PETEJ, S.

Regulation and maintenance of inland navigation network.
Medun transp 9 no.9:603-609 S '63.

BRANICA, M.; PETEK, M.; JEFTIC Lj.; COSOVIC, B., MITROVIC, V.

Determination of stability constants of metal complexes by different polarographic method. Determination of complexibility of uranyl, copper(II), ferric, lead(II) and indium (III) acetylacetonato complexes. Croat chem acta 35 no.4:A19-A20 '63.

1. Department of Physical Chemistry, Institute "Ruder Boskovic", Zagreb, Croatia, Yugoslavia.

[illegible], V.[illegible], [illegible]CHERYAKOV, V.[illegible]

Oxidation of normal paraffin hydrocarbons by [illegible] [illegible] in [illegible] aqueous [illegible] medium. Zhur.[illegible] 38 no.[illegible] Mr '65. ([illegible])

1. [illegible] tekhnologicheskiy institut imeni [illegible]. Submitted [illegible] 8, 1964.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0012402

PETKIYE, Yu.

Evaluation of the thermal resources of the Rumanian People's Republic suitable for the cultivation of corn. Trudy TSIP no.140:136-140 '65.
(MIRA 18:7)

SZARGUT, Jan; PETELA, Ryszard

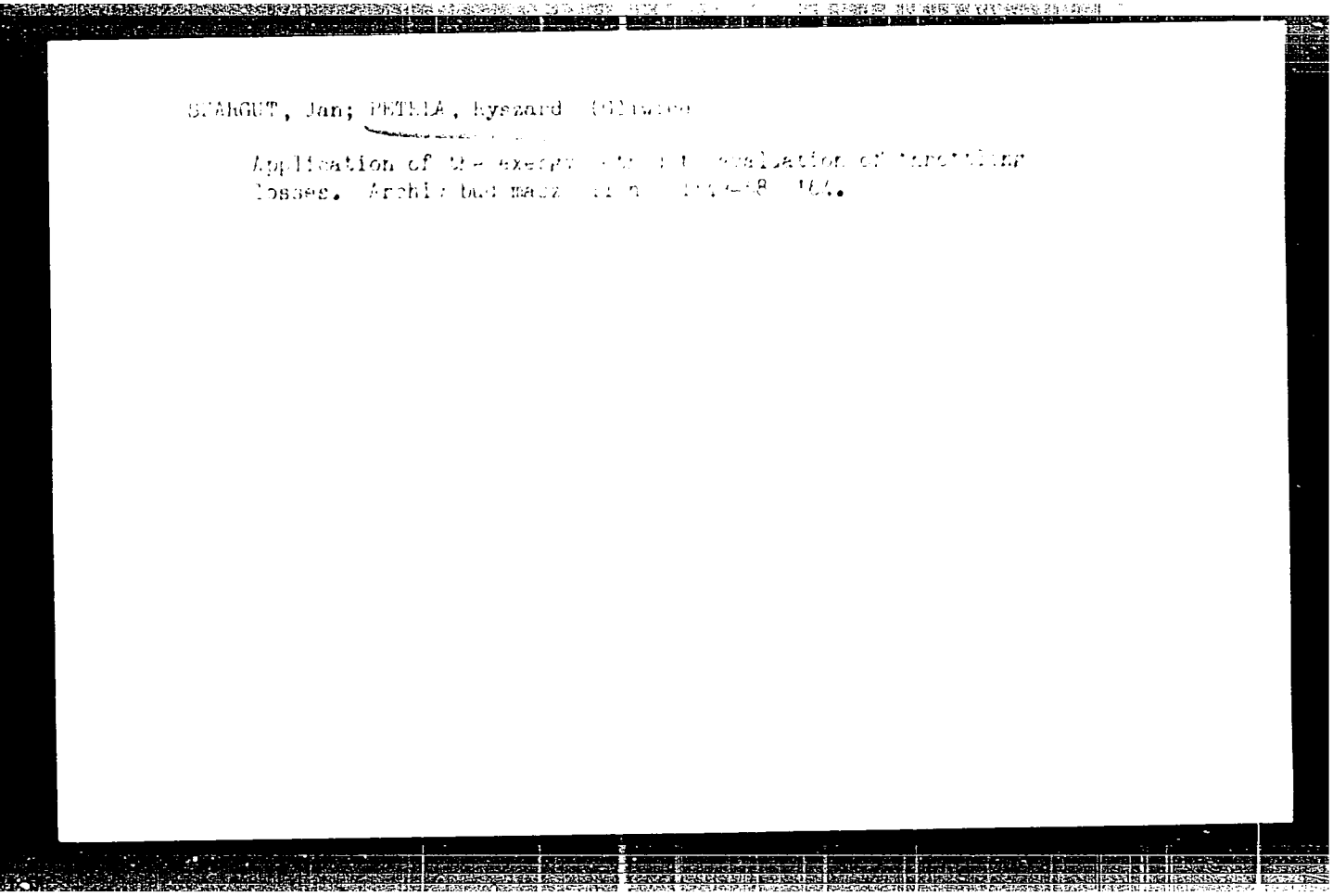
Selection of heating steam produced in connected management for membrane heat exchangers. Problemy proj hut maszyn 11 no.8: 233-240 Ag '63.

1. Politechnika Slaska, Gliwice.

PETELA, Ryszard, dr inz.; SZARGUT, Jan, prof. dr inz.

Application of exergy for the determination of economic losses resulting from the throttling of a medium flowing through a pipeline. Energetyka przem 10 no.11:379-384 N '62.

1. Katedra Energetyki Cieplnej, Politechnika Slaska, Gliwice.



SZAŁGUT, Jan; PETLA, Kyszard [illegible]

Application of [illegible] regulation of [illegible] losses. Archi bud masz [illegible] 1964.

PETELA, Ryszard

Parameters of steam moistening the air blown into the gas generators. Problemy proj hut maszyn 10 no.9:261-263 S '62.

1. Politechnika Slaska, Gliwice.

PETELA, Ryszard, dr inz.

Exergy of heat radiation. Energetyka przem 10 no.11:399-405 N '62.

1. Katedra Energetyki Cieplnej, Politechnika Slaska, Gliwice.

PETELA, Ryszard, mgr. inz.

"Technically operational energy of thermal radiation," summary of a doctor's dissertation by Ryszard Petela. Przegl mech 21 no.13:414 10 J1 '62.

PETELA, Ryszard

The amount of after-gas water obtained in a gas generator with double gas reception. Problemy proj hut maszyn 10 no.6:179-185. Je '62.

1. Politechnika Slaska, Gliwice.

PETELEN, D.; GUNCAGA, J.

Changes in blood proteins in acute & subacute cholecystitis & cholangitis & their significance. Rozhl. chir. 38 no.4:256-261 Apr 59.

1. Z Chirurgickeho oddelenia KUNZ v Banskej Bystrici, prednosta MUDr. Daniel Petelen a z Centralneho laboratoria KUNZ v Banskej Bystrici, prednosta MUDr. Emil Bielik.

(CHOLECYSTITIS, blood in
proteins, diag. value (Cz))
(CHOLANGITIS, blood in
proteins, diag. value (Cz))
(BLOOD PROTEINS, in var. dis.
cholangitis & cholecystitis, diag. value (Cz))

CZECHOSLOVAKIA

PETELEN, D., MD.

Surgical Ward KUNZ (Chirurgicke oddelenie KUNZ), Banska Bystrica

Prague, Prakticky lekar, No 9, 1963, pp 340-343

"Surgical Importance of Cholangiolic-Obstructed Forms of Hepatitis Infections."

PETELEN, D. (Banska Bystrica, KUNZ)

Staphylococcus pyogenes sureus as surgical problem in newborn.
Cesk. pediat. 14 no.6:513-519 5 June 59.

1. Chirurgicke oddelenie KUNZ v Banskej Bystrici, prednosta MUDr.
Daniel Petelen.
(MICROCOCCAL INFECTIONS, in inf. & child
in newborn, diag. & ther. (Cz))
(INFANT, NEWBORN, dis.
micrococcal infect., diag. & ther. (Cz))

PETELEN, D.; GUNCAGA, J.

Changes of blood proteins in abdominal emergencies. Cas. lek. cesk. 98 no.35:1097-1100 28 Aug 59

1. Chirurgicke oddelenie KUNZ v Banskej Bystrici, prednosta MUDr. Daniel Petelen. Centralne laboratorium KUNZ v Banskej Bystrici, prednosta MUDr. Emil Bielik.
(ABDOMEN ACUTE, blood)
(BLOOD PROTEINS)

1 13419-66

ACC NR: AP6006633 SOURCE CODE: HU/0021/65/000/002/0087/0091

AUTHOR: Petelen, Daniel (Doctor); Martinec, Jozsef--Martinets, Y. (Doctor) 10 B

ORG: Surgical and Radiology Department, Hospital of Besztercebanya, KUNZ, Besztercebanya (Besztercebanyai KUNZ Korhaz, Sebeszeti es Rontgenosztaly)

TITLE: Evaculation of the resected stomach immediately following the operation

SOURCE: Magyar radiologia, no. 2, 1965, 87-91

TOPIC TAGS: digestive system, gastroenterology, surgery, radiology

ABSTRACT: As seen in native radiograms, the evacuation of food from the stomach often begins as early as the day following the operation and the function of the resected stomach becomes normal on the second day. This suggests that the postoperative spasms could be decreased or inhibited by suitable nourishment as a physiological stimulus, the adaptation mechanisms could be normalized and an eventual opening of the sutures avoided. This work was prepared for publication by Dr. Gyula Vargha. Orig. art. has: 4 figures. [JPRS]

SUB CODE: 06 / SUBM DATE: none / OTH REF: 008

Card 1/1 HW

EXCERPTA MEDICA Sec 9 Vol. 9/8 Surgery Aug 55

PETELEN D.

4258. PETELEN D. *Operovať, alebo neoperovať akútne cholecystitídy a cholelitiázy? Operation or conservative treatment in acute cholecystitis and cholelithiasis? BRATISLAVSKÉ LÉK. LISTY 1953, 33/12 (1189-1195)

The world literature on this problem is surveyed. Early operation has the advantage of obviating the dangers of bile duct infection, of perforation and peritonitis and the surgical difficulties resulting from changes in anatomical relations caused by long-standing inflammation. Early operation is not, however, indicated in every case; it would be limited to the more serious forms and should be performed under cover of streptomycin, which is present in the bile in a higher concentration than in the blood. Personal experience in 50 cases accentuates the preventive character of the operation. Vlcek - Prag

EXCERPTA MEDICA Sec 9 Vol 13/8 Surgery August 59

4525. CONSERVATIVE TREATMENT OF SUBPHRENIC ABCESSES? - Mózno liečit subfrenické abscesy konzervatívne? - Petelen D. Chir. Odd. KÚNZ, Banskej Bystrici - BRATISL. LEK. LISTY 1058, 38(I)/8 (487-491) Illus. 3

Report on 3 cases successfully treated with different antibiotics, by puncture and instillation of antibiotics into the abscess cavity or by giving antibiotics parenterally or per os. This treatment can be applied in the most serious cases in which surgical intervention would be contraindicated.

KOSMIDER, Stanislaw; PETELENZ, Tadeusz

Electrocardiographic studies in experimental plumbism in rabbits. Postery hig.med.dosw. 13 no.6:765-775 '59.
(LEAD POISONING diag)
(ELECTROELECTROCARDIOGRAPHY exper)

PETELENZ, Tadeusz; KOSMIDER, Stanislaw

Electrocardiography in the rabbit. Acta physiol pol 12 no.4:603-609 '61.

1. Z II Kliniki Chorob Wewnetrznych Sl. A.M. w Zabrzu-Rokitnicy Kierownik: prof. dr W. Zahorski.
(ELECTROCARDIOGRAPHY exper)

PETELENZ, Tadeusz; PIESKIEWICZ, Karol

Cutaneous form of acute lupus erythematosus, systemic. Wiad. lek. 18 no.19:1553-1557 1 O '65.

1. Z Oddziału Klinicznego Instytutu Medycyny Pracy w Przemyśle Węglowym i Hutniczym w Zabrzu (Kierownik: prof. dr. W. Taborski).

LANGAUER-LEWOWICKA, Henryka; PETKLENZ, Tadeusz; KUJAWSKA, Aleksandra

Polyneural lesion with facial paralysis in metallic mercury poisoning. Pol. tyg. lek. 19 no.25:962-964 15 Je'64

1. Z Dzialu Klinicznego Instytutu Medycyny Pracy w Przemysle Weglowym i Hutniczym w Zabrzu (kierownik: prof. dr. W. Zahorski) i z Kliniki Neurologicznej Sl.Akademii Medycznej w Zabrzu (kierownik: prof. dr. W. Chlopicki).

HERMAN, Zbigniew S.; PETELENZ, Tadeusz

The effect of serotonin on electrocardiographic curves of pigeons.
Acta physiol. Pol. 15 no.2:269-278 Mr-Ap '64.

1. Z Zakladu Farmakologii Sl. Akademii Medycznej w Zabrzu (Kierownik: doc. dr T. Chrusciel) i z Instytutu Medycyny Pracy w Przemysle Weglowym i Hutniczym w Zabrzu (Kierownik: prof. dr W. Zahorski).

KOSMIDER, Stanislaw; PETELENZ, Tadeusz

Electrocardiographic changes in older subjects with chronic occupational lead poisoning. Polskie arch. med. wewn. 32 no.5:437-442 '62.

1. Z II Kliniki Chorob Wewnetrznych Sl. AM i z Dzialu Klinicznego Instytutu Medycyny Pracy w Przemysle Weglowym i Hutniczym w Zabrzu Kierownik: prof. dr med. W. Zahorski.
(LEAD POISONING diag) (ELECTROCARDIOGRAPHY)

KOSMIDER, Stanislaw; SZCZUREK, Zbigniew; PETKLENZ, Tadeusz

Histopathology of the cardiovascular system in plumbism in rabbits. Postery hig.med.dosw. 13 no.6:777-780 '59.
(LEAD POISONING pathol)
(CARDIOVASCULAR SYSTEM pathol)

KOSMIDER, Stanislaw; PIEKARSKI, Boleslaw; PETELENZ, Tadeusz; WIERNY, Lech

Electrophoretic studies on serum proteins in the blood in radiation sickness in rabbits. Arch.immun.ter.dosw. 8 no.4:747-757 '60.

1. II Klinika Chorob Wewnetrznych Slaskiej Akademii Medycznej w Zabrzu, Oddzial Kliniczny Instytutu Medycyny Pracy w Przemysle Weglowym i Hutniczym w Zabrzu, Zaklad Radiologii Lekarskiej Slaskiej Akademii Medycznej w Zabrzu.

(RADIATION INJURY exper)
(BLOOD PROTEINS radiation eff)

KOSMIDER, Stanislaw; PETELENZ, Tadeusz; ROMER, Tomasz

Sodium, potassium and calcium levels in the blood serum in radiation sickness in rabbits. Pat. polska 12 no.2:177-182 '61.

1. Z II Kliniki Chorob Wewnetrznych Slaskiej Akademii Medycznej Kierownik: prof. dr W. Zahorski
(RADIATION INJURY blood)
(SODIUM blood)
(POTASSIUM blood)
(CALCIUM blood)

KOSNIDER, Stanislav; PETELENZ, Tadeusz

Electrocardiographic studies in cases of chronic occupational lead poisoning. Polskie arch. med. wewn. 31 no.10:1349-1357 '61.

1. Z Dzialu Klinicznego Instytutu Medycyny Pracy w Przemysle Weglowym i Hutniczym w Zabrzu Kierownik: prof. dr med. W. Zahorski.
(LEAD POISONING diag) (ELECTROCARDIOGRAPHY)

KOSMIDER, Stanislaw; PETELENZ, Tadeusz

Electrocardiographic studies in radiation sickness in rabbits.
Arch.immun.ter.dosw. 8 no.3:537-549 '60.

1. II Klinika Chorob Wewnetrznych Slaskiej Akademii Medycznej w Zabrzu.
(RADIATION INJURY exper)
(ELECTROCARDIOGRAPHY)

CHRUSCIEL, Maria; PETELENCOWA, Teresa; CHRUSCIEL, Tadeusz

Electrocardiogram in pigeons in experimental arteriosclerosis.
Acta physiol. polon. 11 no.2:317-326 Mr-Ap '60.

1. Z Zakladu Farmakologii Slaskiej A. M. w Zabrzu-Rokitnicy, Kierownik: doc. dr T. Chrusciel; z II Kliniki Chorob Wewnetrznych Slaskiej A. M. w Zabrzu, Kierownik: prof. dr W. Zahorski.
(ELECTROCARDIOGRAPHY)
(ARTERIOSCLEROSIS exper.)

BONENBERG, Lucyna; GLOWACKA, Roza; PETELENZOWA, Teresa

A case of excretion of a large biliary calculus by vesicocolic fistula with spontaneous closure of the fistula. Polski tygod. lek. 14 no.42:1875-1878 19 Oct 59.

1. (Z II Kliniki Chorob Wewnetrznych Sl. A. M. w Zabrzu; kierownik: prof. dr med. Witold Zahorski i Zakladu Radiologii Lek. Sl. A. M. w Zabrzu; kierownik: prof. dr med. Stanislaw Januszkiewicz)
(RECTAL FISTULA) (INTESTINAL FISTULA)
(CHOLELITHIASIS)

KOSMIDER, Stanislaw; PETELENZOWA, Teresa

Ballistocardiographic evaluation of the effect of omentocardiopexy on the course of experimental myocardial infarcts. Pat. polska 11 no.3:227-233 '60.

1. Z II Kliniki Chorob Wewnetrznych Slaskiej Akademii Medycznej, Kierownik: Prof.dr med. W.Zahorski.
(MYOCARDIAL INFARCT exper)
(BALLISTOCARDIOGRAPHY)

PETELIN, A., kontr-admiral, Geroy Sovetskogo Soyuza, komanduyushchiy flotiliyey podvodnykh lodok

We take pride in service at sea. Voen. znan. 39 no.7:10-11 Jl '63. (MIRA 16:7)

(Submarine boats)

PETELIN, A.

Outstanding motion-picture and radio technician. Kinomekhanik no.2:6 F'55. (MLRA 8:3)

1. Nachal'nik kluba voyskovoy chasti.
(Naaber, Khel'duar El'marovich)

L 34342-66 EWT(m)/T JKT/TCH

ACC NR: AN6010209 (N) SOURCE CODE: UR/9008/66/000/073/0005/0005

AUTHOR: Petelin, A. (Rear admiral, Hero of the Soviet Union, First Deputy Commander of the Red Banner Northern Fleet)

ORG: None

TITLE: Soviet Northern Fleet stands watch at remote meridians

SOURCE: Krasnaya zvezda, 29 Mar 66, p. 5, cols. 1—6

TOPIC TAGS: nuclear submarine, naval aircraft, naval weapon, naval training, military personnel

ABSTRACT: The article deals with the striking power of the Soviet Northern Fleet including nuclear submarines, surface ships armed with missiles, and naval aviation. At present, the main striking power of the fleet is nuclear submarines armed with powerful nuclear weapons. The operational range of the Soviet nuclear submarines is practically unlimited. They are reliably equipped and armed with powerful missiles. Missile-carrying naval aircraft are capable of delivering air attacks at great distances from their bases. The fleet has well-educated and well-trained military personnel who constantly improve their combat and political readiness. The fleet carries out the combat watch in an important defense area of the country. In the past training year, Northern Fleet personnel received 5 first prizes of the Soviet Navy for good

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L 34342-66

ACC NR: AN6010209

C

firing and tactical training. A number of officers and crew were awarded orders and medals for outstanding combat and political training and for increased combat power of the fleet. The article gives some names of the outstanding commanders, engineers, political officers, and crew who skillfully carried out assigned training missions and were awarded orders and medals. [NT]

SUB CODE: 15/ SUBM DATE: none

Card 2/2 BLG

KISELEV, P.I., kand. tekhn. nauk; KAGANOVICH, S.A., kand. tekhn. nauk; VASIL'YEV, N.S., inzh.; PETELIN, A.A., inzh.

Testing of an unventilated ball mill. Elek. sta. 32 no.1:3-8 Ja '61. (MIRA 16:7)
(Milling machinery—Testing)
(Electric power plants—Equipment and supplies)

PETLIN, A.I., kontr-adm[illegible]

Modern demands [illegible]. [illegible]
52-54 '64.

FEDORIN, Yuriy Vasil'yevich; PETELIN, A.M., kand.sel'skokhoz.nauk, otv. red.; BEZSONOV, A.I., glavnyy red.; USPANOV, U.U., zamestitel' glavnogo red.; BOROVSKIY, V.M., red.; SOKOLOV, A.A., red.; SOKOLOV, S.I., red.; STOROZHENKO, D.M., red.; BARLYBAYEVA, K., red.; SHEVCHUK, T.I., red.; PROKHOROV, V.P., tekhn.red.

[Soils of the Kazakh S.S.R. in 16 volumes] Pochvy Kazakhskoi SSR v 16 vypuskakh. Alma-Ata. Vol.1. [Soils of North Kazakhstan Province] Pochvy Severo-Kazakhstanskoi oblasti. 1960. 173 p. (MIRA 13:7)

1. Akademiya nauk Kazakhskoy SSR, Alma-Ata. Institut pochvovedeniya.
(North Kazakhstan Province---Soils)

PETEIN, Alfred, inz.; JANCIKOVIC, Milan, inz. ROTHL, Bozo, inz.

Mechanization in building industry and its problems. Tehnika Jug 18 no.7:Supplement: Gradevinarstvo 17 no.7:1240-1248 Jl'63.

1. Preduzece "Gradis", Ljubljana (for Peteln).

PETELIN, BOGDAN

PETELIN BOGDAN

Yugoslavia (430)

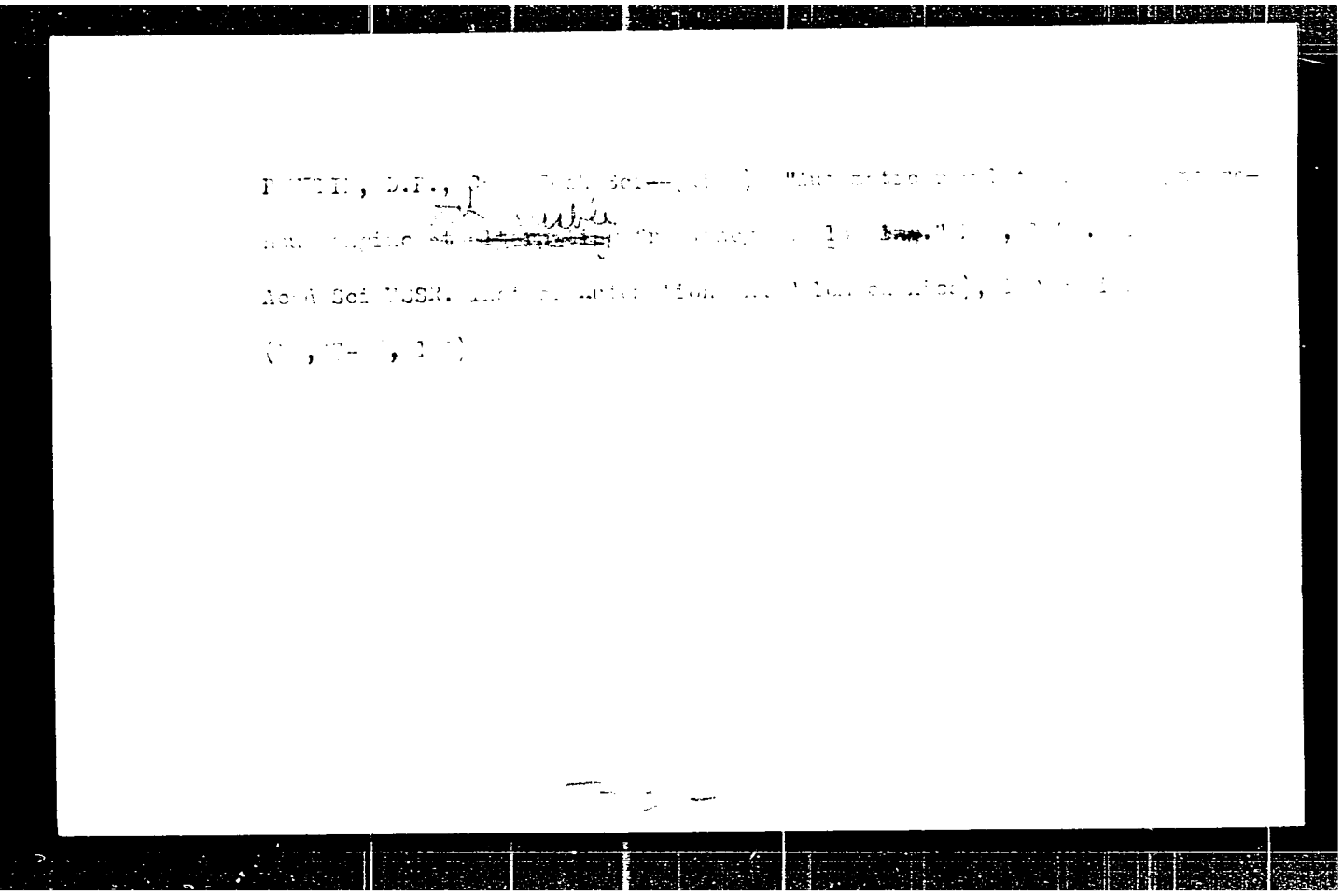
Law

Gradivo za uporabo zakona o zakonski zveze. Ljubljana, 1950, 27p. (Commentary on the application of the law on marriage. Contains also the text of the law on marital property relations. Bibl)

East European Accessions List. Library of Congress, Vol 1, no 13, Nov 1953. UNCLASSIFIED.

PETELIN, D.P.

Automatic control of the angular velocity of a d.c. drive with a series excitation motor. Trudy MINKHiGP no.52:65-73 '64. (MIRA 18:6)



PETELIN, P.P.

38(1) PHASE I BOOK EXPLOITATION SOV/1606

Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki

Avtomatika i telemekhanika; sbornik (Automation and Telemechanics; Collection of Articles) Moscow, Izd-vo AN SSSR, 1958. 144 p. 5,000 copies printed.

Resp. Ed.: Ya.Z. Tsypkin; Ed. of Publishing House: V.A. Kotov; Tech. Ed.: I.F. Ousova.

PURPOSE: The book may be useful to engineers working with automatic and remote control.

COVERAGE: This is a collection of 15 articles which were presented at the fourth and fifth scientific and technical conferences of young members of the Institute of Automation and Telemechanics of the USSR Academy of Sciences. The fourth conference was held in 1955 and the fifth in 1956. The material contained in the articles is based on research work done by young members of the Institute.

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Automation and Telemechanics (Cont.) SOV/1606

The articles discuss automatic and remote control devices and the automated drive. No personalities are mentioned. References appear at the end of each article.

TABLE OF CONTENTS:

2 English, and 1 German.

AUTOMATED ELECTRIC DRIVE 74

Petelin, P.P. Mechanical Transients of a Synchronous Motor With Frequency Control 74

The author discusses methods of starting a synchronous motor with low-frequency alternating current and describes transients occurring during acceleration and braking of a synchronous motor. He also discusses mechanical transients in a synchronous motor-generator set with frequency control. There are 11 references, 6 of which are Soviet, 4 English, and 1 German.

Card 5/8

Petelin D.F.

8(2); 28(1) PHASE I BOOK EXPLOITATION SOV/1433

Soveshchaniye po avtomatizirovannomu elektroprivodu peremennogo toka, Moscow, 1955

Trudy... (Transactions of the Conference on Automated A-C Electric Drives) Moscow, Izd-vo AN SSSR, 1958. 398 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut avtomatiki i telemekhaniki.

Resp. Eds: V.S. Kulebakin, Academician, and M.O. Chilikin, Doctor of Technical Sciences, Professor; Ed. of Publishing House: D.M. Ioffe; Tech. Ed.: I.F. Kuz'min.

COVERAGE: The conference was organized on the initiative of the Institute of Automation and Telemechanics of the Academy of Sciences, USSR, and the Moscow Power Engineering Institute and had as its aim the planning of the most progressive ways of developing automatic control of electric drives. The first conference on the subject of automated electric drive took place more than ten years before the present one and was concerned with d-c electric drives. The results of this building postwar Soviet industry and in furthering industrial development. Present technical development of Soviet industry demands high speeds, simplicity of construction, reliability of operation, and economy. The squirrel-cage induction motor with frequency control appears to be the most promising type of controlled a-c drive. For wide application of this drive in the Soviet economy there is a need of developing new types of frequency converters. Some interesting studies were made in this connection at the Institute of Automation and Telemechanics of the USSR Academy of Sciences and its Leningrad branch, at the Moscow Power Engineering Institute, the Central Design Bureau of the "Elektroprivod Plant, the State Design Institute of the Ministry of Construction of the RSFSR, and in other design organizations. These studies were discussed at the present conference. The transactions contain material concerning the theory and design of reactor, pulse, and frequency methods of controlling a-c electric drives. Candidate of Technical Sciences I.V. Utkin and Engineer V.A. Kokoreva participated in the preparation of this collection of papers. The volume was reviewed by Professor Ya. V. Mitunov, Doctor of Technical Sciences. Some of the papers include a bibliography.

TABLE OF CONTENTS:

AUTHOR: Petelin, [illegible] (Moscow)

TITLE: On Stability and Independence of Automatic Control of Single Alternator Frequency and Voltage (K voprosu ustoychivosti i avtonomnosti avtomaticheskogo regulir-vaniya chastoty i napryazheniya odinochnogo sinkhronnogo generatora)

PERIODICAL: Avtomatika i telemekhanika, 1958, Vol 19, Nr 9, pp 864-878 (USSR)

ABSTRACT: The conditions of stability and independence of the automatic control of the frequency and voltage of single alternators are investigated at any stipulated accuracy of each value to be controlled. The method here suggested is based on the theoretical work of M. V. Meyerov (Refs 1 to 4). - Such a structure of the system of automatic control is chosen as to guarantee a high accuracy in adjusting the frequency and voltage of the singl alternator. Regularities governing the additional influences on the up to of the stabilizing elements of both control circuits are found. These give a guaranty for the independence of the control process with an accuracy up to the small parameter characterized by the values of the amplification factors [illegible] shown that in an independent control of a single synchronous generator frequency and voltage the control processes are [illegible]

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On Stability and Independence of Automatic Control of [illegible] Frequency and Voltage

always the most favorable ones for each value and depend on the parameter of the degenerate equations (41) and (41). There are 14 figures, 1 table, and 5 references, 4 of which are [illegible].

SUBMITTED: October 8, 1957

Card 2/2

PETELIN, D.P., inzh.

Device for measuring the angle θ of synchronous machines. Elek.sta. 29 no.5:84-85 My '58. (MIRA 12:3)
(Electric machinery, Synchronous--Measurement)

PETELIN, D.P. (Moskva)

Rule for the control of excitation and minimum losses in a synchronous motor. Izv. AN SSSR. Otd.tekh.nauk. Energ. i avtom. no.4:205-207 Jl-Ag '59. (MIRA 12:11)

(Electric motors, Synchronous)

PETELIN, D.P. (Moskva).

Approximate determination of self-oscillations in an automatic control system for a synchronous motor [with summary in English]. Avtom. i telem. 20 no.1:16-22 Ja '59. (MIRA 12:1)
(Electric motors, Synchronous) (Automatic control)

S/024/60/000/01/015/028
E194/E355

AUTHORS: Petelin, D.P. and Yarina, V.Z. (Moscow)

TITLE: A Synchronous Motor with Valve-contact Field Control

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, Nr 1, pp 126-130 (USSR)

ABSTRACT: Synchronous motor drives usually include two machines, the synchronous motor proper and the exciter. The use of a machine as exciter makes the set expensive, impairs reliability and makes automatic control of the field more difficult. Recently, considerable attention has been paid to synchronous motors without machine exciters, particularly the small motors where the exciter is commensurate with the main machine in size and cost. An article by Semenov and Yarina published in Avtomatika i telemekhanika, 1959, Nr 8, described a new system of exciting a synchronous motor by a contact-breaker and rectifier combination incorporating semiconductor diodes. In the present state of rectifier development this type of excitation may be used on synchronous motors of up to 100 kW; it adjusts the motor field according to the load on the shaft.

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E194/E355

A Synchronous Motor with Valve-contact Field Control

The contact-breaker and rectifier combination work on the following principle: a semiconductor diode is in series with synchronously-operated contacts and behaves as a controlled rectifier, the contacts fulfilling the role of the control grid. The rectified voltage is controlled by displacing the instant of closure of the contacts. They are normally closed and are opened at an instant when the rectifier is not carrying current so that the contact system is very reliable. It may comprise a synchronously rotating ring, with conducting and insulating segments and a stationary brush. This construction was used for automatic field control of synchronous machines. The length of the respective segments depends on the rectification circuit and the synchronous speed of the machine. Thus, for a three-phase full-wave bridge rectification circuit and a motor speed of 3 000 rpm, the circuit had two rings and a contact arrangement as illustrated in Figure 1. With the same circuit and a speed of 1 500 rpm, the multi-segment ring

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A Synchronous Motor with Valve-contact Field Control

shown in Figure 2 was used. In three-phase bridge rectification the commutation angle may be determined from the expression (1).

As will be seen from Figure 1, the field winding of the synchronous machine is supplied from two sources, an uncontrolled and a controlled rectifier. Whilst the motor is being started and until it is synchronised the field winding is supplied from the uncontrolled rectifier. When the machine reaches synchronous speed the brushes of the controlled rectifier are so positioned that an increase in the load on the shaft and so in the load angle, increases the voltage on the motor field winding. The controlled field supply is then connected and the uncontrolled rectifier disconnected. The voltage of the uncontrolled rectifier is selected according to the no-load characteristics of the motor. The conditions of stable operation are given by Eq (2), the solution of which gives the upper limit of synchronous motor field current.

In a mixed field synchronous motor whose field is controlled according to the stator current, the control does not

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E194/E355

A Synchronous Motor with Valve-contact Field Control

directly correspond to changes in load on the shaft, whereas in the present scheme the field is varied directly as the load angle. This offers the possibility of improved field control of synchronous motors driving variable loads. Starting of the motor is then described. The controlled and the uncontrolled rectifiers may both be supplied from one tapped stepdown transformer. An analysis is then made of the operating conditions of a cylindrical-rotor synchronous motor with field control of the kind described. The mean value of rectified current depends on the control angle and is determined by Formula (3). The law of field control as a function of load angle may be expressed in relative units in the form of expression (4) or expression (5). This law of field control is then easily expressed as a function of the load on a shaft and Eq (7) characterises the law of motor field control as a function of load when using the contact-breaker and rectifier combination. Eq (9) may be used to calculate the reactive power of the motor for a given shaft output and to determine the power factor at different

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A Synchronous Motor with Valve-contact Field Control

loads. It will be seen that with this method of field control the overload capacity of the motor increases with increase in the load on the shaft, thus ensuring a reserve of static stability.

A field controller of this type was built in the laboratory and brief details are given. Experimental investigations confirm the correctness of the above analyses. The operating characteristics of a synchronous motor without field control and with the new field control are plotted in Figure 3. It will be seen that the new type of excitation makes better use of the motor torque and ensures stable operation during sudden changes of load. The scheme is simple and reliable. There are 3 figures and 3 Soviet references.

SUBMITTED: November 25, 1959

Card 5/5

S/105/60/000/02/005/024
B007/B008

8 (3), 8 (5)
AUTHOR: Petelin, D. P., Candidate of Technical Sciences (Moscow)

TITLE: Small Scale Stability of the Excitation Control System for a Synchronous Motor

PERIODICAL: Elektrichestvo, 1960, Nr 2, pp 25 - 27 (USSR)

ABSTRACT: An automatic control of the excitation is applied for motors with changing load to improve the mode of operation and to increase the stability of the synchronous motor and the feeding system. An automatic control of the excitation of the synchronous motor according to the angle θ (Ref 1) is very suitable in many cases. The small scale stability in such systems is investigated here. The diagrammatic circuit scheme of a system for the automatic control of the excitation of a synchronous motor is shown in figure 1. The equation characterizing the control process in the system is derived: differential equation (11) and its characteristic equation in the form of (12). On the basis of the theory of the construction of automatic control systems with high accuracy, developed in the papers (Refs 3,4), it can be said that the control system investigated here will only

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remain stable in the case of relatively small amplification coefficients. The critical value for the amplification coefficient of an open control circuit can be obtained by an analysis of the stability of linear control systems. In this connection, a feedback is introduced into the system. This covers the links with the greatest amplification coefficients. The parameters of this feedback are determined, for which an unlimited increase of the amplification coefficient is admissible without disturbance of the stability. The differential equation (14) for the system with feedback and the characteristic equation (15) of this differential equation are obtained. The solution of these equations produces a system of the automatic control which remains stable at whatever great values of the amplification coefficient. A computation and experimental investigation of a concrete control system was carried out on the basis of the explanations given here. The oscillograms of the transition processes at an increase of the motor load are shown in figure 3 for the case where no stabilizing links are available

and for a second case where stabilizing links with computed parameters are available. There are 3 figures and 4 Soviet references.

SUBMITTED: May 29, 1959

PETELIN, D.P. (Moskva)

Laws governing the static control of the angular velocity of a synchronous motor. Izv.AN SSSR. Otd. tekh. nauk Energ. i avtom no.1:68-71 Ja-F '61. (MIRA 14:3)
(Electric motors, Synchronous)

PETKLIN, Diner Prokof'yevich; NEVRAYEV, V.Yu., red.; LARIONOV, G.Ye., tekhn.red.

[Automatic control of the excitation of synchronous motors] Avtomaticheskoe regulirovanie vozbuzhdeniia sinkhronnykh dvigatelei. Moskva, Gos.energ.izd-vo, 1961. 103 p. (Biblioteka po avtomatike, no.30). (MIRA 14:7)
(Electric motors, Synchronous) (Automatic control)

PETELIN, D.P.

Vsesoyuznoye ob"yedinennoye soveshchaniye po avtomatizatsii proizvodstvennykh protsessov v mashinostroyenii i avtomatizirovannomu elektroprivodu v promyshlennosti. 3d, Moscow, 1959

Elektroprivod i avtomatizatsiya promyshlennykh ustanovok; trudy soveshchaniya (Electric Drive and Automation in Industrial Systems; Transactions of the Conference) Moscow, Gosenergoizdat, 1960. 470 p. 11,000 copies printed.

General Eds.: I.I. Petrov, A.A. Sirotin, and M.G. Chilikin; Eds.: I.I. Sud, and E.P. Silayev; Tech. Eds.: K.P. Voronin, and O.Ye. Larionov.

PURPOSE: The collection of reports is intended for the scientific and technical personnel of scientific research institutes, plants and schools of higher education.

COVERAGE: The book is a collection of reports submitted by scientific workers at plants, scientific institutes and schools of higher education at the third Joint All-Union Conference on the Automation of Industrial Processes in Machine Building and Automated Electric Drives in Industry held in Moscow on May 12-16, 1959. The Conference was called by the Academy of Sciences USSR, the Gosplan SSSR (State Planning Commission USSR), the GNTK SSSR, the Gosudarstvennyy Komitet po avtomatizatsii i mashinostroyeniyu (State Committee on Automation and Machine Building) and the Natsional'nyy Komitet SSSR po avtomaticheskomu upravleniyu (USSR National Committee on Automatic Controls) and prepared by the Nauchno-tekhnicheskiy komitet po avtomatizirovannomu elektroprivodu (Scientific and Technical Committee on Automated Electric Drives), the MEI (Moscow Institute of Energetics), the VNIIEM, the IAT (Institute of Automation and Telemechanics) of the Academy of Sciences USSR, and the Komissiya po tekhnologii mashinostroyeniya Instituta mashinovedeniya AN SSSR (Commission on the Technology of Machine Building of the Institute of Science of Machines of the Academy of Sciences USSR). It was the purpose of the Editorial Board to arrange the reports in a way which would ensure a relatively systematic presentation of theoretical and practical problems relating to electric drives and automatic controls of industrial mechanisms used in various branches of industry. Basic problems of automated electric drive and their solution are outlined. The book also contains articles on electric machinery and means of automation. Considerable attention is paid to noncontact automatic control systems, including systems with [illegible] and magnetic amplifiers, and to computers intended both for the analysis and the synthesis of linear and nonlinear automatic regulation and control systems. Reports already published in journals or official publications have been considerably abbreviated; those which have appeared in volume V of BII EP transactions or in the journal "Elektrichestvo" are marked with an asterisk. No personalities are mentioned. References accompany some of the papers.

PART I. GENERAL PROBLEMS CONCERNING THE THEORY AND PRACTICE OF ELECTRIC DRIVE AND AUTOMATION OF CONTROL

NEVRAYEV, Vsevolod Yur'yevich; PETELIN, Diner Prokof'yevich; DOMANITSKIY, S.M., red.; BORUNOV, N.I., tekhn. red.

[Automated a.c. drive systems] Sistemy avtomatizirovannogo elektroprivoda peremennogo toka. Moskva, Izd-vo "Energiia," 1964. 103 p. (Biblioteka po avtomatike, no.94)
(MIRA 17:4)

PETELIN, D.P., kand.tekhn.nauk (Moskva)

Stability with small error constant in the excitation control system of a synchronous motor. Elektrichestvo no.2:25-27 F '60. (MIRA 13:5)
(Electric motors, Synchronous)

PETELIN, G.; GUSINSKIY, N.

Closing the ranks. Sov.profsoiuzy 7 no.22:57-58 N '59.
(MIRA 12:12)

1. Predsedatel' TSentral'nogo komiteta profsoyuza rabotnikov gosuchrezhdeniy (for Petelin). 2. Zaveduyushchiy mezhdunarodnym otdelom TSentral'nogo komiteta profsoyuza rabotnikov gosuchrezhdeniy (for Gusinskiy).
(Trade unions--Congresses)

PETRLIN, G.

Tasks of trade-union organizations of government instituttions.
Fin. SSSR 19 no.5:27-33 My '58. (MIRA 11:6)

1. Predsedatel' TSentral'nogo komiteta profsoyuza rabotnikov gosudarstvennykh uchrezhdeniy.
(Trade unions)

KONDRATYEV, K. Ya.; BURGOVA, M. P.; MIKHAYLOV, V. V.; GRISHECHKIN, V. S.; PETELIN, G. M.; OTTO, A. N.; MIRONOVA, Z. F.

"Complex of spectral apparatus for the investigation of the short wave radiative field in the atmosphere."

report presented at the Atmospheric Symp, Leningrad, 5-12 Aug 64.

ACCESSION NR: AT4033370 S/2960/63/000/002/0067/0086

AUTHOR: Kondrat'yev, K. Ya.; Burgova, M. P.; Grishechkin, V. S.; Mikhaylov, V.V.; Petelin, G. M.

TITLE: Investigation of the spectral distribution of short-wave radiation

SOURCE: Leningrad. Universitet. Problemy* fiziki atmosfery*, no. 2, 1963, 67-86

TOPIC TAGS: meteorology, atmospheric physics, meteorology, short-wave radiation, spectrophotometer, direct solar radiation, scattered solar radiation, spectral albedo

ABSTRACT: Specialists at the LGU (Leningrad State University) are carrying out an extensive program of study of short-wave radiation; various aspects of this program at the Kafedra fiziki atmosfery* (Department of Atmospheric Physics) are described. The atmospheric optics laboratory of this department has been developing a special set of spectrophotometric apparatus for measurement of the spectral characteristics of direct and scattered solar radiation, integral sky radiation in the short-wave region of the spectrum and the spectral albedo of underlying surfaces. This article gives a brief description of the mentioned apparatus. A high-speed automatic spectrophotometer, shown in Fig. 1 of the Enclosure, has been developed for measurement of the spectral characteristics of direct solar radia-

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ACCESSION NR: AT4033370

tion and spectral sky brightness (in a limited solid angle) in the short-wave region of the spectrum. The instrument consists of four basic units: light flux obturator, a monochromator with a diffraction grating, a receiving and recording unit and a source of standard radiation. The working region of the monochromator is 250-1000 millimicrons; photomultipliers are used as radiation detectors; light filters are placed in front of the photomultipliers to attenuate the scattered light; the standard radiation source is used to check the stability of the instrument sensitivity factor; there is a mounting and base which makes it possible to point the instrument at any point in the sky. The fluxes of total and scattered radiation in the 0.29-1.1 μ region are measured by a SFD-1 monochromator with a diffraction grating with 600 rulings/mm. The receiving part of the instrument is a spherical photometer 200 mm in diameter. The recording instrument is a 1-second EPP-09 electronic potentiometer. The instrument for measurement of sky brightness by the photographic method is a modified ISP-51 spectrograph; the working region of the instrument is 360-600 millimicrons. The method used for processing the results involves the use of two characteristic curves, making it possible to decrease the measurement error by graphic averaging of the results. The spectral albedo of underlying surfaces is measured by a remote-control spectrometer operating in the region 440 millimicrons - 1 micron. Some of the results obtained using these instruments are given in tables and graphs. Orig. art. has: 10 figures and 6 tables.

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ACCESSION NR: AT4033370

ASSOCIATION: Leningradskiy universitet (Leningrad University)

SUBMITTED: 00 DATE ACQ: 23Apr64 ENCL: 01

SUB CODE: AA NO REF SOV: 013 OTHER: 001

Card 3/4

ACCESSION NR: AT4033370

ENCLOSURE: 01

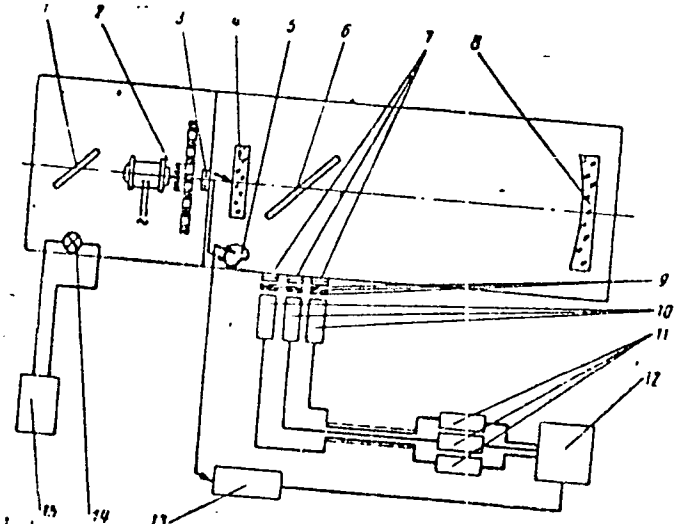

Fig. 1 -

Block diagram of a high-speed spectrophotometer with diffraction grating. 1 -- semi-transparent mirror; 2 - modulator; 3 - entrance slit; 4 - replica; 5 - cam of oscillating device; 6 - flat mirror; 7 - exit slit; 8 - spherical mirror; 9 - light filters; 10 - radiation detectors with preamplifiers; 11 - selective amplifiers; 12 - recording device; 13 - wavelength scale marker; 14 - source of standard radiation; 15 - power source for standard radiation source.

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66451
SOV/20-129-3-19/70

~~24-(7)~~ 24.2120

AUTHORS: Osherovich, A. L., Petelin, G. M.

TITLE: On Measuring the Lifetimes of the Terms 3^1S_0, 3^3P_2, 3^3D_2, 3^1P_1 and 3^1D_2 of Neon by the Method of Delayed Coincidences

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 3, pp 544-546 (USSR)

ABSTRACT: The relative values of the transition probabilities A and of the oscillator strength f for the s-p-lines of neon were determined by R. Ladenburg (Ref 1) with the method of anomalous dispersion. J. Griffiths (Ref 2) determined the average lifetime of some neon terms by means of a Kerr cell. As R. Ladenburg's evaluation is only an approximate one, and as the data obtained by Griffiths were determined only by an indirect method, the authors endeavored to employ the method of delayed coincidences. The neon was excited by means of an electron beam in form of a sequence of rectangular pulses of the duration of $\sim 10^{-7}$ sec with the repetition frequency of 10^4 cycles. In this connection, the time dependence of the number of coincidences between the pulses of the photomultiplier (which records decrease in luminescence of the neon atoms)

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SOV/20-129-3-19/70

On Measuring the Lifetimes of the Terms 3^1S_0, 3^3P_2, 3^3D_2, 3^1P_1 and 3^1D_2 of Neon by the Method of Delayed Coincidences

order of magnitude from Ladenburg's evaluation. In the second table the relative lifetime values are compared. When determining the accuracy of the method of delayed coincidences with modulation of the electron beam, various processes occurring in the plasma, which distort the true lifetime of the terms, must be taken into account. The development of a method with recording of cascade-transitions, and the introduction of a delay into the channel for the recording of the upper transition permits the experimental evaluation of the correction for the influence exerted by the higher levels. There are 1 figure, 2 tables, and 5 references, 3 of which are Soviet.

ASSOCIATION: Fizicheskiy institut Leningradskogo gosudarstvennogo universitota im. A. A. Zhdanova (Physics Institute of Leningrad State University imeni A. A. Zhdanov)

PRESENTED: July 18, 1959, by A. N. Terenin, Academician

Card 3/4

66451

On Measuring the Lifetimes of the Terms 3^1S_0, 3^3P_2, 3^3D_2, 3^1P_1 and 3^1D_2 of Neon by the Method of Delayed Coincidences SOV/20-129-3-19/70

SUBMITTED: July 4, 1959

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L 3773-66 EWT(m) DIAAP GS S/0000/64/000/000/0791/0794

ACCESSION NR: AT5007950

AUTHOR: Davydov, N. S.; Dorfman, L. G.; Yekimov, V. V.; Zalmanzon, V. B.; Zeytlenok, G. A.; Levin, V. M.; Malyshev, I. F.; Petelin, I. G.; Petrunin, V. I.; Popov, V. A.; Trushin, N. Kh.; Umanskiy, I. G.; Finkel'shteyn, I. I.

TITLE: Deflecting system of 5-Gev antiproton channel

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 791-794

TOPIC TAGS: antiproton, high energy particle, particle beam, high energy accelerator

ABSTRACT: Specific requirements flowing from the applied principle of particle resolution have determined the choice of the type of deflecting system. During development of the device the requirements were also considered from the viewpoint of the high-frequency power supply system. The creation of a high-power 150-megahertz frequency generator that operates with pulses of several milliseconds duration is a technically complex task. Therefore, special attention was given during the development of the deflecting system to its economy and efficiency. Taking these considerations into account, computations were carried out of a number of

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ACCESSION NR: AT5007950

alternate deflecting systems--in the form of a waveguide or band line operating in the energy recuperation regime, or in the form of a system of many-cavity or single-cavity volume resonators. As shown by the computations, it is most expedient to make the deflecting system in the form of a set of independently phased resonators of the quasitoroidal type, which operate in the fundamental mode of the electric oscillations, with the use of high-frequency electrical field for deflecting the particles. The report discusses the resonators employed in the deflecting system and their arrangement in the system. The chosen resonator form permits one to obtain a specific homogeneity of the deflecting field in the cross section of a beam by selection of suitable dimensions. The report discusses the characteristics of the developed system. The linear dimensions of the apertures in the resonators for channeling the beam are commensurable with the operating wavelength, which fact leads to the radiation of electromagnetic energy and to the appearance of a strong bond among the resonators. In order to eliminate this phenomenon and preserve complete transparency of the channel for the beam of deflected particles among the resonators, the waveguide segments are provided with limiting wavelength much lower than the operating one, and feedback is introduced in the magnetic field. As shown by investigations, the bond among the resonators is almost completely eliminated. Considerable attention was paid to the electric transparency of the resona-

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ACCESSION NR: AT5007950

tors. The field strength in the resonator gaps which corresponds to a given magnitude of the deflecting pulse was determined on the basis of the field pictures that were taken in an electrolytic tank. Corrections were made for the variation in the high-frequency field during the particles' flight time through a resonator and for the difference between the static and high-frequency pictures of the field in a gap. Measures were also taken to eliminate in the resonators the secondary electron resonance discharge. Orig. art. has: 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific-Research Institute of Electrophysical Equipment, GKAE SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 000 OTHER: 000

Card 3/3

L 00940-66 EWT(m)

ACCESSION NR: AT5015937 UR/3092/65/000/003/0051/0063

AUTHOR: Davydov, M. S.; Zeytlenok, G. A.; Lovin, V. M.; Malyshev, I. F.; Petelin, L. G.; Petrunin, V. I.; Trushin, N. F.; Finkel'shteyn, I. I.

TITLE: Problems of constructing the deflecting system of a 5-Gev antiproton channel

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury. Elektrofizicheskaya apparatura; sbornik statey, no. 3, 1965, 51-63

TOPIC TAGS: antiproton, antiproton isolation

ABSTRACT: The construction principles of an antiproton-isolating r-f deflecting system are set forth. Calculations showed that the most expedient deflecting system should comprise a set of independently-phased single-gap quasi-toroidal resonators operating at the fundamental wave mode, the deflection being accomplished by an electric r-f field. The deflection system of the OIYaI 5-Gev

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L 00940-66

ACCESSION NR: AT5015937

antiproton channel designed along the above lines (details given) has these characteristics: 16 rectangular-deflecting-area resonators; resonance frequency, 150 Mc; Q-factor, 15000 or higher; shunt resistance, 0.8 Mohms; power loss in one resonator is 60 kw and in the entire deflecting system, 1 Mw at a rated electric-field strength of 31.2 kv/cm. All resonators are mounted in a 3-section 14-m long 1.5-m diameter vacuum tank. The resonators are connected to their feeders via vacuum lead-ins and two-loop matchers. A separate-excitation 1.5-Mw vhf oscillator produces 6-μsec pulses at a repetition rate of 5 p/min. Orig. art. has: 12 figures and 6 formulas.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: NP, EC

NO REF SOV: 005 OTHER: 001

Card 2/2

PETELIN, L.S.

Classification and pathogenesis of hyperkinesias. Zhur. nevr. i psikh. 65 no.2:179-186 '65. (MIRA 18:9)

1. Kafedra nervnykh bolezney (zaveduyushchiy prof N.S. Chetverikov) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.

PETELIN, L.S.; ROGOVIN, A.B.

Electromyographic studies in multiple sclerosis. Zhur. nevr. i psikh. 64 no.8:[illegible] (MIRA 17:12)

1. Kafedra nervnykh bolezney (zaveduyushchiy - prof. N.S. Chetverikov) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.

PETELIN, L.S.

Electromyographic research in balneological treatment of poliomyelitis. Vop.kur. fizioter. i lech. fiz. kul't. 23 no.6:527-531 N-D '58 (MIRA 11:12)

1. Iz nevrologicheskogo otdeleniya (zav. - prof. N.S. Chetverikov) TSentral'nogo instituta kurortologii (dir. - kand.med.nauk G.N. Pospelova)
(POLIOMYELITIS)
(ELECTROMYOGRAPHY)

PETELIN, L.S., kand.med.nauk (Moskva)

Mud therapy of the sequelae of epidemic poliomyelitis. Med. sestra 22.no.4:27-33 Ap '63. (MIRA 16:7)
(BATHS,MOOR AND MUD) (POLIOMYELITIS)

PETELIN, L.S., Cand Tech Sci -- [illegible] "[illegible] of [illegible] have experienced [illegible] the complex theory of [illegible] [illegible] [illegible] "[illegible]" Len, 195[illegible]. [illegible] (Min [illegible] USSR. [illegible] Sci Res Inst of [illegible] [illegible] Physics [illegible]), [illegible]

([illegible], [illegible], 1[illegible])

[illegible]

PETELIN, Lev Sergeyevich; MONIKOV, M.Ye., red.; KUZ'MINA, N.S., tekhn. red.

[Fangotherapy of epidemic poliomyelitis] Griazelechenie epidemicheskogo poliomielita. S predisl. N.S.Chetverikova. Moskva, Medgiz, 1962. 125 p. (MIRA 15:4)
(POLIOMYELITIS) (BATHS, MOOR AND MUD)

PETELIN, L.S., VORON, M.G.

Use of an electronic stimulator (Neurostimulator) for [illegible] of movements in man. [illegible]

[illegible]

PETELIN, L.P.; [illegible]

Use of the [illegible] recording of the [illegible]

1. Kafedra [illegible] TSentral'nogo [illegible]

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141/61/004/003/007/020
E032/E382

AUTHOR: Petelin, M.I.

TITLE: On the problem of propagation of electromagnetic waves in non-equilibrium magnetically active plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, v. 4, no. 3, 455-47?

TEXT: It has been shown by a number of authors (Ref. 3 - A.V. Gaponov - IVUZ, Radiofizika 2, 450, 836, 1959. Ref. 4 - ibid - ZhETF 39, 326, 1960. Ref. 5 - Gaponov and V.V. Shelesnyakov - Report on XIII Assembly URSI London 1960; Ref. 6 - Zheleznyakov, IVUZ, Radiofizika 3, 57, 1960 Ref. 7 - ibid - 3, 180, 1960; Ref. [illegible] ibid - IVUZ, Radiofizika (in print)) that in some systems it is possible to produce such stationary distributions of charged particles that instability (due to the Vavilov-Cherenkov radiation) can take place even if the electrons have a velocity lower than that of light. The investigation of such distributions was carried out by Zheleznyakov (Refs 6-8). The same type of problem is considered in the following but it is assumed that the plane wave

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On the problem of ...

propagates at an arbitrary angle with respect to the uniform magnetic field. The wave is in the form $E_0 \exp(ikr - i\omega t)$ and this propagates in a uniform magnetically-active plasma for which the electron-distribution function is independent of the coordinates and is an arbitrary function $f_0(p_\parallel, p_\perp)$ of the longitudinal and transverse components ($p_\parallel$ and $p_\perp$) of the electron impulse. The charge of the electrons is fully compensated by the opposite charge of the ions. According to Ref. 9 (V.D. Shafranov - Sbornik Fizika plazmy i problema upravlyaemykh termoyadernykh reaktsiy, t. AN SSSR, Moscow, 1958, p. 416) the tensor of the permittivity of the plasma is in the form:

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E192/E382

On the problem of ....

$$\varepsilon_{\alpha\beta}(\omega, \underline{k}) = \varepsilon(\omega)\delta_{\alpha\beta} - i\frac{4\pi e^2 N}{\omega}\int d\underline{p}\left(1 - \frac{\underline{kv}}{\omega}\right)\frac{\partial f_o}{\partial p_\beta} + \frac{\underline{kv}_\beta}{\omega}\frac{\partial f_o}{\partial \underline{p}}\Bigg] x$$

$$x \int_0^\infty v_\alpha(\underline{p}, t)\, e^{i\omega t - i\int_0^t \underline{kv}(p, t')dt}\, dt \qquad (1)$$

where $\varepsilon(\omega)$ is the permittivity of the medium where the plasma is situated.
$\delta_{\alpha\beta}$ is the Kronecker symbol.
N is the electron concentration.
e is the electron charge.
$\underline{p}$ and v are the impulse and velocity of the particle at the instant $t = 0$.
$v(\underline{p}, t)$ is the velocity of the non-perturbed electron motion in a static field $\underline{H}_o$.

Card 3/9

On the problem of ....

In the above, it is assumed that the frequency of the plane wave is much lower than the gyro-frequency of the ions and so the ion current is negligible compared with the electron current. In the coordinate system illustrated in Fig. 1, the tensor given by Eq. (1) can be expressed in the form of:

$$\varepsilon_{\alpha\beta}(\omega,\underline{k}) = \varepsilon(\omega)\delta_{\alpha\beta} + i\frac{8\pi^2}{\omega}\int_{-\infty}^{+\infty} dp_{\parallel}\int_{0}^{\infty} dp_{\perp}\, p_{\perp}\, f_o(p_{\parallel},p_{\perp})\alpha_{\alpha\beta}(\omega,\underline{k},p_{\parallel},p_{\perp}) \qquad (1a).$$

The wave vector $\underline{k}$ and the frequency ω of the plane electromagnetic wave propagating in plasma are related by the following scattering equation (Ref. 11 - L.D. Landau, Ye.M. Lifshits - Electrodynamics of Solid Media, Moscow, 1957):

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On the problem of ....

$$\det\left[c^2(k^2\delta_{\alpha\beta} - k_\alpha k_\beta) - \omega^2\varepsilon_{\alpha\beta}(\omega, \underline{k})\right] = 0 \qquad (2)$$

where the tensor $\varepsilon_{\alpha\beta}$ is determined by the electron-distribution function $f_o(p_{\parallel}, p_{\perp})$. If the electron impulses have the δ-distribution as given by:

$$f_o = \frac{1}{2\pi p_\perp^o}\,\delta(p_{\parallel} - p_{\parallel}^o)\,\delta(p_\perp - p_\perp^o) \qquad (3)\ .$$

the tensor is in the form:

$$\varepsilon_{\alpha\beta}(\omega, \underline{k}) = \varepsilon(\omega)\delta_{\alpha\beta} + i\frac{4\pi}{\omega}\,\sigma_{o\beta}(\omega, \underline{k}, p_{\parallel}^o, p_\perp^o) \qquad (4)\ .$$

Card 5/9

On the problem of ....

For the weakly relativistic plasma such that:

$$v_{\perp} \ll c, \tag{5}$$

$$|v_{\parallel}| \ll c, \tag{6}$$

the ratio of the electron velocity to the velocity of light can be employed as the small parameter for solving Eq. (2) If it is further possible to meet the additional conditions:

$$|k_x v_{\perp}| \ll \omega_H \tag{7}$$

$$|k_z v_{\parallel}| \ll |\omega - \omega_H| \tag{8}$$

the frequency of the plane wave can be expressed in the form:

$$\omega = \Omega + \gamma \tag{9}$$

Card 6/9

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where Ω_0 is the zero-approximation solution which is obtained from Eq. (2) if it is assumed that $\nu_{\perp} = 0$ γ in Eq. (9) is a frequency correction. The method of evaluating the corrections for several special cases is indicated. In the case of a low-concentration plasma the roots of Eq. (2) can be found by the perturbation method, assuming that Ω_c/ω is a small parameter. For $N = 0$, the equation for the zero-approximation for the plane-wave frequency is in the form:

$$\left[k^2c^2 - \Omega^2\varepsilon(\Omega)\right]^2 \prod_{l=-\infty}^{\infty} (\Omega - k_z v_{\parallel} - l\omega_H)^2 = 0 \qquad (30)$$

$$(k_x \neq 0, \quad \beta_{\perp} \neq 0) .$$

This is satisfied by the frequencies:

$$\Omega = k_z v_{\parallel} + l\omega_H \qquad (l = 0 \pm 1, \pm 2, \ldots). \qquad (30a)$$

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and the frequencies which are determined by the scattering equation for the waves propagating in a medium with a permittivity $\varepsilon(\omega)$ in the absence of plasma:

$$\left[k^2c^2 - \Omega^2\varepsilon(\Omega)\right]^2 = 0 \qquad (30)$$

Again, the correction factor γ for the zero-approximation frequencies Ω are found for several cases. From the above analysis it is concluded that at a sufficiently low plasma concentration, instability due to Cherenkov radiation or the anomalous Doppler-effect radiation can occur. It is necessary however, that the electrons should have no transverse velocity component. The waves having frequencies $\Omega = k_z v_\parallel + \ell\omega_H$ where $\ell = \pm 2, \pm 3, \ldots$ can increase in amplitude only when $v_\perp \neq 0$. In this case, plasma can be regarded as a system of mono-energetic excited oscillators whose instability with

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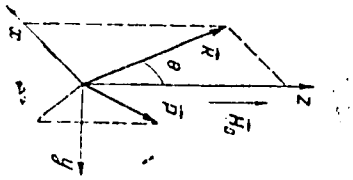
respect to the high-frequency perturbations is related to the phase and spatial bunching of the relativistic electrons in the radiation field. The author expresses his deep gratitude to A.V. Gaponov and V.V. Zheleznyakov for directing this work.

There are 1 figure and 12 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific-research Radiophysics Institute of Gor'kiy University)

SUBMITTED: October 21, 1960

Fig. 1:



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PETELIN, M.I.

Interaction of electromagnetic waves with an electron beam guided by a periodic static field. Izv. vys. ucheb. zav.; radiofiz. 5 no.4: 736-741 '62. (MIRA 16:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Electromagnetic waves) (Electron beams) (Wave guides)

42731

S/109/62/007/011/010/012
D266/D308

9.7570

AUTHORS: Petelin, M.I. and Shaposhnikov, A.A.

TITLE: On the exploitation of defocusing static fields for the amplification of microwave signals

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 11, 1962, 1969 - 1971

TEXT: The purpose of the paper is to demonstrate theoretically that the motion of electrons in defocusing electrostatic fields may be used for low noise amplification. It is assumed that the electrons are emitted from a source lying on the z axis and the planar paraxial equation ($y \approx 0$) can be used. The input and output circuits are located on the z axis and the corresponding high frequency electric fields are assumed to have only x components. The electrostatic field is taken in the form

$$E = -\nabla\varphi\ (x^2, y^2, z)$$

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which can, for example, represent a quadrupole field $\varphi(x^2-y^2, z)$ an axially symmetric field $\varphi(x^2 + y^2, z)$ or a two-dimensional field $\varphi(x^2, z)$. The electron trajectories in this field can be obtained in the form

$$x = c_1 x_1(z) + c_2 x_2(z)$$

For a periodic static field (period d along the z axis) the coefficients c_1, c_2 can be expressed with the aid of the input position X and input velocity X of the electrons as follows

$$c_1 = \frac{1}{w}\left(X\frac{dx_2}{dz} - \dot{X}\frac{x_2}{v}\right), \qquad c_2 = \frac{1}{w}\left(\dot{X}\frac{x_1}{v} - X\frac{dx_1}{dz}\right)$$

where $v = z$ - component of the electron velocity, w - Wronsky's determinant. In order to get rid of the transverse noise the components $\bar{X}_w$ and $\dot{X}_w$ (the bar denotes averaging over the cross-section) have to satisfy in the required band the relationship

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$$\frac{dx_2}{dz} \hat{X}_w - \frac{x_2}{v} \tilde{X}_w = 0$$

For low values of current this can be achieved with the aid of electrostatic lenses in the beam forming section. In the case of high currents the fast wave has to be stripped of noise first and then the above procedure can be applied.

SUBMITTED: April 12, 1962

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S/141/63/006/001/010/018
E140/E135

AUTHOR: Petelin, M.I.

TITLE: On the use of the method of the kinetic equation for the study of the interaction of electromagnetic waves with curvilinear electron beams

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.6, no.1, 1963, 104-111

TEXT: The first part of the article derives a system of integral equations for the high-frequency electron current in cartesian coordinates. The dispersion relations are then obtained by the method of the stationary functional for finite but small electron concentrations. In the second part, the method of the kinetic equation (V.D. Shafranov, Sb. fizika plazmy i problemy upravlyayemykh termoyadernykh reaktsiy, v.4, izd. AN SSSR, M., 1958, p.416) is used to examine the simplest models of a system based on continuous resonant interaction of electromagnetic waves interacting with electron streams moving in curvilinear trajectories under the action of a uniform magnetic field and

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