudes to 300 gammas were classed as moderate, 300 - 500 as large, and those over 500 gammas as very large. Besides the well-known 11 year cycle, a 30 year cycle of summary duration of moderate storms has been detected. The time series of magnetic storm activity is found related with the sunspot activity, as shown in Fig. 1. The displacement of the maximum of a storm number with respect to the maximum of the relative number of sun spots, - as a function of solar spots zone displacement along the latitude, is connected with the time variations of the density of the interplanetary medium. Corpuscular sun streams

Card 1/2

ACC NR: AT6007142

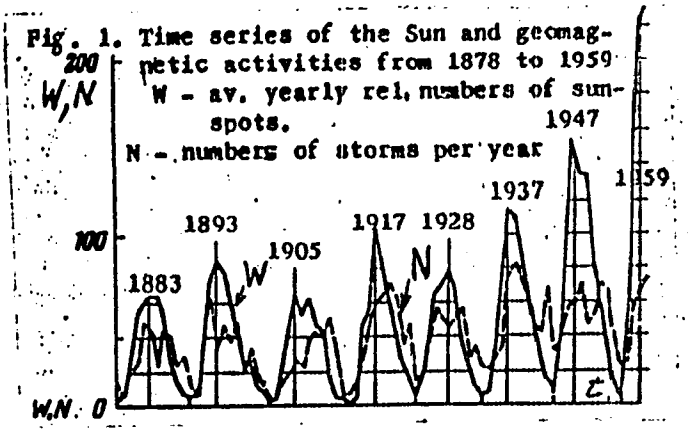

Fig. 1. Time series of the Sun and geomagnetic activities from 1878 to 1959
W - av. yearly rel. numbers of sunspots.
N - numbers of storms per year

perturb the interplanetary medium, and the magnetic storm field (which is to a considerable extent an interplanetary magnetic field) is intensified ten hundred times by the turbulent movement caused by the streams. Orig. art. has: 11 figures, 4 tables.

SUB CODE: 08, 03/ SUB DATE: None/ ORIG REF: 004/ OTH REF: 002

Card 2/2

3(6) PHASE I BOOK EXPLOITATION SOV/1934

Leningrad. Nauchno-issledovatel'skiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln

Trudy, Vyp. 13. (Transactions of the Institute of Scientific Research on Terrestrial Magnetism, the Ionosphere, and Radio Wave Propagation. Nr. 13) Moscow, Gidrometeoizdat (Otd-nie), 1957. 118 p. 1,120 copies printed.

Additional Sponsoring Agency: USSR. Ministerstvo svyazi.

Ed. (Title page): Ya.L. Al'pert; Ed. (Inside book): V.I. Tarkhunova; Tech. Ed.: V.V. Mayorov.

PURPOSE: This issue of the Institute's Transactions is intended for geophysicists and technical personnel working in research organizations as well as for advanced students at universities and technical vuzes. It is also of interest to communications personnel.

Card 1/3

AVAILABLE: Library of Congress

MM/lsb
6-22-59

Card 3/3

SOV-109-3-4-16/28

AUTHOR: Kalinin, Yu. K.

TITLE: Perturbation of the Field of a Plane Radio Wave by the Irregularities of the Earth's Surface (Vozmushcheniye polya ploskoy radiovolny neodnorodnostyami zemnoy poverkhnosti)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3 , Nr 4, pp 557-561 (USSR)

ABSTRACT: It is assumed (Ref.1) that the perturbed field E can be expressed by:

$$E = E_o - \left(\frac{\partial A_x}{\partial x} + \frac{\partial A_y}{\partial y}\right) \quad , \qquad (3)$$

where A_x is expressed by Eq.(4); A_y is given by a similar equation, $y_s(\rho)$ is the Sommerfeld attenuation function and E_o is the field in the absence of the irregularities of the Earth's surface. If Eq.(4) is integrated with respect to y the expressions for the perturb-

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Perturbation of the Field of a Plane Radio Wave by the Irregularities of the Earth's Surface

ation due to the profile of the surface and due to the nature of the soil are given by Eqs.(5) and (6) respectively, in which the x_A is the distance from the point of observation to the boundary of the irregularity, $H_0^{(1)}$ is the Hankel function of the first kind of the zero order, and $s = k(x_A - x)\cos\theta$; $h(x)$ and $g(x)$ in expressions 5 and 6 describe the electrical and the geometrical properties of the Earth's surface respectively. Eqs.(5) and (6) were used to evaluate the perturbation for a "slight slope"-type of irregularity and for a "sea-dryland-sea" discontinuity; the results are shown graphically in Figs.1 and 2

Perturbation of the Field of a Plane Radio Wave by the Irregularities of the Earth's Surface

respectively. The paper contains 2 figures and 2 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln (Scientific Research Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation)

SUBMITTED: June 1, 1956

1. Radio waves 2. Earth--Electrical properties 3. Earth--Reflective properties 4. Mathematics--Applications

AUTHORS: Kalinin, Yu. K. and Feynberg, Ye. L.

TITLE: Propagation of the Ground Wave over a Non-Uniform Spherical Earth Surface (Rasprostraneniye zemnoy volny nad neodnorodnoy sfericheskoy poverkhnost'yu zemli)

PERIODICAL: Radiotekhnika i elektronika, 1958, Vol 3, Nr 9, pp 1122-1132 (USSR)

ABSTRACT: For the purpose of analysis it is assumed that the field is produced by a vertical dipole situated on the surface of the Earth. The vertical component of the electrical field E_n satisfies:

$$E_n = E_n^{(0)} + \frac{1}{4\pi}\int\left\{\frac{\partial v}{\partial n}E_n - \frac{\partial E_n}{\partial n}v\right\}dS \qquad (1)$$

where $E_n^{(0)}$ is the volume integral of the source function multiplied by v, n is the normal to the surface (directed towards the centre of the Earth) and v is the Green function which can be expressed by Eq.(2) where θ is the arc angle of a great circle connecting two points, k is the wave number, a is the radius of the Earth and z is

Propagation of the Ground Wave over a Non-Uniform Spherical Earth Surface

the vertical co-ordinate; the coefficient $q_o = iA/\sqrt{\varepsilon'_o}$, where $A = (1/2\ ka)^{1/3}$; on the other hand, $V(\vartheta, z; q_o)$ denotes the attenuation function. For the case of $z = 0$, the function V can be expressed by Eq.(3), where $w(t)$ is the Airy function of a complex argument. For this case, the boundary conditions are expressed by Eqs.(4), so that E_n is in the form of Eq.(5). The solution for E_n is in the form of Eq.(6) where W is a slowly changing attenuation function. This can be written in the form of Eq.(5a) or in the form of Eq.(7). The integral in Eq.(7) is taken along the great circle connecting the points of transmission and reception. If the transmission route consists of N segments which are uniform, Eq.(7) can be written as Eq.(8), where ϑ_j is the angular length of the j^{th} segment and q_j is a parameter describing its characteristics. For a route

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consisting of two segments, the attenuation function is expressed by Eq.(9) or Eq.(10). This can also be written as Eq.(12). For a route consisting of 3 segments, the attenuation function W_3 can be written as Eq.(15). It is of interest to define the attenuation of various segments of a transmission route; this can be done by employing Eq.(18). This was used to determine the attenuation of a number of systems. The results are shown in Figs.1 and 2; the attenuation functions W are plotted for sea-land-sea and land-sea-land systems as a function of their relative angular width, ξ . Similar results are shown in Figs.3 and 4; Fig.3 shows the field as a function of distance D over a land-sea system, while Fig.4 gives the field for a sea-land system; the crosses and circles in the figures denote the experimental points (taken from Ref.7). For systems in which $q = q_1$ and $q = q_2$, the so-called boundary refraction phenomenon is observed (see Fig.5). The attenuation function for this case can be written as Eq.(21) or Eq.(22), from which the differential attenuation can be expressed by .

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Eq.(23). The paper contains 5 figures and 8 references; 5 of the references are English and 3 Soviet.

ASSOCIATION: NII zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln i Fizicheskiy institut im. P. N. Lebedeva, AN SSSR) The Scientific Research Institute for Earth Magnetism, Ionosphere and Radio Wave Propagation and the Physics Institute im. P. N. Lebedev of the Soviet Academy of Sciences)

SUBMITTED: June 26, 1957.

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AUTHOR: Kalinin, Yu.K. SOV/109-3-10-6/12

TITLE: Problem of Diffraction of Radio Waves Over a Non-uniform Earth surface (K voprosu o difraktsii radiovoln nad neodnorodnoy sfericheskoy poverkhnost'yu zemli)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 10, pp 1274 - 1279 (USSR)

ABSTRACT: A theory of the propagation of ground waves over a spherical, non-uniform Earth surface was developed by Furutsu and the author (Refs 1 and 2). In particular, it was found that for a route consisting of two sections which are characterised by parameters q_1 and q_2, the attenuation function is given by Eq.(1), where $\Delta\theta_1$ and $\Delta\theta_2$ are angular measures of the two sections; $\Delta\theta_1 + \Delta\theta_2 = \theta_A$, while $t_i(q_i)$ is the i-th root of the equation: $w'(t) = q_j w(t)$, where $w(t)$ is the Airy function of a complex argument; a is the radius of the Earth, $A = (ka/2)^{1/2}$ and $q_j = iA/\sqrt{\varepsilon'_j}$. The attenuation function for a route consisting of 3 segments was also found in the

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above works (Eq.(2)) and it was indicated how the function could be derived for a larger number of segments. Here, the author shows the attenuation function for n segments; W_n is given by:

$$W_n = \sqrt{\pi i A\theta_A}\left[\prod_{j=1}^{n-1}(q_j - q_{j+1})\right] \times$$

$$\sum_{\alpha_1 \ldots, \alpha_n}^{\infty} \frac{\exp\left\{ iA \sum_{j=1}^{n} \Delta\theta_j t_{\alpha_j}(q_j) \right\}}{\left\{\prod_{j=1}^{n}\left[t_{\alpha_j}(q_j) - q_j^2\right]\right\}\left\{\prod_{j=1}^{n-1}\left[t_{\alpha_j}(q_j) - t_{\alpha_{j+1}}(q_{j+1})\right]\right\}} \qquad (3) .$$

The proof of Eq.(3) is done by induction; thus, it is proved that if W_n is expressed by Eq.(3), W_{n+1} is in

the form of Eq.(4).
It is shown that if all the segments are large, i.e. $\Delta\theta_j A \gtrsim 1$, the attenuation function is in the form of Eq.(8). At long waves, Eq.(8) can be written as Eq.(9), while for the short waves, it is in the form of Eq.(10). If one of the segments is small, the attenuation function is given by Eq.(11); in particular, for $n = 2$, Eq.(11) can be written as Eqs.(12) or (13). The attenuation function for a route with continuously variable parameters can be found by solving the integral equation expressed by Eq.(14). This can be represented in the form of two integrals, as shown on p 1278, so that the final expression for the attenuation is written as Eq.(16), where V_m is the volume of an m-dimensional wedge whose angles between its sides are equal to $\pi/4$. It is shown that the series expressed by Eq.(16) is uniformly convergent, provided the following condition is fulfilled:

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$$\left| 2\Delta q \frac{iA\theta_A}{\pi} \right| < 1 .$$

The author thanks Ye.L. Feynberg and Ya.L. Al'pert for discussing the results of this work.
There are 4 references, 3 of which are Soviet and 1 English.

ASSOCIATION: N.-i. in-t zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln (Scientific-research Institute of Earth Magnetism, the Ionosphere and Radio-wave Propagation)

SUBMITTED: June 26, 1957

Card 4/4 1. Radio waves--Diffraction

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AUTHORS: Borodina, S.V., Kalinin, Yu.K., Mikhaylova, G.A. and Fligel', D.S.

TITLE: A Review of the Present State of Research into the Propagation of Very Low Frequency Electromagnetic Waves

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol 3, Nr 1, pp 5-32 (USSR)

ABSTRACT: This is a review paper treating both theoretical and experimental problems. In the first part a review is given of calculations on the propagation of electromagnetic waves taking into account irregularities in the ionosphere, the finite conductivity and the spheroidicity of the earth. In the second part a review is given of experimental studies in the frequency range 10 cps to 50 Kc/s. Above 3 Kc/s there is good agreement between experimental and theoretical data. It is pointed out that it is necessary to develop a general theory of propagation of very low frequency electromagnetic waves taking into account both the spheroidicity and the finite

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A Review of the Present State of Research into the Propagation of Very Low Frequency Electromagnetic Waves

conductivity of the earth, particularly above 3 kc/s. The review is based on 109 published papers. Acknowledgement is made to Ya.L.Al'pert, Yu.G.Ishchuk and G.M.Sosnovskaya for their help. There are 14 figures, and 2 tables and 109 references, 11 of which are Soviet and 98 Western.

ASSOCIATION: Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR (Institute of Terrestial Magnetism, Ionosphere and the Propagation of Radio Waves, AS USSR)

SUBMITTED: September 19, 1959

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AUTHOR: Kalinin, Yu.K.

TITLE: Certain problems of radiowave propagation over the inhomogeneous spherical surface of the Earth

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1961, 70, abstract 8 I476 (Tr. In-ta zemn. magn. ionosfery i rasprostr. radiovoln. AN SSSR, 1960, no. 17 (27), 50-129)

TEXT: The result is given of various investigations into the scope of problems concerned with the radiowave propagation over a spherical inhomogeneous earth. In solving the problem the transition is made from the differential to integral form of Maxwell's equations by applying the Green functions so that the analysis is reduced to solving the integral equation for calculating the electric field E. The iterative method of solution is possible for a wide range of functions $\varepsilon^1(\rho\eta)$ where ε^1 - the complex dielectric earth constant, ρ and η are the coordinates. As a result, the

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Certain problems...

solutions is found to be proportional to the attenuation function W as determined from the integral equation. From the proof of convergence the required number of terms p is determined such that the first p terms be greater than the remaining terms by a given number of times n. Solutions may be obtained for p = 1 and n = 0, p = 4-5 and n = 20. The analysis is given of various particular cases of the attenuation function. The cases are considered of boundary refraction of different earth radii at different sections of the propagation path, of local field inhomogeneities of waves propagating along the boundary and of statistical inhomogeneity of the path. The use is considered of the double Fourier integral for the solution of certain problems together with obtaining the attenuation function from the parabolic equation. The use of the theory given above is considered in view of many experimental results published in literature. Of special interest is the effect of increasing field amplitude, when the wave crosses from one section of the path into another, whose conductivity is greater - the so-called recovery effect along short sections of the propagation path.

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Theoretical calculations are in good agreement with experimental data. The recovery-effect is not observed along long sections of the path and if one section is small and the other long, this effect is much less noticeable. Phase relationships give also satisfactory agreement between theory and practice. The theory shows that the process of propagation has the property of sliding along the earth's surface, diffracting into the shadow regions. 45 references.
[Abstracter's note: Complete translation]

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AUTHORS: Borodina, S.V., Kalinin, Yu.K., Mikhaylova, G.A., and Fligel', D.S.

TITLE: A review of the present state of research into the propagation of ultra-long electromagnetic waves

SOURCE: Akademiya nauk SSSR. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln, Trudy, no.17(27). Moscow, 1960. Rasprostraneniye radiovoln i ionosfera. 130-172

TEXT: Long and ultra-long electromagnetic waves are defined as those with wavelengths between 3 - 5 and some tens of thousands of kilometres. Part I of this paper is concerned with a review of the theory of propagation of ultra-long radio waves, beginning with G.N. Watson's paper (Ref.1: The transmission of electric waves round the earth. Proc. Roy. Soc., v.95, 546, 1919). It is indicated how the various equations formulated to describe the propagation of electromagnetic waves in the earth—uniform-ionospheric wave-guide can be evaluated. This is followed by a summary of the methods which can be used to take into account the

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