GERSHT, Ye.P.

Using radioactive isotopes in meteorology and hydrology. Meteor. i gidrol. no.8:62-64 Ag '57. (MLRA 10:8)
(Radioisotopes) (Meteorology) (Hydrology)

[illegible], [illegible]; GAEVSKAYA, M.S. [Gayevskaya, M.S.] GERSHTEIN, L.M. [Gershteyn, L.M.]; MOSOVA, E.A.

Changes in the nerve cell proteins in dogs during resuscitation from the state of clinical death. Physiol. Bohemoslov. 14 no.3:271-275 '65.

1. Institute of Brain, USSR Academy of Medical Sciences, and Laboratory of Experimental Physiology of Resuscitation, USSR Academy of Medical Sciences, Moscow.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920008-2"

GERSHTENKERN, S. (Dnepropetrovsk)

Potentials for reducing losses due to waste in machinery manufacturing. Fin.SSSR 37 no.4:31-33 Ap '63. (MIRA 16:4)
(Machinery industry--Costs) (Waste products)

KAGAN, I.S., dots., kand.ekon.nauk; GERSHTENKERN, S.Ya., inzh.

Production quality accounting as reflected in relations between supplier and consumer shops in metallurgy. Izv.vys.ucheb.zav.; chern. met. no.11:135-143 N '58. (MIRA 12:1)

1. Dnepropetrovskiy metallurgicheskiy institut. Rekomendovano kafedroy ekonomiki promyshlennosti.
(Metallurgy--Accounting)
(Metallurgical plants--Quality control)

S/128/60/000/010/001/003
A133/A133

AUTHORS: Kagan, I. S., Gershtenkern, S. Ya.

TITLE: On the problem of calculating the cost price of castings

PERIODICAL: Liteynoye proizvodstvo, no. 10, 1960, 10-13

TEXT: The article represents a general survey on the calculation of production costs in foundries. The authors repeat some well-known general rules concerning the computation of an adequate cost price, and point out the existing difficulties when cost prices have to be fixed in piece or small-batch production. They state that at the beginning of 1959 2,800 cast iron and steel foundries in the Soviet Union had an average annual output of 4,500 tons each. While the share of the big foundries in the aggregate production was reciprocally proportinal to their number, quite a number of smaller foundries are still in existence even in highly developed Sovnarkhozes, and it is here that the difficulties of achieving an economically sound cost price arise. The assortment of castings in many foundries comprises hundreds and thousands of

Card 1/4

On the problem of . . . . .

S/128/60/000/010/001/003
A133/A133

items, e. g. at the Moscow "Stankolit" Plant the order nomenclature includes 10,000 items, 75% of which are produced in single pieces or small lots of up to 50 pieces. To be able to carry out in such cases an exact cost-accounting, the basis for any sort of calculation, the authors demand that the foundries are given in the first place the necessary weighing and measuring devices to keep an accurate and regular check on metal and material consumption and other costs. The authors then analyze the various methods of planning, follow-up, accounting and calculation in the individual foundry shops of mechanical engineering and metallurgical plants. They investigate at first the units of calculation of the product cost price, which they divide into three groups, viz. 1) the mean physical ton of casting, 2) the cost calculation based on individual orders, and 3) the calculation based on differentiated criteria, like labor cost of the main production workers, wage cost split up according to professions of the workers, etc. An analysis of the above-mentioned factors shows that in most cases the various calculation methods are inaccurate since they are based

Card 2/4

On the problem of ...

on merely theoretical classifications and do not take into account e. g. the actual burning losses of the castings, the different labor consumption for castings of various sizes, the proper distribution of direct and overhead costs on the single casting or group of castings. The authors then analyze the normative calculation method as it is e. g. employed in the foundry shops of the Nevskiy mashinostroitel'nyy zavod (Nevskiy Mechanical Engineering Plant), where the castings are divided into five weight groups and three groups based on the intricacy of the work. An investigation of the method of expressing the cost invested in unfinished products and taking this as a basis for cost price calculation leads the authors to the conclusion that the object of calculation in foundries should be the finished product, while all unfinished items should be rated according to the cost price norms. Finally, the authors comment on the calculation of production costs and finished products in the smelting sections of foundries, and emphasize the necessity, in order to gain an accurate picture of the actual production costs, of weighing the liquid steel, since all other calculation methods must lead to an inaccurate computation

On the problem of ...

S/128/60/000/010/001/003
A133/A133

of the productivity of steel-smelting equipment and, consequently to an incorrect determination of the fulfilment of the plan. The authors conclude that in foundries of piece and small-batch production the normative calculation method should be employed and 1 ton of casting should be taken as the calculation unit, while the castings should be divided into weight and intricacy groups.

There are 3 tables and 5 Soviet-bloc references.

Card 4/4

GERSHTENKERN, S. Ya.

Metal balance in foundries. Lit. proizv. no.6: 9-12 Je '61.
(MIRA 14:6)
(Foundries--Equipment and supplies)

GERSHTENKERN, S.Ya.

Distribution of indirect expenses in foundries. Lit. proizv. no.1:9-12 Ja '62. (MIRA 16:8)

(Founding—Accounting)

BRYUKHANENKO, B.A., dotsent, kand. ekonom. nauk; BEN', T.G.; GERSHTENKERN, S.Ya.; KAGAN, I.S.; PRAVDIN, M.V.; STOGNII, A.P.; KHAKHALINA, A.N.; CHERNIKHOV, V.S.; KOBYLYAKOV, I.I., dotsent, kand. ekonom. nauk; SHIRYAYEV, P.A., kand. ekonom. nauk

"Economic aspects of ferrous metallurgy" by N.P. Bannyi, V.B. Brodskii, IA.A. Oblomskii, V.V. Rikman, L.N. Roitburd. Reviewed by B.A. Briukhanenko and others. Stal' 22 no.6: 562-565 Je '62. (MIRA 16:7)

1. Dnepropetrovskiy metallurgicheskiy institut (for Ben', Gershtenkern, Kagan, Pravdin, Stogniy, Khakhalina, Chernikhov). 2. Dneprodzerzhinskiy metallurgicheskiy zavod-vtuz (for Kobylyakov).

(Iron industry) (Steel industry)
(Brodskii, V.B.) (Oblomskii, IA.A.)
(Rikman, V.V.) (Roitburd, L.N.)

GERSHTENKERN, S.Ya.

New book on the economics of founding. Lit. proizv. no.6: 46-47 Je '63. (MIRA 16:7)

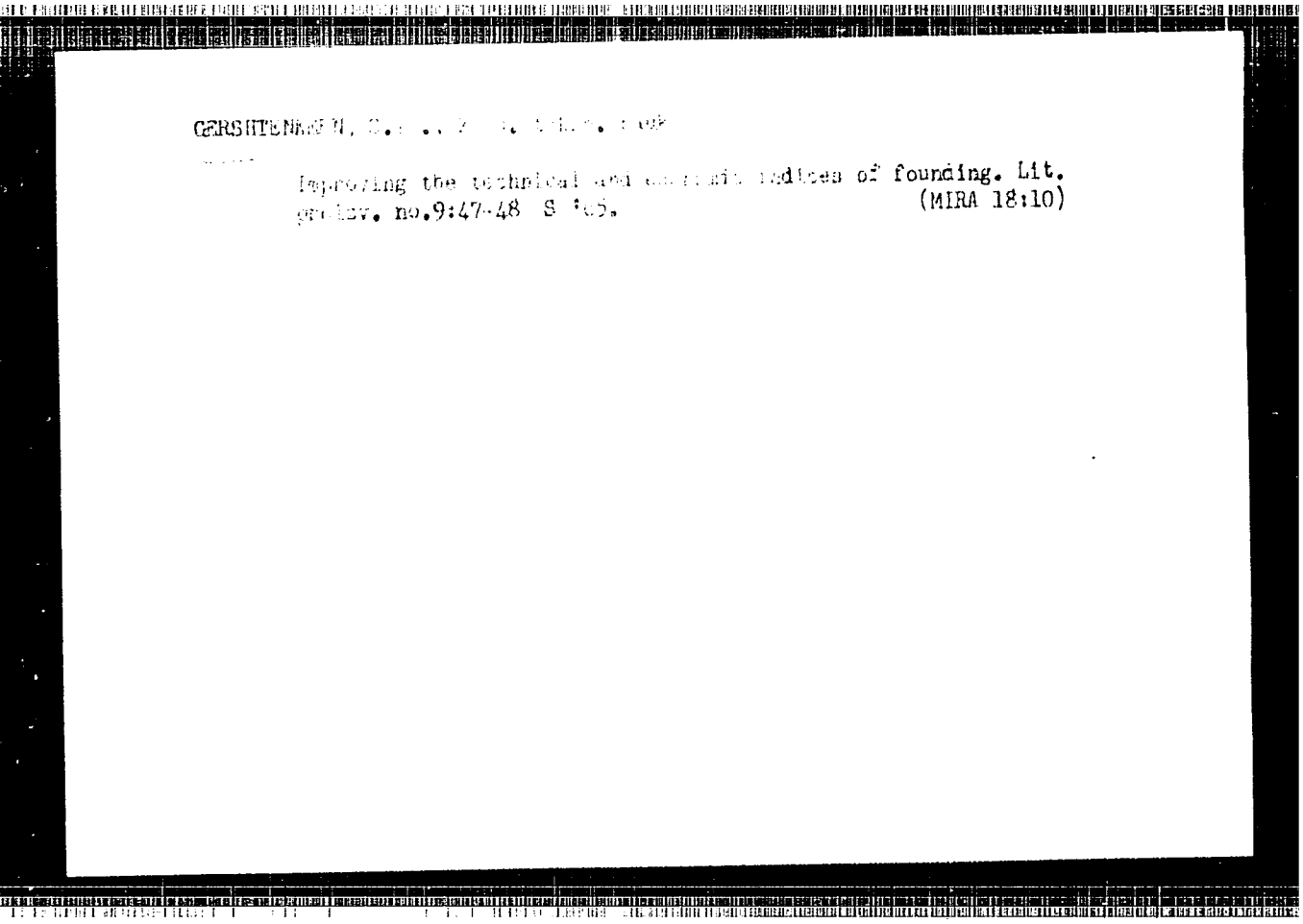
(Founding)

GERSHTENKERN, S.Ya.

Operational analysis of expenses in the production of castings.
Lit. proizv. no.6:9-11 Je '64. (MIRA 18:5)

GERSHTENKERN, S.Ya.

Improving the cost analysis of castings. Lit. proizv. no.3:
8-9 Mr '65. (MIRA 18:6)



GERSHTEYN, M. [illegible]

Improving the technical and economic indices of founding. Lit. [illegible] (MIRA 18:10)

GIRSHTENKIRN, S.Ye., inzh., ZAKHAROV, G.A., inzh., CHERNOVY, Ye.G., [illegible]

Book reviews. Lit. proizv. no.11:43-45 N '65. (MIRA 18:12)

[redacted], A.L., inzh.

Unit for working frozen ground using a diesel hammer drill.
Stroi. i dor. mash. 6 no.10:24-27 O '61. (MIRA 14:10)
(Frozen ground)
(Boring machinery)

GERSHTEYN, A.K., inzh.; KOTOV, V.V., inzh.; SHASHKOV, I.P., inzh.

Mobile unit for the production of keramzit. Stroi. i dor. mash. 7 no.7:32-34 Jl '62. (MIRA 15:7)
(Omsk Province—Keramzit)

LYADUKHIN, I.A.; NIKOLAYEV, A.F.; TARASOV, S.M.; DEVYATKOV, A.N.; VARKHOTOV, K.P.; ZLOTNIK, M.I.; YEVDOKIMOV, V.I.; LYSYAKOV, A.G.; GERSHTEYN, A.K.; KISS, N.L.; MEL'NIK, V.I.; BEYZERMAN, R.M.; SMIRNOV, I.M.; NIKUL'SHIN, K.Ye.

From the pages of Soviet magazines. Mekh. stroi. 19 no.9:31 S '62. (MIRA 15:9)
(Bibliography--Construction equipment)

GERSHTEYN, A. R.

USSR/Electricity - Transmission, Power Mar 51

"The Draft of a Standard for Rated Voltages of Stationary Electric Power Systems," N. G. Bykov, A. R. Gershteyn, Engineers, Leningrad Branch of Teploelektroproyekt"

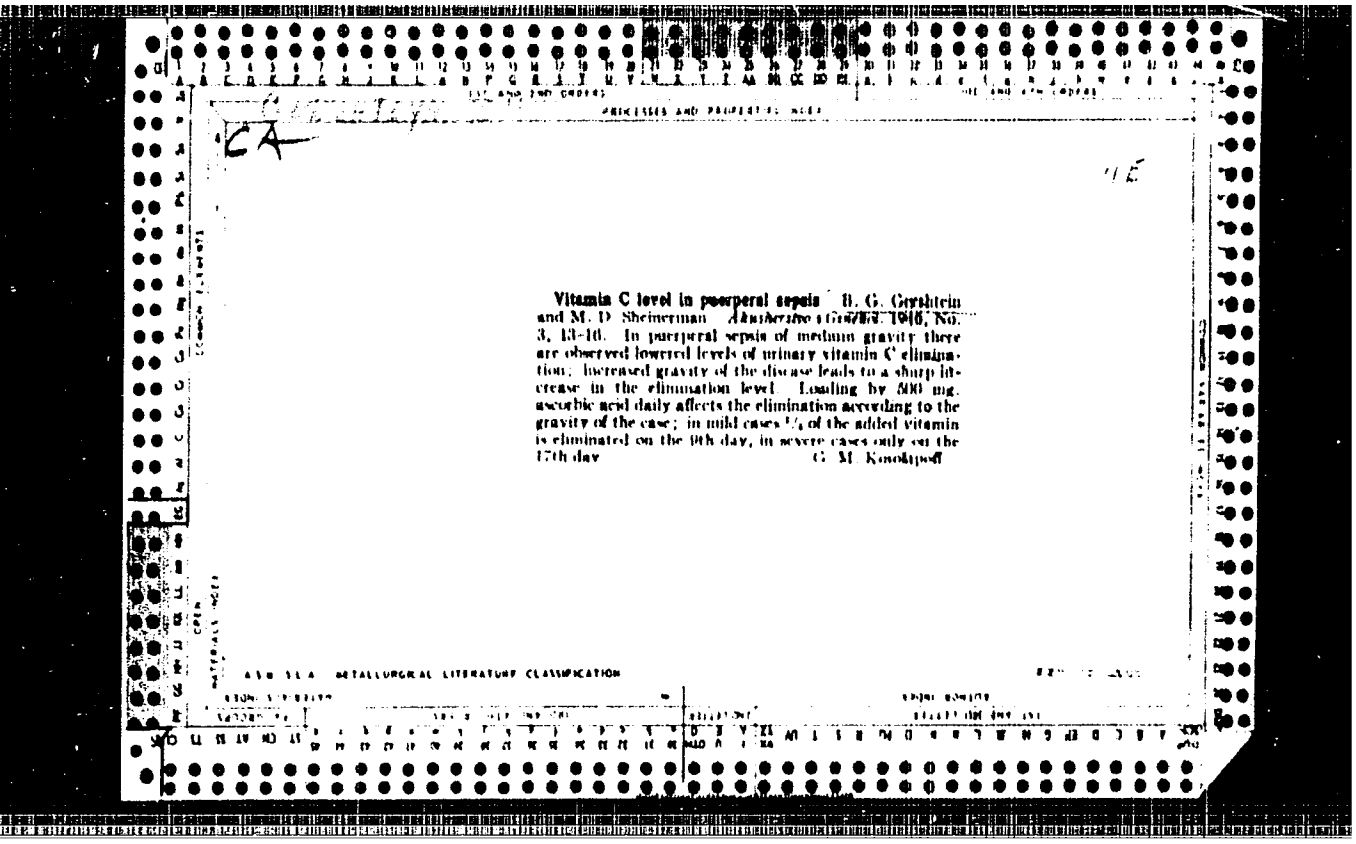
"Elektrichestvo" No 3, pp 72-74

Gives results of research carried out by "Teploelektroproyekt" during 1949 - 1950 to det which of the 2 voltages, 15 or 20 kv, should be used in the development of the cable networks of Soviet power systems. Results of the research favor the introduction of 15 kv.

201T34

GERSHTEYN, A.R., inzh.; ANIKEYEVA, A.F., inzh.; LEYBOVICH, I.R.; SAL'KOV, B.L., inzh.

Concerning S.T.Ivanov's article "Mistakes in designing the electrical section of electric power plants and substations." Elek. sta. 36 no.2:83-85 F '65. (MIRA 18:4)



Vitamin C level in puerperal sepsis B. G. Gyrshtein and M. D. Sheinerman *Akusherstvo i Ginekol.* 1946, No. 3, 13-16. In puerperal sepsis of medium gravity there are observed lowered levels of urinary vitamin C elimination; increased gravity of the disease leads to a sharp increase in the elimination level. Loading by 500 mg. ascorbic acid daily affects the elimination according to the gravity of the case; in mild cases ¼ of the added vitamin is eliminated on the 9th day, in severe cases only on the 17th day. G. M. Kondrat'eff

AL'TSHULER, Z.Ye., inzh.; BASTUNSKIY, M.A., inzh.; BERSTEL', V.N., inzh.; BIRENBERG, I.E., inzh.; BOGOPOLSKIY, B.Kh., inzh.; BUKHARIN, S.I., inzh.; GERSHTEYN, B.G., inzh.; GRINSHPUN, L.V., inzh.; DREYYER, G.I., inzh.; DINERSHTEYN, A.G., inzh.; ZLATOPOL'SKIY, D.S., inzh.; KLANYUK, A.V., inzh.; KOZIN, Yu.V., inzh.; LEVITIN, I.P., inzh.; MEL'NIKOV, L.F., inzh.; MEL'KUMOV, L.G., inzh.; NADEL', M.B., inzh.; PAVLOV, N.A., inzh.; PASLEN, D.A., inzh.; PESIN, B.Ya., inzh.; PYATKOVSKIY, P.I., inzh.; RAZNOSCHIKOV, D.V., inzh.; ROZENOYER, G.Ya., inzh.; ROZENBERG, R.L., inzh.; ROYTENBERG, N.L., inzh.; RYABINSKIY, Ya.I., inzh.; SYPCHENKO, I.I., inzh.; TABACHNIKOV, L.D., inzh.; FEL'DMAN, E.S., inzh.; SHTRAKHMAN, G.Ya., inzh.; SHTKRENGAS, N.S., inzh.; LEVITIN, I.P., otvetstvennyy red.; STEL'MAKH, A.N., red.izd-va; BEKKER, O.G., tekhn.red.

[Overall mechanization and automatization of production processes in the coal industry] Kompleksnaia mekhanizatsiia i avtomatizatsiia proizvodstvennykh protsessov v ugol'noi promyshlennosti. Pod red. IU.V.Kozina i dr. Moskva, Ugletekhizdat, 1957. 82 p. (MIRA 11:3)

1. Gosudarstvennyy proyektno-konstruktorskiy institut. 2. Institut Giprougleavtomatizatsiya i Tekhnicheskogo Upravleniya Ministerstva ugol'noy promyshlennosti (for all except: Levitin, Stel'makh, Bekker)

(Automatic control) (Coal mining machinery)

AUTHORS: Gershteyn, B.G. and V.berskiy, I.A. 137-21-58-9-12/21

TITLE: The Casting of Racks for Built-up Gear Hobbing Cutters (Otlivka reyek dlya sbornykh chervyachnykh frez)

PERIODICAL: Stanki i Instrument, 1958, Nr 9, pp 36 - 37 (USSR)

ABSTRACT: The manufacture of cast racks using tool steel waste as practised at the Yaroslavskiy avtozavod (Yaroslavl Motor Works) in the USSR is described. Twelve racks of 2.5 mm module and a pressure angle of 20° are assembled into a hobbing cutter. A master rack was placed on a baseplate and surrounded with a steel jacket in which the mould for making the lost wax patterns was cast at a temperature of 200 °C in an alloy consisting of 30% tin, 55% lead and 15% antimony, after covering the master with soot. The casting patterns were made of a composition containing 50% paraffin wax and 50% stearin. All twelve patterns with teeth downwards were joined to a stem in a spoke formation sloping down from the centre. The assembled patter was covered with three layers of a fire-resisting paste and a reinforcing fourth layer. The fire-resisting coating consisted of 30-35% hydrolised ethyl silicate of orthosilicon and 60-70% of powdered quartz. The ethyl silicate solution consisted of 60% ethyl silicate, 30%

Card1/4

The Casting of Racks for Built-up Gear Hobbing Cutters

ethyl alcohol and 10% of a weak aqueous solution of hydrochloric acid. The reinforcing coat consisted of 5% waterglass solution and 95% of powdered quartz previously heated to 900 °C. The casting mould was filled with a dry filler on a moulding machine developed at the works and heated to a temperature of 900 °C for three hours. The lost wax pattern was melted out with hot air. The steel was melted in a high-frequency induction furnace of 150 g crucible capacity, using a charge containing 45% of high-speed steel scrap (with 18% tungsten), 51.9% of casting scrap, 1.0% of ferrochrome, 2.5% of ferro-tungsten, 1.5% of ferro-vanadium and 0.1% of crushed electrodes. The oxidising agents were 0.1% of secondary aluminium, 0.5% of ferro-silicon and 1.0% of ferro-manganese. The metal was heated to 1 600 °C and reached the normal composition of high-speed steel. The steel was poured at about 1 470 °C into the moulds and pre-heated to about 650 °C. Before pouring, the ladles were heated to 790 °C. The cast racks were fettled by sandblasting after boiling for five hours in a 50% solution of potassium or sodium hydroxide. The cast racks had a hardness of

The Casting of Racks for Built-up Gear Hobbing Cutters

about 57 Rockwell C. Heat treatment consisted of heating to 880 °C, holding for six hours, cooling and further holding for three hours at 740 °C, then further cooling to room temperature. The racks, thus softened to 30 Rockwell C, were machined in sets of twelve and heat-treated by quenching in oil from a temperature of 1 270 °C and a treble tempering treatment to 560 °C. Initially, cast racks had a shorter cutting life but were restored to a standard endurance by several measures, including the simultaneous pressing of all the patterns in the set, the reduction of machining allowances to about 0.4 mm, all round, improving the accuracy specifications, reducing the assumed shrinkage from 2.0% to 0.7%, introducing ferro-titanium (0.4%) into the charge and ensuring the precision of the thermal cycles, as well as eliminating the first annealing

The Casting of Racks for Built-up Gear Hobbing Cutters

treatment. The machining has been reduced to grinding the teeth and the latest racks are said to be 30% cheaper than those made from forged blanks.
There are 5 figures and 1 table.

[illegible], B[illegible]ris Grigor'yevich; [illegible] [illegible]movich;
KAR[illegible], N.S., otv. red.

[Automation of processes on the surface of coal mines; a lecture] Avtomatizatsiia protsessov na poverkhnosti ugol'nykh shakht; lektsiia. Moskva, Tsentr. in-t tekhn. informatsii ugol'noi promyshl., 196[illegible]. 3[illegible] p.
(MIRA 17:10)

AYZENSHTADT, G.Ye.-A.; GERSHTEYN, E.I.

Initial thickness of the Kungur salt-bearing complex in the Caspian Lowland. Dokl. AN SSSR 151 no.5:1156-1158 Ag '63. (MIRA 16:9)

1. Vsesoyuznyy neftyanoy nauchno-issledovatel'skiy geologo-razvedochnyy institut. Predstavleno akademikom A.L.Yanshinym.
(Caspian Lowland--Salt domes)

AUTHORS. Gershteyn, E. Z., Stavitskaya, T. S., Stil'bans, L. S. 57-11-8/33

TITLE. Investigation of Thermoelectric Properties of Lead Telluride (Issledovaniye termoelektricheskikh svoystv telluristogo svintsa).

PERIODICAL. Zhurnal Tekhn.Fiz., 1957, Vol. 27, Nr 11, pp. 2472-2483 (USSR).

ABSTRACT. Referring to the previous work of the authors in T, 1957, Nr 1, the investigation of the thermoelectric properties of the lead telluride was extended to a somewhat greater carrier concentration region of from 5.10^{17} to 2.10^{20}. The influence of the dispersion process and of the degeration on the thermo-electromotive force and the mobility are investigated at the sample in a wide admixture-concentration interval. In the case of types which approach a stoichiometric structure the correlation between the temperature dependence of the forbidden zone width and the carrier mobility is investigated. By introduction of compensating admixtures the influences on the kinetic degeneration coefficients and on the variation of the dispersion process are separated. The investigation of the temperature dependence in degenerated and not degenerated types facilitates to determine separately the dependence of the length of free path of the electrons on the temperature and the energy.

Card 1/2

Investigation of Thermoelectric Properties of Lead Telluride. 57-11-8/33

There are 10 figures and 14 Slavic references.

ASSOCIATION. Institute for Semiconductors AN USSR., Leningrad (Institut poluprovodnikov AN SSSR, Leningrad).

SUBMITTED. June 6, 1957.

AVAILABLE. Library of Congress.

Card 2/2

GERSHTEYN, G. M.

USSR/Electrons - Emission May 1946
Vacuum tubes, Magnetron

"Secondary Emission in Split-anode Magnetrons," Engr G. M. Gershteyn, 11 pp

"Radiotekhnika" Vol I, No 2

An investigation of the influence of secondary electron emission on the static characteristics of split-anode magnetrons, and a possible explanation of the phenomenon. The theoretical conclusions were checked experimentally for certain types of split-anode magnetrons.

19T11

GERSHTEYN, G.M.

Cand. Physical Sci.
Mr., Saratov State Univ., -1945-.

Physics.

"On the Dynatron Effect in Multi-Segmented Magnetrons," Dok. AN, 51, No. 4, 1946

GERSHTEYN, G. M.

36/49T17

USSR/Electronics Jan/Feb 49
Oscillators, Magnetron
Electrons - Emission

"The Role of Secondary Emission in Slotted Magnetron Operation," G. M. Gershteyn, Zurn Tekh Fiz, Vol IV, No 1, 5 pp

"Zhurnal Tekhnicheskoy Fiziki" Vol IV; No 1

Shows that presence of secondary emission from less positive segments of the anode strongly influences differential statistical characteristics of multicavity magnetrons. Also shows that dips occur in volt-ampere characteristics of the separate groups of segments due to presence of secondary

36/49T17

USSR/Electronics (Contd) Jan/Feb 49

emission. The latter are set up by generation of "secondary-emission" oscillations with asymmetrical connection of the oscillating system (Lecher wires). Conducted preliminary experimental investigation of these oscillations. Submitted 20 Apr 48.

36/49T17

GERSHTEYN, G. M.

USSR/ Nuclear Physics

Card 1/1 ; Pub. 118 - 2/2

Authors ; Kalinin, V.; Gershteyn, G.; and Sovetov, N.

Title ; Bibliography. Book review

Periodical ; Usp. fiz. nauk 54/1, 182-184, Sep 1954

Abstract ; Critical review of the book by V. M. Lopukhin entitled, "Excitation of Electromagnetic Oscillations and Waves by Electron Currents", published in 1953 by GOSTEKHIZDAT, is presented.

Institution : ...

Submitted : ...

USSR/Radiophysics - Superhigh Frequencies, I-11

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35395

Author: Gershteyn, G. M.

Institution: None

Title: Concerning the Problem of Stabilization of Magnetron Frequency by Automatic Regulation of the Magnetic Field

Original Periodical: Nauch. yezhegodnik za 1954 g., Saratovsk. un-t., Saratov, 1955, 637-640

Abstract: The frequency stability of multisegment magnetrons can be increased by several times at increased anode voltage by automatically regulating the magnetic field simultaneously with changing the anode voltage. Such regulation insures a constant ratio of magnetic to electric field intensity. The article gives a theoretical estimate of the possible limit to which the frequency stability can be raised with such a regulation; approximate equations are given.

Card 1/1

84187
S/112/59/000/014/064/085
A052/A001

9,4320 (2204, 1052, 1071)

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 14, p. 224, # 30146

AUTHORS: Gershteyn, G.M., Ustinov, N.K.

TITLE: An Investigation of Traveling-Wave Magnetrons With Anode Current Feed of Electromagnets

PERIODICAL: Uch. zap. Saratovsk. un-t, 1956, No. 44, pp. 65-71

TEXT: The work of 2-, 4- and 6-segment magnetrons under conditions of ~ 1.5 m traveling-wave oscillations and with anode current feed of electromagnets has been investigated experimentally. Such a circuit aims at a constant H/V_a and at the maintenance of conditions of Postumus synchronism. In the above relation H stands for magnetic field intensity and V_a for anode voltage. Two sectional coils of 30,000 turns each have been used. In the case of a compound connection (a part of the turns is fed from an outside source) no constant H/V_a has been achieved within a broad interval of V_a variations (which disagrees with the Ford results). In the case of a series connection of electromagnets a linear relation

Card 1/2

84487
S/112/59/000/014/084/085
A052/A001

An Investigation of Traveling-Wave Magnetrons With Anode Current Feed of Electromagnets

H=f (V_a) has been obtained for certain filament currents. The wavelength λ remained constant within the mean measurement error of $\pm$ 0.2 %. The stability of λ in relation to V_a variations at this connection has been several times higher compared with the usual circuit. The diagrams H=f (V_a) and λ=f(V_a) for different filament currents are given. There are 4 references.

E.Ya P.

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

Card 2/2

84488
S/112/59/000/014/065/085
A052/A001

9,42/0 (2204, 1052, 1071)

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 14, p. 224, # 30147

AUTHOR: Gershteyn, G.M.

TITLE: On Frequency Stabilization of Magnetrons With Static Negative Resistance by Means of Automatic Magnetic Field Control

PERIODICAL: Uch. zap. Saratovsk. un-t. 1956, No. 44, pp. 73-81

TEXT: Conditions under which the frequency stability of slot magnetrons with static negative resistance and with anode current feed of electromagnets increases are considered. Relations of magnetic field intensity to anode voltage $H=f(V_a)$, necessary for frequency stability, are determined. The expression $H \sim \sqrt{V_a}$ for $H/H_{cr} > 1.2$ agrees with the experimental curve for anode current feed of electromagnets.. Typical experimental curves $H=f(V_a)$ and $f=f(V_a)$ are given. The obtained frequency stability (for instance, $\Delta f/f = 3 \cdot 10^{-5}$ at a 10% variation of V_a) is one order higher than in circuits with an independent feed of electromagnets at relatively low H and V_a (H = 200-300 oersteds, V_a = 150-200

Card 1/2

On Frequency Stabilization of Magnetrons With Static Negative Resistance by Means of Automatic Magnetic Field Control

volts) and large emission currents. The latter circumstance may be of interest from the viewpoint of obtaining sufficiently powerful and at the same time stable magnetron oscillators. A constant f within a broad V_a interval at an automatic magnetic field control is of interest for obtaining an anode amplitude modulation with the lowest parasitic frequency modulation. There are 10 references.

E.Ya.P.

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

Card 2/2

PHASE I BOOK EXPLOITATION

Kalinin, Venedikt Ivanovich, and Gershteyn, Grigoriy Moiseyevich

Vvedeniye v radiofiziku (Introduction to Radio Physics) Moscow, Gostekhizdat, 1957, 660 p. 20,000 copies printed.

Ed.: Mirkotan, S.F.; Tech. Ed.: Gavrilov, S.S.: Corrector: Pletneva, T.S.

PURPOSE: The monograph is intended to serve as a textbook on radio physics and is approved for state universities by the Ministry of Higher Education of the USSR.

COVERAGE: The textbook is based on the courses of the"radio-physics cycle" which the authors have taught during the past 10-15 years at the Saratov University. Readers are assumed to be familiar with courses in general physics, electrical and radio engineering and to have a basic knowledge of electronic devices. The following subjects are covered: electromagnetic oscillations, linear systems and signal conversions, the general theory of oscillation and nonlinear conversions, and special attention is given to problems of superhigh frequencies. The physics of superhigh frequencies (over 300 mc) is closely associated with atomic

Card 1/24

AUTHOR: Gershteyn, G. M., and Vitel's, G. L.

TITLE: Expansion of Oscillatory Regions of Decimeter-Band Magnetrons. A Short Report (O rasshirenii kolebatel'nykh zon magnetronov detsimetrovogo diapazona. Kratkoye soobshcheniye)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol 2, Nr 1, pp 120-121 (USSR)

ABSTRACT: Split-anode magnetrons with a small number of segments and Lecher-type resonant lines may be used as easily tunable higher-frequency oscillators of the decimeter band. Results of experiments with 4- and 6-segment magnetrons having a thin cathode and a Lecher frame functioning in a nonresonant region are reported. The anode radius of the magnetron was 0.5 cm, cathode radius, 0.015 cm; straps were used to secure π-mode oscillations. At an anode voltage within 1,000 to 3,000 volts and at a higher-than-critical magnetic field, an aperiodic load can bring about an appreciable expansion of the oscillatory region and, consequently, a possibility of obtaining a higher frequency deviation corresponding to a given anode-voltage change. The frequency deviation may reach $\pm$ 10%. The maximum width of the oscillatory region was obtained with small anode currents.

109-2-1-15/17

Expansion of Oscillatory Regions of Decimeter-Band Magnetrons. A Short Report

There are 3 figures and 4 references in the article.

ASSOCIATION: Kafedra radiofiziki, Saratovskiy universitet (Chair of Radiophysics, the Saratov University)

SUBMITTED: January 14, 1956

AVAILABLE: Library of Congress

1. Oscillators 2. Magnetrons--Applications 3. Magnetrons--Test methods

Card 2/2

SOV/112-59-23-48320

9.4210

Translation from: Referativnyy zhurnal Elektrotekhnika, 1959, Nr 23, p 152 (USSR)

AUTHOR: Gershteyn, G.M.

TITLE: On the Oscillation Frequency of Multisegment Magnetrons

PERIODICAL: Uch. zap. Saratovsk. un-t, 1957, Vol 56, pp 113 - 118

ABSTRACT: Considered is the dependence of the oscillation frequency of a single-circuit multisegment magnetron, working on Π-type oscillations, on anode voltage, which is utilized for the frequency modulation of magnetrons. Approximate expressions for oscillation frequency ω and for the transconductance of modulation characteristic $d\omega/dU_a$ are derived. In a general case the transit angle θ_o is a function of anode voltage U_a and frequency ω. At a resonant load of magnetron a change of U_a leads to a small change of frequency. Expressions for ω and $d\omega/dU_a$ derived after some transformations are

Card 1/2

SOV/112-59-23-48320

On the Oscillation Frequency of Multisegment Magnetrons

applicable for magnetrons with a small number of segments (for instance, 4, 6, 8), working on a resonant load and under condition that to a certain change of U_a corresponds a relatively small change of frequency.

A.G.P.

Card 2/2

GERSHTEYN, G.M.

Transformation of spatial harmonics of a quasi-stationary field into time harmonics of the induced current. Izv.vys.ucheb.zav.; radiofiz. 1 no.2:13-18 '58. (MIRA 11:11)

1. Saratovskiy gosudarstvennyy universitet.
(Electric fields)

9.9000

69954

SOV/141-2-4-9/19

AUTHOR: Gershteyn, G.M.

TITLE: Simulating the Electric Field by Measuring the Induced Current

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 4, pp 602 - 606 (USSR)

ABSTRACT: A novel method of simulating the electric field, based on the Shockley-Ramo theorem, was proposed in two earlier articles (Refs 1,2). It was shown that while a small charged body (probe) was moved relatively to a system of electrodes, the charge and the velocity being constant, the current induced in the external circuit of the electrodes was a function of time, which was proportional to the distribution function of the static field. In this way, it was possible to represent the space distribution of the field by a time function. The method of plotting the field is illustrated in Figure 1, where a charged probe q moves with a velocity v ; this produces a current $i_{II}(t)$, which is observed across the resistance R on the tube of an oscillograph. The system can be used for plotting the field but not the potential.

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Simulating the Electric Field by Measuring the Induced Current

However, the potential difference can also be determined by integrating the function $i_H(t)$. The potential difference is given by:

$$\psi_2 - \psi_1 = \alpha \int_{t_1}^{t_2} i_H(t)dt \qquad (2)$$

where α is a constant,
t_1 and t_2 are time instants when the charged probe passes points s_1 and s_2, respectively.

The integration can be performed very simply by furnishing the circuit with a capacitor. The resulting system is shown in Figure 2. The circuit was employed in a practical

Simulating the Electric Field by Measuring the Induced Current

case and proved quite successful. The above method of plotting the field suffers from certain limitations due to the boundary conditions imposed by the Shockley-Ramo theorem. In fact, the potentials at the electrode systems can only assume normalised values of +1 or 0. In order to generalise the method, it can be assumed that the field at a given point of space is produced as a result of the superposition of partial field produced while one of the electrodes has a potential $\psi = 1$ and the remaining electrodes have a potential $\psi = 0$; the potential $\psi = 1$ is then successively applied to other electrodes. Another disadvantage of the above method is the necessity of employing reapidly moving probes. It appears, however, that this deficiency can be overcome by employing probes carrying large charges; the probes made of electrets are particularly promising. There appears to exist another way of overcoming this difficulty. In accordance with the Shockley-Ramo theorem, the charge q_H induced on a given

Card 5/5 electrode is expressed by:

Simulating the Electric Field by Measuring the Induced Current

$$q_H = q\psi(x_1, y_1, z_1) \qquad (7)$$

where q is the charge of a point particle introduced into a given point of the field, having coordinates x_1, y_1 and z_1; $\Psi(x_1, y_1, z_1)$ is the potential which would exist at the point x_1, y_1, z_1 if one of the electrodes had a normalised potential of +1, the remaining electrodes being grounded. If the charged probe is introduced into various points of the inter-electrode space and the charge induced on the electrode is measured by means of a sensitive electrometer, it is possible to determine the potential directly at various points of the field. The preliminary experiments carried out by the author showed that this type of approach is applicable.

The author expresses his gratitude to the participants of the Radiophysics Seminar of Saratov State University and.

Simulating the Electric Field by Measuring the Induced Current

in particular, to V.I. Kalinin, A.I. Shtyrov and V.M. Dashenkov for discussing this work.

There are 4 figures and 4 references, 3 of which are Soviet and 1 English.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet (Saratov State University)

SUBMITTED: April 8, 1959

AUTHOR: Gershteyn G.M. SOV/109-4-1-25/30

TITLE: A New Method of Analoguing the Electric Fields (O novom metode modelirovaniya elektricheskikh poley)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 1, pp 137 - 139 (USSR)

ABSTRACT: In 1956, the author proposed a new method (Ref 1) of constructing the analogues of electrical fields; these were based on the use of the Shockley-Ramo theorem, dealing with the induced currents. It was shown then that such analogues did not require supply sources and it was pointed out that they could be used to transform the spatial harmonics of the electric field into time harmonics of the induced currents. Here, the above idea is further developed and some possibilities of its application are discussed. It is shown that if a charged movable probe (Figure 1) is situated between two electrodes B and C, the motion of the probe results in the appearance of a voltage across a load resistance R_H; the voltage is applied to the vertical plates of an oscillograph and, if the time base of the oscillograph is synchronised with the motion of the probe, the screen of the tube displays

Card1/3

A New Method of Analoguing the Electric Fields

the components of the electric field along the line of the motion of the probe. This analogue was not very successful. It was found, however, that the method could be used to produce an analogue for the quasi-stationary fields of the cylindrical periodic structures, such as magnetrons. The resulting device is shown in Figure 2. Here, a fixed charge probe A (in the form of a long rectangular rod, having a thickness of 0.8 mm and a width of 1.5 mm) is supported by an insulating rod and is situated near a "segmented" structure; the latter has a diameter of 20 mm and is formed of two groups of segments. The rings of the segments are connected to a load resistor R_H by means of contact brushes C . The voltage from the resistor is applied to the input of an oscillograph. If the cylindrical structure is rotated, oscillograms of the type shown in Figures 3 are obtained. These can be regarded

SOV/109-4-1-23/30

A New Method of Analoguing the Electric Fields

as giving a satisfactory approximation of the fields in a magnetron. There are 3 figures and 3 references, 1 of which is English and 2 Soviet.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet im. N.G. Chernyshevskogo (Saratov State University imeni N.G. Chernyshevskiy)
Kafedra radiofiziki (Chair of Radio Physics)

SUBMITTED: May 10, 1958

Card 3/3

PHASE I BOOK EXPLOITATION SOV/5678

Gershteyn, Grigoriy Moiseyevich

Nekotoryye voprosy vzaimodeystviya zaryazhennykh chastits s elektricheskim polem (Some Problems in the Interaction of Charged Particles With an Electric Field) [Saratov] Izd-vo Saratovskogo univ., 1960. 166 p. Errata slip inserted. 3,000 copies printed.

Ed.: A. A. Zhuk; Tech. Ed.: V. V. Zenin.

PURPOSE: This book is intended for students in schools of higher education and for scientific workers interested in physical processes occurring in oscillators, amplifiers, and accelerators.

COVERAGE: The book describes the basic processes of interaction between charged particles and a-c electric fields occurring in various electric vacuum devices. The author attempts to examine from a single standpoint the operating mechanisms of various devices (oscillators and amplifiers, accelerators). Particular attention is paid to the separation of particles in the beam, the induction of

Card 1/7

currents by these particles, and the relation as established by the Shockley-Ramo theorem, between the distribution of the field in space and the variation of the induced current in time. On the basis of the Shockley-Ramo theorem the author proposes a new method of simulating electrical fields which satisfies the Laplace equation. The separation processes of the particles and the determination of the induced current in statically and dynamically controlled oscillators and amplifiers, as well as in accelerators of charged particles, are analyzed. The effect of the interaction between the particles themselves on the processes occurring in the beam and the possibility of using the concept of spacecharge waves in order to explain the mechanism of nonresonant oscillations are discussed. The book is largely based on the lectures delivered by the author to students of radiophysics at the SGU (Saratovskiy gosudarstvennyy universitet -- Saratov State University) since 1956. The presentation and terminology used in the book "Vvedeniye v radiofiziku" (Introduction to Radiophysics) by V. I. Kalinin and G. M. Gershteyn are used without special explanations, as the reader is assumed to be familiar with this and other basic textbooks on radiophysics and electronics. The author thanks V. I. Kalinin, Professor, for his advice. References accompany individual chapters.

S/057/60/030/05/03/014
B012/B056

AUTHORS: Gershteyn, G. M., Khokhlov, A. V. 16

TITLE: The Prescribing of Arbitrary Boundary Conditions of 1. Order in Field Simulation According to the Method of Induced Current

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 5, pp. 480 - 490

TEXT: In earlier papers (Refs. 1,2) the first of the two authors suggested a new method of electric field simulation[2] by utilizing the Shockley-Ramo-theorem on induced currents (Ref. 3). In the paper of Ref. 4 the author advanced the idea of simulating the fields according to this method in the case of arbitrary potential values on the boundary surfaces of the investigated system, and also showed the way in which this idea may be realized. - In the present paper this idea is further developed. An approximate calculation of the circuit (which prescribes complex boundary conditions) and experimental results obtained by the simulating of some concrete resistors are given. First, the method of prescribing boundary

V B

conditions is theoretically explained. Fig. 1 shows the circuit with the prescribed arbitrary boundary conditions of 1. order. It was applied here for the purpose of investigating such resistors, in which the electrodes were connected in series and the probe passed them by successively. On the basis of the figure, the calculation of this circuit is then given, for which purpose the formulas by Kramer (Ref. 5) are used. The formulas obtained (7) - (10) are used for calculating the circuits of some periodic resistors. As usually resistors of the segment- and plug-type are used, such systems are in this case investigated. The results obtained by investigating segment-resistors are given. However, as it is difficult in the case of plug-resistors to obtain analytical formulas for the field (in the case of arbitrary electrode potentials), the experimental results were compared with the analogous results obtained on a model of these resistors in an electrolyte bath. The experimental setup and the experimental method are described. Finally, the oscillograms of the induced current obtained with both resistors are given and discussed. They show that the potential distribution obtained by the induced current agrees with the potential distribution recorded under the given boundary

V B

The Prescribing of Arbitrary Boundary Conditions S/057/60/030/05/03/014
of 1. Order in Field Simulation According to the B012/B056
Method of Induced Current

conditions by means of the electrolyte bath. In form of a summary it is said that the method described offers the possibility of prescribing arbitrary boundary conditions of 1. order when simulating the fields according to the method of the induced current with the help of quite simple resistor-series. There are 10 figures and 7 references: 5 Soviet, 1 German, and 1 English.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet im. N. G. Chernyshevskogo, Kafedra radiofiziki (Saratov State University imeni N. G. Chernyshevskiy, Chair of Radiophysics)

SUBMITTED: July 8, 1959

/B

Card 3/3

GERSHTEYN, G.M.

Using and oscillating probe for field modeling by the induced current method. Zhur. tekhn. fiz. 30 no.6:734-736 Je '60. (MIRA 13:8)

1. Saratovskiy gosudarstvennyy universitet, Kafedra radiofiziki.
(Electromechanical analogies)

S/196/62/000/010/001/035
E073/E155

24.2300

AUTHOR: Gershteyn, G.M.

TITLE: Simulating electric fields by the method of analysis of the induced current

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.10, 1962, 5-6, abstract 10 A15. (Uch. zap. Saratovsk. un-t, 69, 1960, 3-15)

TEXT: According to the theorem of Shockley-Ramo, if a small charged body moves relative to an arbitrary system of electrodes with a velocity v, the current in the circuit of one of the electrodes will equal

$$i_{ind}(t) = qvE_v(x,y,z),$$

where $E_v(x,y,z)$ - component, taken along the direction of movement of the charge, of the electrostatic field potential that would exist if there were unit potential at the given electrode and zero potentials on the remaining electrodes.

Card 1/2

Simulating electric fields by ...

If the probe charge moves uniformly, the curve $i_{ind}(t)$ will be similar to the spatial distribution E_v along the direction of movement. Integrating this curve, for instance by an electric integrator, the potential curve can be obtained. Correspondingly, instead of the spatial harmonics, time harmonics can be obtained which can be measured more easily. A theory is given, experiments are described and the error of the method is estimated, particularly that caused by the finite nature of the probe charge (sonde).
4 references.

[Abstractor's note: Complete translation.]

Card 2/2

S/058/62/000/004/140/160
A061/A101

9,4210

AUTHOR: Gershteyn, G. M.

TITLE: A contribution to the theory of the "inverted" magnetron

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 18, abstract 4Zh123 ("Uch. zap. Saratovsk. un-t", 1960, v. 69, 71 - 76)

TEXT: Some problems related to the theory of the "inverted" magnetron are considered. Expressions are derived for the h-f potential and the azimuthal component of electric field intensity by appropriately selecting the spatial harmonics in the "inverted" segment magnetron. On the basis of the Shockley-Rameau theorem, the magnitude of current induced in the segments of the magnetron by revolving condensations of electrons is calculated as the sum of time harmonics with frequencies $k\frac{N}{2}\omega_H$ (k = integer, N = number of segments, and ω_H = angular velocity of the condensations). As is shown, the expression for the induced current can be similarly obtained also in ordinary magnetrons, whose first harmonic fits the formula given by Welch (RZhFiz, 1954, no. 11, 13521). It is noted that the correspondence between the spatial harmonics of the static-electric field

Card 1/2

S/058/62/000/004/140/160
A061/A101

A contribution to the theory of...

and the time harmonics of the induced current can be utilized to replace the analysis of the spatial harmonics of the standing wave field by the more convenient analysis of the spectrum of the time harmonics of the induced current.

G. Korostelev

[Abstracter's note: Complete translation]

Card 2/2

KALININ, V.I., prof., doktor fiziko-matem. nauk [deceased]; AKINDINOV, V.V.; GERSHTEYN, G.M.; DASHENKOV, V.M.; YEVSEYEV, V.I.; IL'IN, V.S.; KOROSTELEV, G.N.; LUCHININ, V.D.; NAUMENKO, Yu.P.; RYAZANOVA, T.P.; SEDIN, V.A.; TOLSTIKOV, V.A.; SHTYROV, A.I.; AVILOV, B.I., red.; ZENIN, V.V., tekhn. red.

[Practical work in radio physics] Radiofizicheskii praktikum. Izd.2., dop. i perer. Saratov, 1961. 277 p. (MIRA 15:1)

1. Saratov. Universitet. 2. Kafedra radiofiziki Saratovskogo universiteta im. N.G.Chernyshevskogo (for all except Avilov, Zenin).

(Radio)

B/271/63/000/003/037/049
A060/A126

AUTHOR: Gershteyn, G.M.

TITLE: Simulation of static fields by the method of induced currents

PERIODICAL: Referativnyy zhurnal, Avtomatika, telemekhanika i vychislitel'naya tekhnika, no. 3, 1963, 43, abstract 33252 (Dokl. 4-y Mezhvuz. konferentsii po primeneniyu fiz. i matem. modelirovaniya v razlichn. otraslyakh tekhn. Sb. 1, Moscow, 1962, 213 - 223)

TEXT: The author describes the concept of the method of induced currents utilized for simulating static fields described by the Laplace equation. Here a charged probe is used which moves relative to the electrodes of the simulator so that the current induced in the external circuit of the simulator electrodes is a function of time proportional to the distribution function of the corresponding component of the field gradient along the line of motion of the charge. It is indicated that in order to set the boundary conditions it is possible to set and sum potentials induced in load impedances by means of a summing amplifier. Two methods for the realization of simulators using the principle of induced

Card 1/2

S/271/63/000/003/037/049
A060/A126

Simulation of static fields by the method of ....

currents are described - the construction of simulators with a fly-past probe, and also of simulators with a vibrating probe. There are 2 figures and 8 references.

I. V.

[Abstracter's note: Complete translation]

Card 2/2

S/058/63/000/001/094/120
A160/A101

AUTHORS: Gershteyn, G. M., Pavlyuchuk, V. A.

TITLE: An analysis of the spectrum of the spatial harmonics of the field of periodic systems on induced-current models

PERIODICAL: Referativnyy zhurnal, Fizika, no. 1, 1963, 16 - 17, abstract 1Zh101 ("Dokl. 4-y Mezhvuz. konferentsii po primeneniyu fiz. i matem. modelirovaniya v razlichn. otraslyakh. tekhn. Sb. I", M., 1962, 225 - 236)

TEXT: A method is developed for the experimental analysis of the spectrum of direct and inverse spatial harmonics of periodic structure fields. The method - proposed by one of the authors before (Referativnyy zhurnal, Fizika, no. 6, 1960, 14659) - is based on the transformation of the spatial field harmonics into induced-current time harmonics with an analysis of the latter's spectrum by the conventional spectrum analyzer. A detailed description is given of the experimental installation for plotting a distribution curve of the azimuthal component of the electrical field and the spectra of the spatial harmonics

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S/058/63/000/001/094/120
A160/A101

An analysis of the spectrum of the...

of periodic-structure models. Presented are the results of analyzing the spectrum of the spatial harmonics of the azimuthal field component of a segment and rod-type cylindrical periodic systems under complicated boundary conditions corresponding to different phase shifts of the high-frequency field per one cell $\frac{\pi}{2}; \frac{\pi}{3}; \frac{\pi}{4}; \frac{\pi}{6}$. It is noted that the described method is especially suitable for analyzing the spatial harmonics of the periodic-structure field with rods of complex shape, and also for an experimental synthesis of the periodic systems according to a given correlation between the amplitudes of the spatial harmonics. The indicated method permits the investigation of the distribution of the electrostatic and magnetic fields in systems with a periodic focusing of electronic streams, and the distribution of magnetic induction in the gap of electric machines.

G. Korostelev

[Abstracter's note: Complete translation]

Card 2/2

S/109/62/007/005/007/021
D263/D307

4,4310
AUTHORS: Gershteyn, G.M., Lalov, V.V., and Pavlyuchuk, V.A.

TITLE: Examination of the space harmonic spectrum of high frequency field of periodic structures

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 5, 1962, 816 - 825

TEXT: The paper is divided into two parts, one is concerned with the measurement of static space harmonics and the other with their relationship to high frequency space harmonics. In the experiments some previous ideas of one of the authors (G.M. Gershteyn and A.V. Khokhlov, Radiotekhnika i elektronika, 1959, 4, 12, 2040; G.M. Gershteyn, Izv. vuzov MVO SSSR (Radiofizika), 1959, 2, 4, 602; G.M. Gershteyn and A.V. Khokhlov, ZhTF, 1960, 30, 5, 480) are utilized, which establish correspondence between the space harmonics of the field and temporal harmonics of an induced current obtained by an ordinary spectrum analyzer. The models investigated were multiply connected periodical structures consisting of rods of arbitrary form. The potential distribution on the elements corresponded to

Card 1/2

Simulation of the space harmonic ...

the phase shift experienced by the high frequency field. The theoretical analysis employs a two-dimensional model where the cross-section of the element can be arbitrary. Assuming sufficiently long retardation Laplace equation is solved and the field intensity in arbitrary points is obtained. Assigning a static potential $u_{k+1} = u_1 \cos k\varphi$ to the kth element (φ -phase shift), solving Laplace equation for the same field distribution as before and expanding into spatial harmonics the relationship between static and high frequency space harmonics is obtained. The experimental data obtained for static fields can then be calculated for the actual high frequency field. The method is applicable to any cross-section of the rods when analytical solution cannot be obtained. The spectrum of the space harmonics is obtained in a matter of seconds which opens the possibility of synthesizing experimentally a periodic structure with a given distribution of space harmonics. There are 7 figures.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet im. N.G. Chernyshevskogo, Kafedra radiofiziki (Saratov State University im. N.G. Chernyshevskiy, Department of Radio Physics)

SUBMITTED: July 10, 1961

Card 2/2

S/057/62/032/001/015/018
B104/B138

AUTHORS: Gershteyn, G. M., and Fedonin, G. K.

TITLE: Simulator for studying two-dimensional fields with a vibrating charged probe

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 1, 1962, 112-118

TEXT: A laboratory device for simulating two-dimensional fields obeying Laplace's equation was developed by applying earlier findings (Izv. Vuzov. Radiofiziki, 2, no. 4, 602, 1959; ZhTF, XXX, 6, 734, 1960). The charged probe 3 is made from a good dielectric. Probe holder Д is caused to vibrate by vibrator Б, which is fed by a 1-f generator Г, and is connected to a device К which allows the probe to be moved in Cartesian or polar coordinates. The vibrating charged probe produces current in the circuit formed by M and R. The voltage drop at R is measured by the indicator И, which consists of a 1-f amplifier and a cathodic voltmeter. Thin rods of circular or square cross section were used as probes. Frequency and amplitude of the probe vibrations are carefully selected so as to achieved purely linear probe vibration. The three models of

Card 1/3

Simulator for studying two- ...

capacitors presented in Fig. 3 were used. The electrodes were 30-50-mm high and were made of copper sheet on a textolite base. A 28ИМ(28IM) reference amplifier was used for amplifying the induced voltage. Measurement and calculation of the potential from A. M. Strashkevich's formula (Elektronnaya optika elektrostaticheskikh poley, ne obladayushchikh osevoy simmetriey. Fizmatgiz, 1959), were consistent with each other with an error of 2%. The error in measurements can be reduced by using a compensation method. There are 7 figures and 6 Soviet references.

ASSOCIATION: Saratovskiy gosudarstvennyy universitet, Kafedra radiofiziki (Saratov State University, Department of Radiophysics)

SUBMITTED: March 25, 1961

Fig. 1. Diagram of simulator

Fig. 3. Capacitor models

Simulator for studying two- ...

S/057/62/032/001/015/018
B104/B138

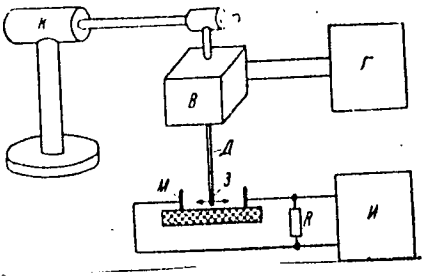

Fig. 1

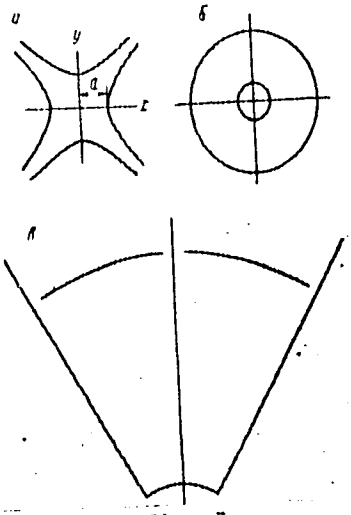

Fig. 3

Card 3/3

GERSHTEYN, G.M.; SALIY, I.N.

Discrete approximation of a continuous function at the boundary of a region in electrical modeling. Elektrichestvo no.11:47-50 N '63. (MIRA 16:11)

1. Saratovskiy gosudarstvennyy universitet imeni Chernyshevskogo.

L 10166-63 EWT(1)/ES(w)-2/EDS--AFFTC/ASD/
SSD--Pab-4--IJP(C)
ACCESSION NR: AP3000005 S/0057/63/033/005/0530/0536

59
58

AUTHOR: Gershteyn, G. M.

TITLE: General case of currents induced by the motion of a charge and of uncharged conductors

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 5, 1963, 530-536

TOPIC TAGS: induced current, vibrating electrodes, electrets

ABSTRACT: Usually the "induced current" is understood to be the current induced in the external circuit of the electrodes by motion of charged particles relative to the stationary electrode system; this current is given by the Shockley-Ramo (Ramo,S.,Proc.IRE,27,584,1939) formula, incorporating a ficticious or virtual field term. In some cases, however, the current may also be induced due to motion of an uncharged conductor or electrode relative to the stationary electrode and charge. Accordingly, the author adduces a general expression for the current induced in a system of conductors, taking into account the motion of charges and uncharged conductors relative to the system and the time variation

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L 10166-63
ACCESSION NR: AP3000005

of the ficticious field of the system. There are then considered some particular cases of a charged particle moving relative to a system of stationary electrodes (the Shockley-Ramo case) and of a charged particle moving relative to stationary electrodes but with an uncharged conductor also moving relative to these (case of generators with mechanical modulation, case of a particle in a plate capacitor with a vibrating plate, case of a particle capacitor filled with an electret). It is suggested that the deduced equations may be of value for determining the current induced in the circuits of vacuum devices with mechanical modulation and mechanical-component transducers, and in investigating the effects of vibration of electrodes and other components in vacuum tubes and similar equipment. Orig. art. has: 39 equations.

ASSOCIATION: Kafedra radiofiziki Saratovskogo gosudarstvennogo universiteta (Chair of Radio Physics, Saratov State University)

SUBMITTED: 20Apr62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH,SD NR REF SOV: 004 OTHER: 001

Card 2/2

L 23609-65 EWT(d) IJP(c) MLK
ACCESSION NR: AT5002500 S/0000/64/000/000/0138/0149

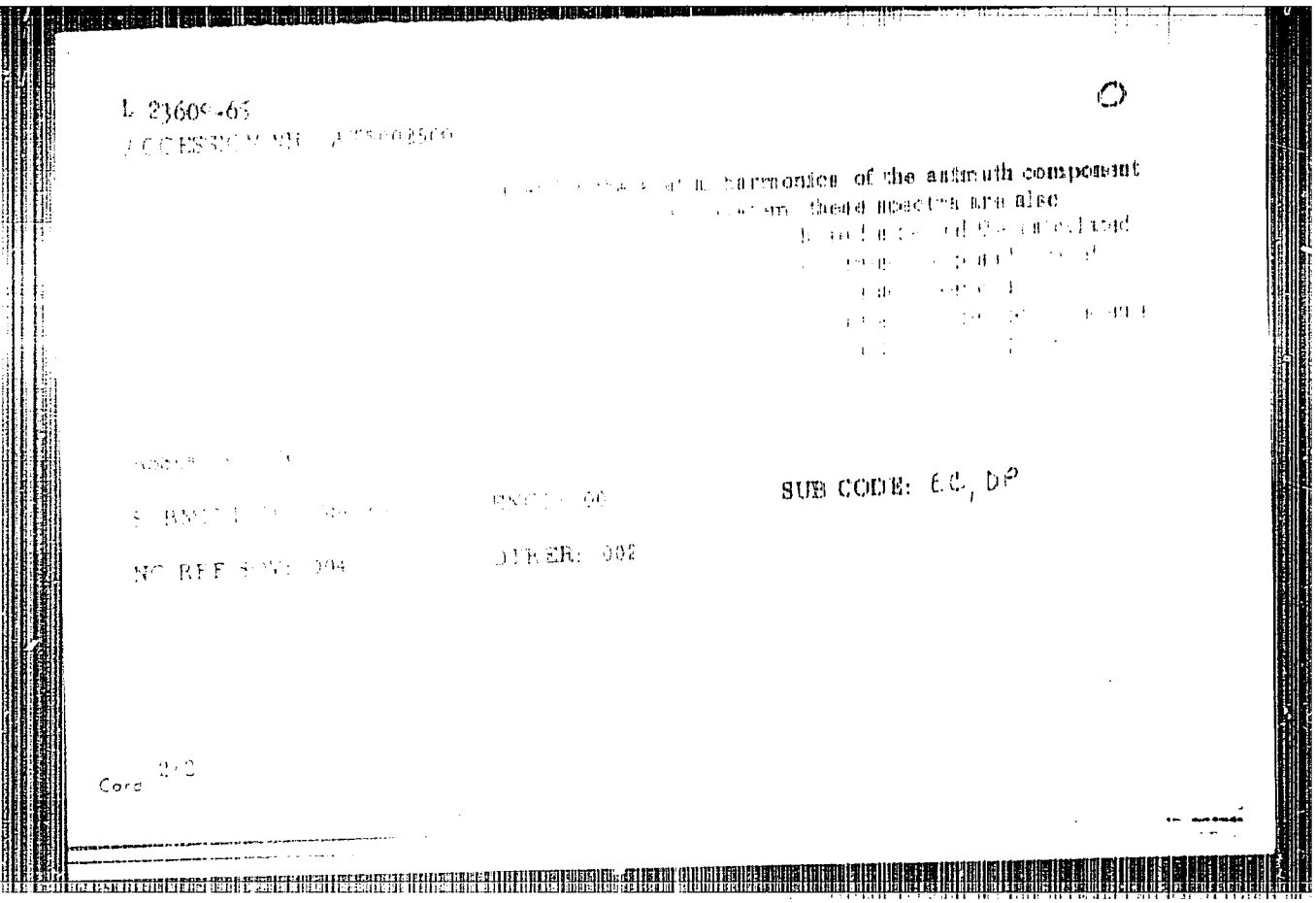
AUTHOR: Gershteyn, G.M.; Pavlyuchuk, V.A.

TITLE: The problem of the automatic derivation of the spectrum of the spatial harmonics ... systems

... voyvykh zadach (Analog methods ... ogo soveshchaniya.

... spatial harmonics, high frequency ... computer

... development of a new experimental ... frequency fields of periodic ... based on the transfor- ... the time ... latter



L 23609-65

ACCESSION NR: AP5002509

... harmonics of the azimuth component ... these spectra are also ...

SUB CODE: EC, DP

NO REF SOV: 004 OTHER: 002

Card 2/2

L 33578-66

ACC NR: [illegible]

SOURCE CODE: UR/0053/65/000/011/1033/1039

AUTHOR: Gershteyn, G. M.; Dzyubenko, R. Kh.

TITLE: Determining the modeling of electromagnetic fields by inhomogeneities of waveguides

SOURCE: Zh. prikl. fiziki, Abs. 11Zh260

REF SOURCE: Sb. tr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 140-149

TOPIC TAGS: model, electromagnetic wave simulation, waveguide iris, waveguide transmission/ MNT-V3 test installation

ABSTRACT: The authors compare the calculated and experimental results of determining the parameters (reflection coefficient R and susceptance B_{sh}) of inhomogeneities of waveguides which admit, in first approximation, the use of the electrostatic field for this purpose. The theoretical parameters of a capacitive diaphragm in a waveguide are given for different geometries of this diaphragm. The experimental determination of R and of B_{sh} was with the aid of modeling the distrubution function of the Laplacian electrostatic field of the diaphragm and substituting it into the corresponding functional. The field was modeled with a MNT-V3 installation using an amber probe 3 mm in dia. Two capcitive diaphragms of different geometry were investigated. Comparison of the results of the calculations and of the measurements shows that the numerical data coincide in the case of a narrow diaphragm (d = 15 mm) within 2.5%, and within 5% in the case of d = 26 mm. V. M. [Translation of abstract]

SUB CODE: 20, 09/20

Card 1/1

L 33580-66

ACC NR: AR6016259 SOURCE CODE: UR/0058/65/000/011/H040/H040

AUTHOR: Gershteyn, G. M.; Saliy, I. N.

TITLE: Determination of the relative magnitude of the coupling impedance of spatial harmonics of slow-wave systems by the method of induced-current harmonics

SOURCE: Ref. zh. Fizika, Abs. 11Zh274

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 150-157

TOPIC TAGS: harmonic analysis, traveling wave interaction, electric impedance, induced current

ABSTRACT: The authors investigate the feasibility of using the method of induced-current harmonics to determine the relative magnitude of the coupling impedance of higher spatial harmonics. Formulas are derived for determining the relative magnitude of the coupling resistance of the higher spatial harmonics in terms of the ratio of the amplitudes of the spatial harmonics of the static field. An experimental verification of the proposed method was made with models of slow-wave systems of the "comb" type with different ratios of the gap width to the period of the comb structure. The experimental data are in good agreement with the results calculated by the formulas of W. Kleen (Introduction to Microwave Electronics, M., Soviet Radio, 1963) and Beluga (RZhFiz, 1962, 4Zh151). E. Guttsayt. [Translation of abstract]

SUB CODE: 09

Card 1/1

L 38820-66 EWT(1) IJP(c)

ACC NR: AR6021041 SOURCE CODE: UR/0058/66/000/002/H057/H057

AUTHOR: Gershteyn, G. M.; Zhemarin, G. V.

TITLE: Concerning the use of the method of induced current to simulate fields in inhomogeneous media

SOURCE: Ref zh.Fiz, Abs. 2H380

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 182-193

TOPIC TAGS: simulation, induced current, model scaling, electrostatic field, dielectric constant, ANISOTROPIC MEDIUM

ABSTRACT: It is shown theoretically and experimentally that the fictitious field of the Shockley-Ramo theorem has the same properties with respect to material piecewise inhomogeneous dielectric media (DM) as a real electrostatic field. It is also possible to apply this theorem to an anisotropic DM whose dielectric constant (ϵ) is described by a symmetrical second-rank tensor, if one uses an isotropy-producing deformation of space. The possibility of simulating fields in inhomogeneous media using induced-current models into which dielectrics with different ϵ are introduced, is demonstrated. A preliminary experimental confirmation of this possibility is obtained. [Translation of abstract]

SUB CODE: 20

Card 1/1

ACC NR: AR6019070 SOURCE CODE: UR/0274/66/000/001/A051/A061

47
B

AUTHOR: Gershteyn, G. M.; Tugushev, R. Kh.

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley., Saratov, Saratovsk. un-t, 1964, 140-149

TITLE: Simulation of the electromagnetic fields of waveguide heterogeneities

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 1A421

TOPIC TAGS: waveguide, electromagnetic field

TRANSLATION: Calculated and experimentally determined parameters (coefficient of reflection R and reactive conductivity B) of heterogeneities are compared. The electrostatic field of the heterogeneity was used in the experiment. The calculated parameters of the capacitive diaphragm in a waveguide are given for various geometries of the diaphragm. The experimental determination of R and B was obtained by modeling the distribution function of the Laplacian electric field of the diaphragm and its substitution in the corresponding functional. The field was simulated on the MNT-V3 device, using an amber probe of 3 mm diameter. Two capacitive diaphragms of different geometry were studied. A comparison of the calculated and measured data shows that in the case of a narrow diaphragm (d=15 mm), the numerical data agree within 2.5% and in the case of a diaphragm of d=26 mm, within 5%. 5 illustrations, 5 tables, 6 references. V. M.

SUB CODE: 09/ ~~SUBM DATE: none~~ UDC: 621.317.34

Card 1/1 gd

L 02293-67 EWT(d) IJP(c)
ACC NR: AR6016553 SOURCE CODE: UR/0196/65/000/012/A009/A009

AUTHOR: Gershteyn, G. M. 16 56 B

TITLE: Errors in simulation of three-dimensional fields using induced current models with a drift probe 9M

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 12A58

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 27-35

TOPIC TAGS: induced current, electric analog, electronic simulation, error measurement

ABSTRACT: Expressions are derived for determining the errors in volummetric and surface distribution of the charge on a probe. Calculation of drift probe error for a number of specific cases of periodic systems of the segmented type shows that the error of the method is less than 1% for the ratios of the dimensions of probe and model which are used in systems with a drift probe. The total error for simulation of fields of periodic systems is less than 3-4%, even including the comparatively high instrumental error. Bibliography of 5 titles. From the summary. [Translation of abstract]

SUB CODE: 09

UDC: 537.212.621.3.001.57

Card 1/1 vmb

L 02290-67 EWT(d) IJP(c)

ACC NR: AR6016556 SOURCE CODE: UR/0196/65/000/012/A009/A009

AUTHOR: Gershteyn, G. M.; Sedin, V. A.; Pronin, V. P.; Fedonin, G. K.; Khokhlov, A. V.

TITLE: MNT-V3 installation for simulating three-dimensional fields by the induced current method

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 12A61

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 56-71

TOPIC TAGS: induced current, electric analog, electronic simulation, electric field, gravitation field, magnetic field, Laplace equation

ABSTRACT: The authors describe the MNT-V3 specialized modelling device based on the use of the induced current method. The installation is designed for simulating three-dimensional fields described by the Laplace equation for the case of boundary conditions of the first kind. The device may be used simulating the spatial fields of electrotechnical and electron-optical systems, the quasistatic fields of individual cells of decelerating systems in SHF instruments, the quasistatic fields of nonhomogenieties in waveguides and fields of the edge effect in various devices.

UDC: 537.212:621.3.001.57

Card 1/2

Card 2/2

L 02313-67 EWA(d) IJP(c)

ACC NR: AR6016552 SOURCE CODE: UR/0196/65/000/012/A008/A008

AUTHOR: Gershteyn, G. M.

60
B

TITLE: The induced current method

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 12A57

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 3-26

TOPIC TAGS: induced current, electric analog, electric field, gravitation field, magnetic field, Laplace equation, electric potential, electronic simulation

16

ABSTRACT: A new analog method for simulation of fields described by the Laplace equation — the induced current method -- uses the proportionality between the induced current generated by the motion of a point charge with respect to a system of electrodes and the distribution of the image field of the electrodes along the line of motion of this charge. The image field is defined as that which satisfies the Laplace equation for the boundary conditions of the given system of electrodes which would be generated if a dimensionless unit potential were applied to the k-th electrode while the potential of the remaining electrodes was held at zero. The Shockley-Rameau theorem shows that when a point charge q is located at the point

Card 1/3 UDC: 537.212:621.3.001.57

ACC NR: AR6016552

$P(x,y,z)$, a charge $q_i = -q\phi(x,y,z)$ is induced at the k-th electrode, i. e. when q= const, the induced charge is an analog of the image field potential at the point where the charged probe (considered as a point charge) is located. When the probe moves with a constant velocity and has a constant charge, the current induced in the circuit of the k-th electrode of the model is a function of time proportional to the distribution function for the corresponding component of the field gradient along the line of motion of the probe. An advantage of the proposed method is the elimination of lead wires from the probe and the possibility for measuring an electrostatic field in an ideal dielectric medium. The induced current method is applied to two forms: in models with a drift probe and in models with a vibrating probe. The first modification is convenient in cases where the field pattern may be taken rapidly and the model is used in combination with automatic devices for recording the potential and its gradient. The drift probe moves at a velocity of 1 m/sec and higher. The vibrating probe does not require rapid transpositions. This modification may be used for easy determination of the field gradient and any of its components. Setting up arbitrary boundary conditions of the first kind in simulation by the induced current method is comparatively simple: the field at the point $P(x,y,z)$ is represented as the superposition of partial fields generated by the unit potentials of individual electrodes. The currents induced in the electrode circuits are taken in the required ratios during summation. Technical difficulties are often encountered in setting up boundary conditions of the second kind. The induced

L 02313-67
ACC NR: AR6016552

current method is suitable for use in analog simulation of three-dimensional fields in a homogeneous medium, particularly for analyzing the spectrum of spatial harmonics of fields in periodic systems used in generators and SHF amplifiers and in particle acceleration. 5 illustrations, bibliography of 37 titles. Yu. Ch.
[Translation of abstract]

SUB CODE: 09

Card 3/3

ACC NR: AP6033491 SOURCE CODE: UR/0413/66/000/018/0111/0112

INVENTOR: Gershteyn, G.M.; Nudel'man, I. Ye.; Promin, V. P.; Shekhtman, L. A.

ORG: none

TITLE: Method of processing gravimetric survey results. Class 42, No. 186155

SOURCE: Izobret prom obraz tov zn, no. 18, 1966, 111-112

TOPIC TAGS: gravimetric survey, gravity isoanomaly, dielectric sheet, potentiometer, gravity parameter, GRAVIMETRY

ABSTRACT: A method is proposed for processing gravimetric survey data based on analysis of isoanomaly gravity maps. The isoanomaly map is put on a dielectric sheet, the interspaces between isoanomalies are filled with conductors, and a potentiometer adapted for each interspace is attached. A point-shaped charge is moved above the dielectric sheet which measures the current. Parameters of the gravity field are determined from the intensity of the induced current. This method permits a continuous distribution of the gravity field, higher accuracy, and a shortened processing to be obtained. Orig. art. has: 1 figure.

Card 1/2 UDC: 550.831

L 06194-67
ACC NR: AP6033491

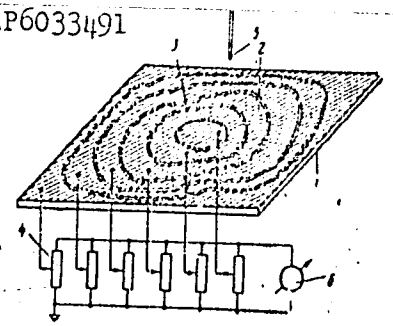


Fig. 1. Set-up for processing gravimetric survey data.
1 - dielectric sheet; 2 - conductor; 3 - gravity isoanomaly
4 - potentiometer; 5 - point-shaped charge; 6 - indicator

SUB CODE: 08/ SUBM DATE: 14Jun65/

Card 2/2 afs

SOURCE CODE: UR/0275/66/000/001/A004/A004

AUTHOR: Gershtoyn, G. M.; Naumenko, Yu. P.

TITLE: The use of induced current to model a two-dimensional field with a space charge

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 1A7

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 167-181

TOPIC TAGS: induced current, space charge density

TRANSLATION: The induced current method is used for modeling a two-dimensional device described by a Poisson equation. The modeling was based on an induced current device with an oscillating probe and additional electrodes located at the edge of the model. The potential of these electrodes are different from the electrodes of the model. The additional electrodes introduce an additional power line current to the testing region and at a certain distance from their surface the resulting field satisfies the Poisson equation. It is shown that this occurs when the potentials are spread over additional electrodes and have a Poisson distribution in the xy-plane. The computed and experimental results of three space charge density distribution cases in a cylindrical diode (linear, constant, and Langmuir distribution) showed satisfactory agreement of theoreti-

UDC: 621.385

ACC NR: AR6017143

tical and experimental curves. This method can be used in modeling fields described by the Poisson equation with given right part of the equation, e. g., in calculating the fields of electronic vacuum instruments by the successive approximation method. 6 references. R. B.

SUB CODE: 09

Card 2/2

ACC NR: AR6017144 SOURCE CODE: UR/0276/66/000/001/A021/A021

AUTHOR: Gershteyn, G. M.; Saliy, I. N.

TITLE: Use of induced current harmonics to determine the relative coupling impedance of the spatial harmonics of delay systems

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 1A133

REF SOURCE: Sb. Vopr. elektrich. modelirovaniya poley. Saratov, Saratovsk. un-t, 1964, 150-157

TOPIC TAGS: harmonic analysis, delay circuit

TRANSLATION: The use of induced current and a drift probe in models of delay systems make it possible to oscillograph the full amplitude spectrum of space harmonics. A derivation of the equation was presented for determination of relative magnitude of higher resistor coupled delay systems through the delay system amplitude relation of the static field. The experimental verification of the given method was made on the comb-type delay system models with a different relative slot width of the comb structure. The experimental data are in good agreement with the theoretical results calculated according to the formulas of V. Kleyen (*Vvedeniye v elektroniku SVCh*, Moscow; *Sov. Radio*, 1963) and I. Sh. Belugi *Izv. vuzov. Radiofizika*, 1961, 4, No. 5). 7 references. E. G.

SUB CODE: 09

Card 1/1 UDC: 621.385.6

IVANOVSKIY, G.F.; GERSHTEYN, I.A.; SAPUNOV, G.S.; BAIMBETOV, A.M.

Continuous-action unit for the production of a demulsifier. Nefteper. i neftekhim. no.5:5-6 '64. (MIRA 17:8)

1. Novo-Ufimskiy neftepererabatyvayushchiy zavod.

UL'MAN, I.Ye., kand. tekhn. nauk; GERSHTEYN, I.M., inzh.

Automatic alternating current build-up with a pulsation arc.
Mekh. i elek. sots. sel'khoz. 21 no.1:27-29 '63.
(MIRA 16:7)
1. Chelyabinskiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.
(Agricultural machinery—Maintenance and repair)

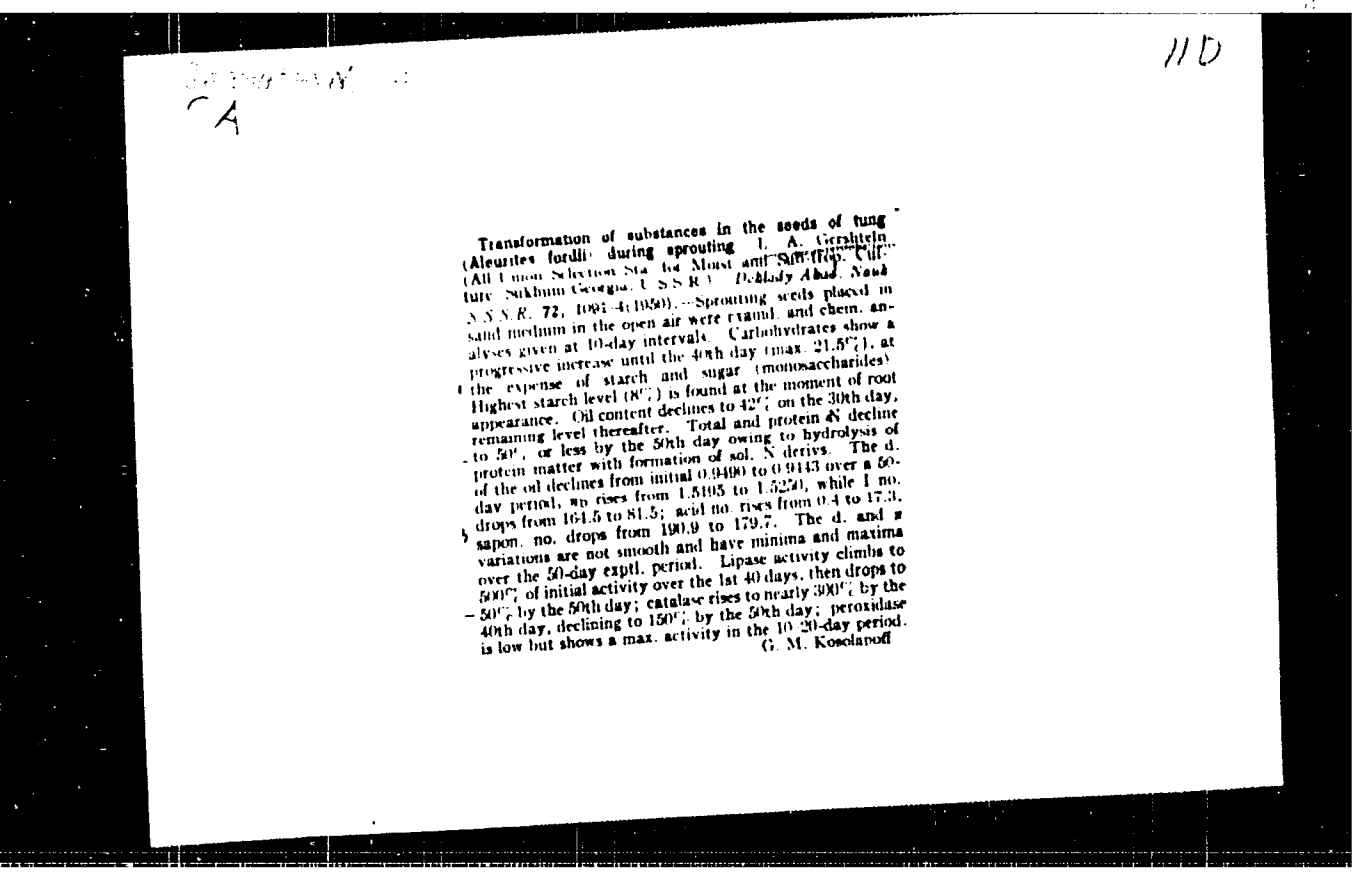
GELISHTEYN, I.N., inzh.; UVAROV, Ye.P.

Glass-reinforced plastic is an efficient polymer material for concrete framework. Prom. stroi. 41 no.4:34-35 Ap '64. (MIRA 17:9)

CH

Compounds of nicotinic acid amide with cobalt and nickel chlorides. M. A. Azizov and G. M. Gershman. *Doklady Akad. Nauk Uzbek. S.S.R.* 1954, No. 1, 30 (in Russian); *Referat. Zhur., Khim.* 1955, No. 345.—Upon the addn. of a satd. alc. soln. of $CoCl_2$ to a satd. alc. soln. of nicotinamide a powdered lilac-colored ppt., $CoCl_2 \cdot 2C_6H_6ON_2$ (I), formed. With $NiCl_2$ the reaction proceeds slowly, forming a light-green ppt. $NiCl_2 \cdot 2C_6H_6ON_2$ (II). I and II are not hygroscopic, are stable in air, sol. in H_2O, and insol. in org. solvents. The mol. cond. of 1 mole in 1000 l. H_2O at 25° is 251.3 for I and 246.5 for II; thus I and II dissociate into 3 ions. At temps. above 200° I darkens and melts at 280° with decompn. Starting at 300° II darkens and chars at 460°.

M. Hosch



CA

11D

Transformation of substances in the seeds of tung (Aleurites fordii) during sprouting. I. A. Gershtein (All Union Selection Sta. for Moist and Subtrop. Culture, Sukhum, Georgia, U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 72, 1091–4 (1950).—Sprouting seeds placed in sand medium in the open air were examd. and chem. analyses given at 10-day intervals. Carbohydrates show a progressive increase until the 40th day (max. 21.5%), at the expense of starch and sugar (monosaccharides). Highest starch level (8%) is found at the moment of root appearance. Oil content declines to 42% on the 30th day, remaining level thereafter. Total and protein N decline to 50% or less by the 50th day owing to hydrolysis of protein matter with formation of sol. N derivs. The d. of the oil declines from initial 0.9490 to 0.9143 over a 50-day period, nD rises from 1.5105 to 1.5220, while I no. drops from 164.5 to 81.5; acid no. rises from 0.4 to 17.3; saponn. no. drops from 190.9 to 179.7. The d. and n variations are not smooth and have minima and maxima over the 50-day exptl. period. Lipase activity climbs to 500% of initial activity over the 1st 40 days, then drops to 50% by the 50th day; catalase rises to nearly 300% by the 40th day, declining to 150% by the 50th day; peroxidase is low but shows a max. activity in the 10–20-day period.
G. M. Kosolapoff

11 D

CA

Inheritance of quality of ethereal oil in some hybrids of eucalyptus. I. A. [illegible] (All-Union [illegible] Sta.). *Doklady Akad. Nauk S.S.S.R.* 78, [illegible] (1951).—Cross breeding of *Eucalyptus viminalis*, *E. smithii*, *E. maidens*, *E. camaldulensis*, and *E. dealbata* resulted in hybrids whose properties are usually intermediate between those of the parents, although factors such as oil content may approach or exceed the parents in some cases. Thus, *E. viminalis* × *E. dealbata* contains more essential oil (2.43%) than either parent. The phys. consts. of the oils are generally intermediate between those of the parents.

G. M. Kosolapoff

Some data on the biochemistry of the sweet potato.
L. A. Gershtein. *Biokhim. Plodov i Ovoshchei, Akad. Nauk* [illegible]

S.S.S.R. Inst. Biokhim., Sbornik 3, 143-62(1955).—In the growth of sweet potatoes there occurs an increase of pulpit and reduction of starch and nitrogenous substances until harvesting. The max. accumulation of dry matter and carbohydrates takes place in October-November, which is the best time for harvesting. In dry storage of fat cultivars without preliminary curing there occurs a steady rise in dry matter and sugars with decline in starch. Preliminary curing by partial drying reduces starch content and increases sugar content with predominance of sucrose. Nitrogenous substances are but little affected by curing and storage, a slight decompn. of protein matter takes place. During eye formation and sprouting there takes place a reduction of content of dry matter. Cooking of the tubers for food purposes tends to increase the content of sugar and of dry matter. Loss is greatest in boiling, least in baking.

G. M. Kondrapell