AUTHOR: Aleksin, A.A.

TITLE: Structural and Tectonic Analysis and Gypsum Content of the Rocks from Samples of the South East Ustyurt (Strukturno-tektonicheskiy analiz i gipsonosnost' [illegible] na primere Yugo-Vostochnogo Ustyurta)

PERIODICAL: Razvedka i Okhrana nedr, 1958, Nr 8, pp 4-8 (USSR)

ABSTRACT: The author studied the formation of gypsum layers in the Ustyurt region (situated between the Caspian and Aral seas). In such an aeration layer, under condition of an arid climate, gypsum can be considered as a typical mineral of dry zones. The longer such arid periods last, the heavier are the gypsum layers. By its composition, gypsum can be divided into two groups - syngenetic and epigenetic. The syngenetic gypsum is characterized by the lack of any traces of contemporary fauna and flora and it is associated with different sulfates and natural sodium chloride. The formations of epigenetic gypsum have various forms and often bear the impressions of shells of various kinds of mollusks. As a rule, gypsum is found in two layers: at the bottom near the ground water level and near the surface. In the west part of the Sarykamysh delta of the Amu-Dar'ya river,

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Structural and Tectonic Analysis and Gypsum Content of the Rocks from Samples of the South East Ustyurt

SOV-132-58-8-2/16

four layers containing gypsum were observed. The author finds that the two middle layers were formed when the ground water level was higher. Similar layers were found in other parts of the **Ustyurt platform** and can be traced to the south part of the **Sarykamysh depression,** which in the past had been a lake, and these layers determine the various levels of the said lake. In consequence, a study of gypsum containing layers could determine the ancient levels of different basins. The study of Tertiary rocks in the Ustyurt region shows ancient water levels of the Caspian and Aral seas and the duration of the different levels. There are 8 Soviet references.

ASSOCIATION: Kompleksnaya Yuzhnaya geologicheskaya ekspeditsiya AN SSSR. (The Composite Southern Geological Expedition of the AS of the USSR)

1. Geology--USSR 2. Rocks--Structural analysis 3. Gypsum --Determination

Card 2/2

AUTHOR: Alekain, A.A. SOV/5-33-1-15/25

TITLE: Gypsiferous Rocks in Arid Regions and Their Paleogeographic Importance Shown by the Example of Northern Turkmenia (Gipsonosnost' porod v zasushlivykh oblastyakh i ikh paleogeograficheskoye znacheniye na primere severnoy Turkmenii)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody. Otdel geologicheskiy, 1958, Vol 33, No 1, pp 159-143 (USSR)

ABSTRACT: The article deals with the process of the epigenetic accumulation of gypsum in rocks which were submitted to the action of an arid climate. The study of the gypsiferous rocks of Tertiary and Quaternary periods in Northern Turkmenia (Satyurt) permits one to suppose that, along with the occurrence of syngenetic residues of gypsum in the Tertiary deposits of Satyurt, the content of gypsum is mainly determined by the precipitation of epigenetic gypsum, indicating the ancient levels of ground waters in this region. Ancient levels of the Aral and the Caspian Seas could be determined by these gypsiferous layers. Moreover the magnitude of such layers would also indicate the duration of these sea levels. In connection with this theory, the following geo-

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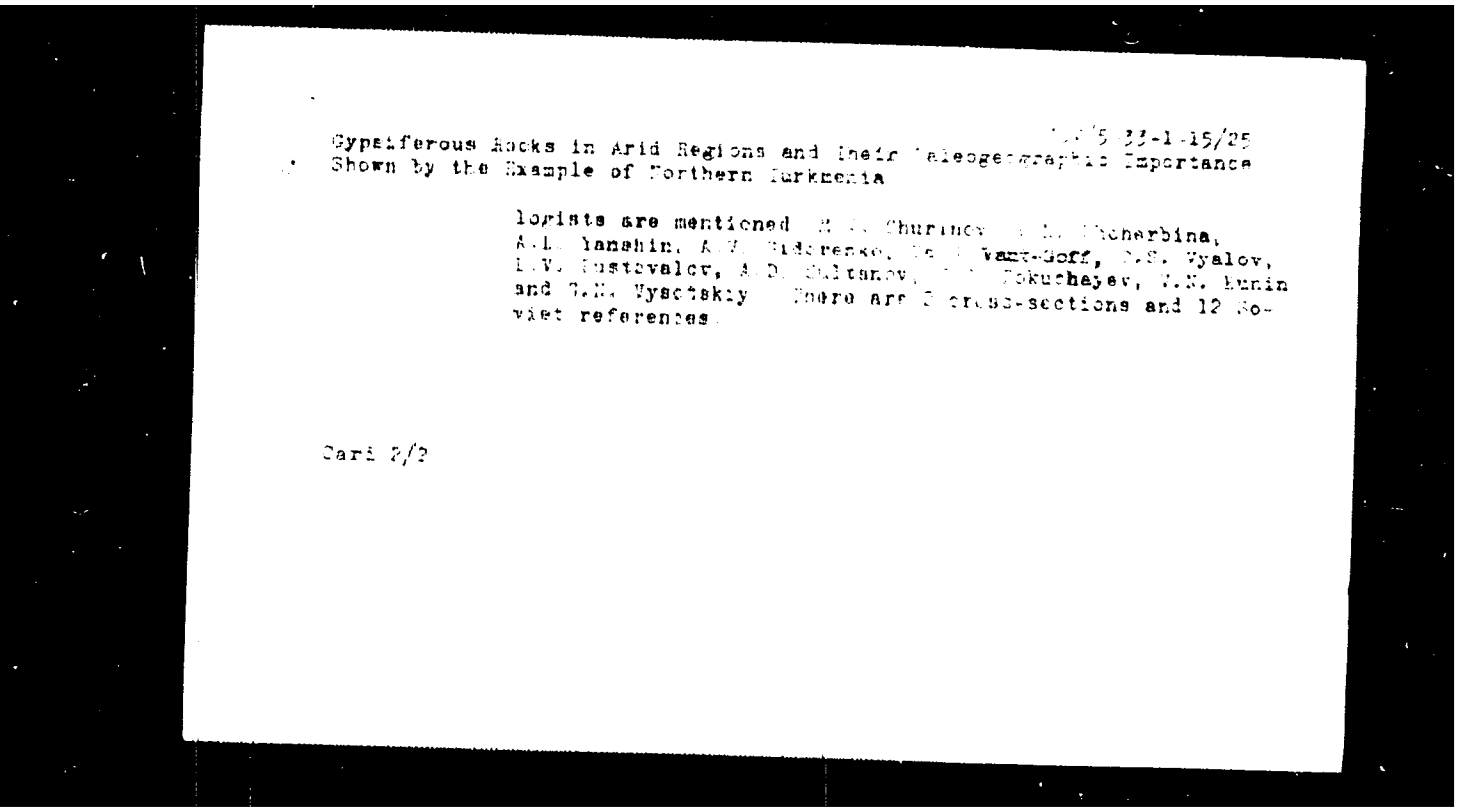

Gypsiferous Rocks in Arid Regions and Their Paleogeographic Importance Shown by the Example of Northern Turkmenia

[illegible] 33-1-15/25

lo/ists are mentioned [illegible] Churinov, [illegible] Shcherbina, A.L. Yanshin, A.V. Fedorenko, [illegible] Vant-Goff, D.S. Vyalov, L.V. Pustovalov, A.D. Saltanov, [illegible] Tokushayev, V.N. Lupin and T.N. Vysotskiy. There are 3 cross-sections and 12 Soviet references.

Card 2/2

3(4)
AUTHOR: Aleksin, A.A., Candidate of Geological and Mineralogical Sciences SOV/26-59-2-21/53

TITLE: Drinking Water in Kara-Kumy (Pit'yevaya voda v Kara-Kumakh)

PERIODICAL: Priroda, 1959, Nr 9, pp 91-93 (USSR)

ABSTRACT: The author discusses the problem of formation of sources of drinking water in deserts and semi-deserts. In the Transcaspian deserts existing water wells are found mostly on alluvial plains of the Amu-Darya river and in the lower Kara-Kum Mountains. He describes different points of view of scientists on the problem of formation of these underground waters and finds that they are usually formed where favorable conditions for the infiltration of surface water exist. The study of aerial photographs also shows that reservoirs of drinking water are directly connected with definite surface reliefs. The following scientists are mentioned in this article:

Card 1/2

Drinking Water in Kara-Kumy

SOV/26-59-2-21/53

A.F. Lebedev, V.A. Sergeyev, P.I. Koloskov, E.N. Blagoveshchenskiy and V.N. Kunin.

ASSOCIATION: Kompleksnaya yuzhnaya geologicheskaya ekspeditsiya AN SSSR (Composite Southern Geological Expedition of the AS USSR)- Moscow.

Card 2/2

3(0)

AUTHORS: Aleksin, A. A., Merklin, R. L.

SOV/20-124-2-39/71

TITLE: On the Presence of Middle Miocenic Oyster Beds in the Remnants of the South-East Ustyurt (O prisutstvii srednemiotsenovykh ustrichnikov v ostantsakh yugo-vostochnogo Ustyurta)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 380-382 (USSR)

ABSTRACT: The first mentioned author found a stratum with Crassostrea in the Tuzgur hill, about 100 km west of Tashauz (Turkmenian SSR). The authors present a general view of the Neogene sediments east of the Caspian Sea from Ustyurt to Kopetdag basing on publications (Refs 1, 2-6, 8). They state that oyster beds have been found in several places of the area mentioned. Oyster beds with Crassostrea are usually parallelized with the sediments of the Krymsko-Kavkazskaya (Crimea-Caucasus)(Ref 8), as they are deposited below the Chokrakskiye strata. Quite recently, the opinion was expressed (Ref 1), that in the Middle-Miocene there might be an older horizon than Tarkhanskiy. Its deposits are said to be maritime deposits, especially Crassostrea oyster beds. This Crassostrea horizon, however, is believed to be placed higher than the Kotsakhurskiy "Oncophora" horizon. M. F. Nosovskiy (Ref 6) also

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On the Presence of
Middle Miocenic Oyster Beds in the Remnants of the South-East Ustyurt

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suggested a Helvetian age of the Crassostrea oyster beds. In the opinion of the second author the Crassostrea and Oncophora strata may be some synchronous adjacent sediment facies of one and the same water; both were probably widely spread in the northern shore region of the Helvetian Paratethys. The authors describe sections of the oyster beds of Tuzgur with the fossils found there in three places and conclude that the strata there belong to the Konkskiye sediments. They are deposited transgressively. Here, the lower and the middle horizon are missing. The transgressive contact takes its course between the upper part of Konka (within the Veselyanskiye strata) and the Crassostrea strata. The latter thus cannot be younger than the Tarkhanskiy horizon. In the South-East Ustyurt (near Aybugir) and a little north a sand parcel with shark teeth is deposited (Refs 3, 7) on Paleogene loams. Further up follows a stratum of Chokrak shell rock. Karaganskiye sediments are missing; on the Chokrak Sartaganskiye strata of the Konkskiy horizon are deposited. Possibly the shore lines of the Chokrakskiy, Karaganskiy and Kartvel'skiy waters passed west of Tuzgur and also west of Aybugir the Chokrak-waters excepted. Sartaganskiye strata of Tuzgur were reassorted without any doubt, since

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On the Presence of
.Middle Miocenic Oyster Beds in the Remnants of the South-East Ustyurt SOV/20-124-2-39/71

mollusks from waters of different salinity were occurring together. It can be stated that in the first half of the Middle-Miocene the open sea extended to the lower course of the Amu-Dar'ya. The salt content may have been normal and the annual temperature high. A big stream provided nutritive detritus and terrigenous sand as well as calcium carbonate and caused a reduction of the salt content in the shore waters (Ref 9-10). There are 10 references, 7 of which are Soviet.

ASSOCIATION: Paleontologicheskiy institut Akademii nauk SSSR
(Paleontological Institute of the Academy of Sciences, USSR)

PRESENTED: July 18, 1958, by A. L. Yanshin, Academicia.

SUBMITTED: July 18, 1958

Card 3/3

ALEKSIN, A.A.

Importance of the buried geological structure in improving the alluvial plains of Central Asia as exemplified by the lower Amu Darya Valley. Pochvovedenie no.2:32-39 F '60. (MIRA 15:7)

1. Kompleksnaya yuzhnaya geologicheskaya ekspeditsiya AN SSSR.
(Amu Darya Valley—Drainage)

ALEKSIN, A.A.

Conditions in an aeration zone and underground waters in arid regions. Sov. geol. 3 no.7:95-102 Jl '60. (MIRA 13:8)

1. Leningradskiy gornyy institut.
(Aral Sea region--Hydrology)

ALEKSIN, A.A.

Geological features of alluvial deposits in connection with the problem of the structural plan of the underlying bedrock of the lower Amu Darya. Trudy VSEGEI 42:249-255 '60. (MIRA 14:9)
(Amu Darya Valley--Alluvium)

ALEKSIN, A.A.; LEONT'YEV, O.K.; POTEYEVA, N.I.

Some results of structural and geomorphological studies in the Volga Delta in connection with prospects for finding oil and gas. Vop.geog. no.52:35-44 '61. (MIRA 14:6)
(Volga Delta--Physical geography)

ALEKSIN, A.A.

Condensation and the movement of moisture in soils under the conditions of dry climates. Izv.vys.ucheb.zav.; geol.i razv. 4 no.2:95-104 F '61. (MIRA 14:6)

1. Leningradskiy gornyy institut.
(Soils moisture) (Soils and climate)

ALENBIN, A.A.

Find of the water fern in the southern Ural region and its stratigraphic distribution. Biul.MOIP.Otd.geol. 37 no.2:146-149 Mr-Ap '62. (MIRA 15:7)
(Ural Mountain region--Ferns, Fossil)

FILATOV, K.V.; ALEKSIN, A.A.

Basic methods of regional hydrogeological investigations in connection with oil and gas prospecting. Geol.nefti i gaza 6 no.8:29-30 Ag '62. (MIRA 15:9)

1. Nauchno-issledovatel'skaya laboratoriya geologicheskikh kriteriyev otsenki perspektiv neftegazonosnosti.
(Water, Underground) (Petroleum geology)

ALEKSIN, A.A.

Hydrogeology of abyssal zones in large tectonic troughs. Biul.MOIP. Otd.geol.38 no.2:156-157 Mr-Ap '63. (MIRA 16:5)

(Caspian Sea region--Water, Underground)

ALEKSIN, A.A.

Oil and gas potentials in connection with the formation of underground waters in the outlying zones of the North-Caspian Basin. Sov. geol. 6 no.9:141-143 S '63.
(MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza.

AL'EKSIN, A.A.; CHEKHOVSKIKH, M.M.

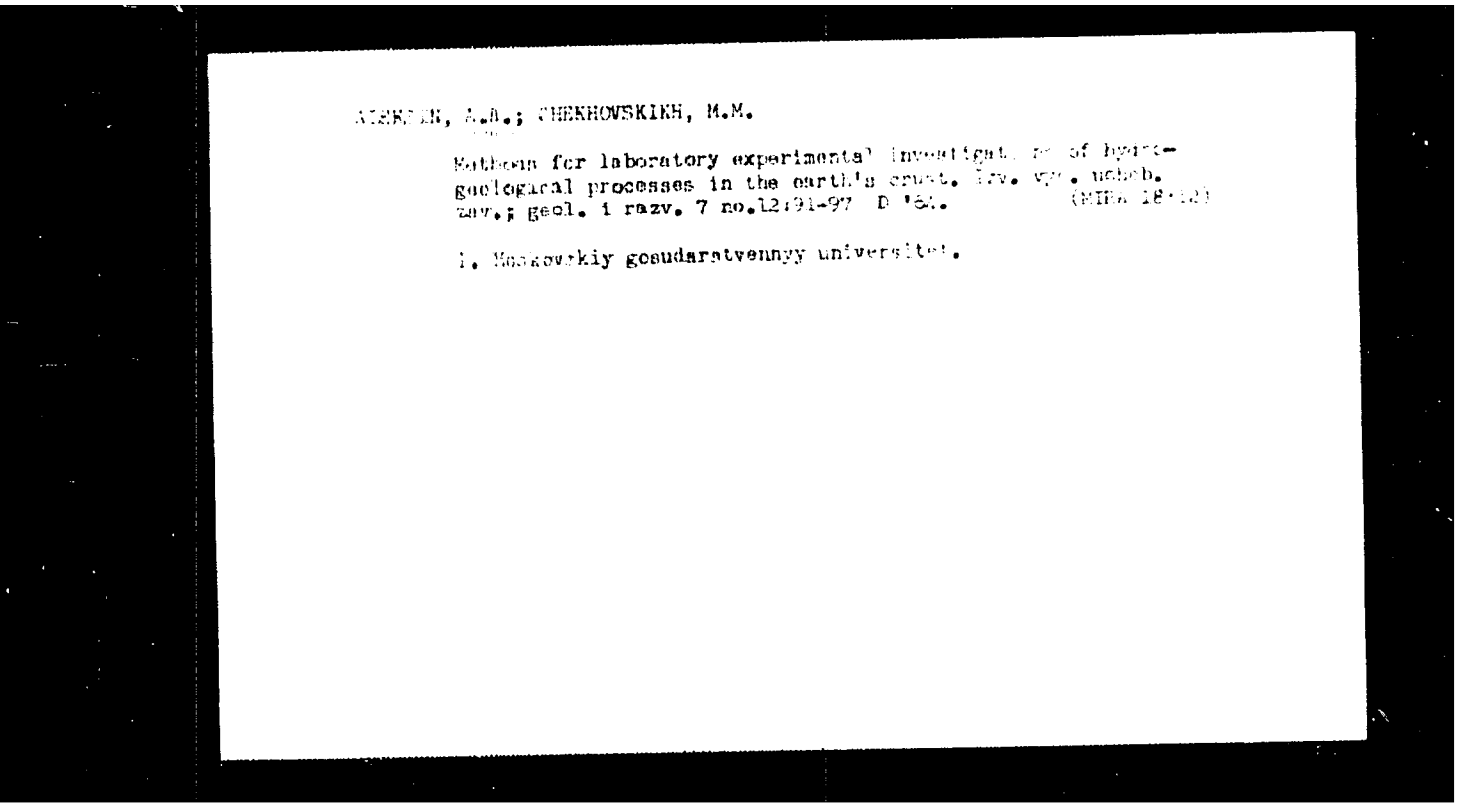
Modeling the hydrologic processes taking place in the depths of the earth's crust. Vest. Mosk. un. Ser. 4: Geol. 19 no.1:3-7 Ja-F '64. (MIRA 18:2)

1. Kafedra gruntovedeniya i inzhenernoy geologii Moskovskogo universiteta.

ALEKSIN, A.A.; IL'INSKAYA, G.G.

Using the electron microscope to study solutions squeezed from rocks under pressure. Vest.Mosk.un.Ser.4: Geol. 19 no.5:93-96 S-O '64. (MIRA 17:12)

1. Kafedra gruntovedeniya i inzhenernoy geologii Moskovskogo universiteta.



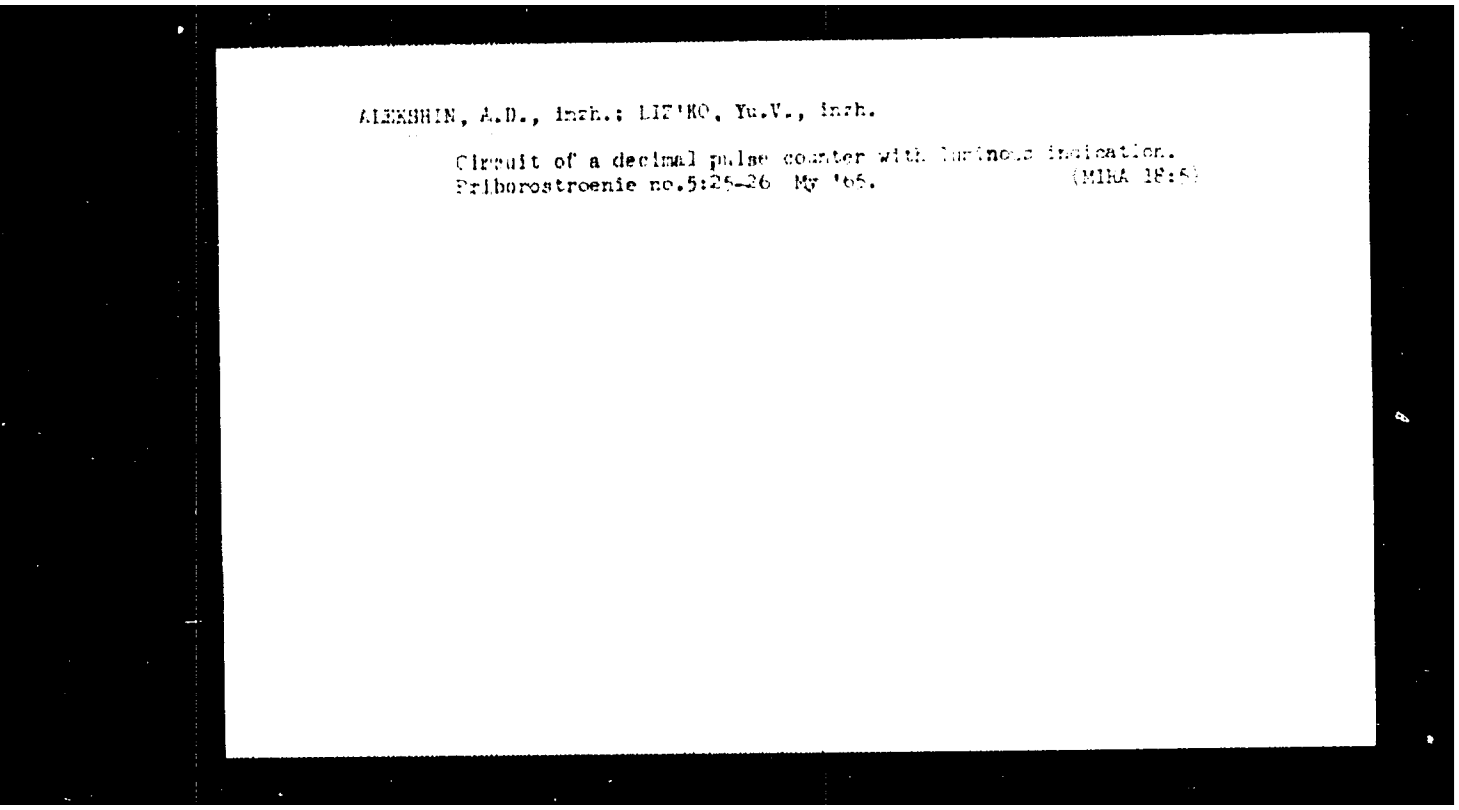
ZERKAL, A.A.; CHEKHOVSKIKH, M.M.

Methods for laboratory experimental investigation of hydro-geological processes in the earth's crust. Izv. vys. ucheb. zav.; geol. i razv. 7 no.12:91-97 D '64. (MIRA 18:12)

1. Moskovskiy gosudarstvennyy universitet.

ALEKSIN, A.A.; SIMONENKO, V.F.

Specific gravity of formation waters as an indicator of hydrodynamic conditions in Paleozoic sediments in the southeastern part of the Russian Platform. Trudy VNIIGAZ no. 25:95-102 '65. (MIRA 18:12)



ALEKSHIN, A.D., inzh.; LIT'KO, Yu.V., inzh.

Circuit of a decimal pulse counter with luminous indication.
Priborostroenie no.5:25-26 My '65. (MIRA 18:5)

MIKHALKOV, Sergey Vladimirovich (1913-); ALEKSIN, Anatoliy Georgiyevich

[We met in the Arctic] My vstretilis' v Zapoliar'e. Moskva, Molodnaia gvardiia, 1960. 53 p. (MIRA 14:8)
(Siberia--Description and travel)

BELYAYEVSKIY, N.A.; ALEKSIN, A.G.

Fifth session of the Working Group of Senior Geologists and the fifth session of the Subcommittee on the Development of Mineral Resources of the Economic Commission for Asia and the Far East of the United Nations. Sov. geol. 6 no.11: 157-161 N '63. (MIRA 17:1)

ORIGORYAN, Grigoriy Markovich, doktor tekhnicheskikh nauk; ALEKSIN, Aleksandr Georgiyevich, inzhener; ZAKS, Saveliy L'vovich, kandidat tekhnicheskikh nauk; KUZIN, Mikhail Ivanovich, inzhener; POLOZKOV, Vladimir Tikhonovich, kandidat tekhnicheskikh nauk; SUKHANOV, Vasiliy Pavlovich, inzhener; SULTANOV, D.K., inzhener; STREL'CHUK, Nikolay Antonovich, inzhener; CHERNYAK, Il'ya L'vovich, inzhener; KUSHELEV, V.P., retsenzent; ROYZEN, I.S., otvetstvennyy redaktor; ZAMARAYEVA, K.M., vedushchiy redaktor; KOVALEVA, A.A., vedushchiy redaktor; SAVINA, Z.A., vedushchiy redaktor; TROFIMOV, A.V., tekhnicheskiy redaktor

[Safety engineering and fire prevention in the petroleum industry] Tekhnika bezopasnosti i protivopozharnaia tekhnika v neftianoi promyshlennosti. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1956. 508 p. (MLRA 10:1)
(Petroleum industry--Safety measures)
(Fire prevention)

15-57-10-14463

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 10, p 182 (USSR)

AUTHOR: Aleksin, A. G.

TITLE: Types of Oil and Gas Accumulations in the Eastern Ciscaucasia (Typy skopleniy nefti i gaza Vostochnogo Predkavkaz'ya)

PERIODICAL: Novosti neft. tekhniki. Geologiya, 1956, Nr 2, pp 26-31

ABSTRACT: The author associates the systematic distribution of oil and gas accumulations in the eastern Ciscaucasia with the middle Caspian oil basin, the center of which is in the central basin of the Caspian Sea. All the separate oil and gas zones and the conjectured oil and gas zones of the eastern Ciscaucasia are shown in a figure. In addition to the enumerated zones, oil and gas may be found on the northern border of the downwarp, associated with the regional wedging and unconformable overlap of Miocene, Paleogene, and Mesozoic rocks. The

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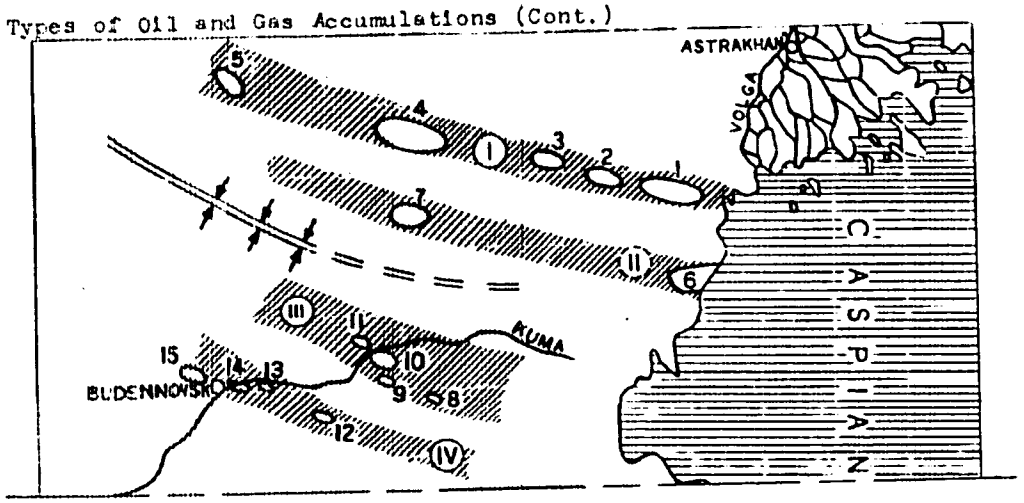
Types of Oil and Gas Accumulations (Cont.)

majority of deposits in the eastern Ciscaucasia are of the folded-region type. Exceptions are the Ozek-Suat, Achikulak, and Promyslovoye deposits, located on the northern border of the basin. These deposits are of the platform-slope type on the fore-mountain downwarp. The individual deposits in the eastern Ciscaucasia are most commonly found confined to single formations between impermeable layers and are concentrated in anticlines or other traps (commonly in fault-sealed traps). The chief supply of oil comes from wells in anticlinal traps. Transitional varieties of traps are also encountered; these are tectonic and, in part, lithologic. The formation of deposits of the transitional group is associated with faulting on the one hand and lithologic variations within the productive bed on the other. Deposits in true stratigraphic traps of one kind or another are quite infrequent.

15-57-10-14463

Types of Oil and Gas Accumulations (Cont.)



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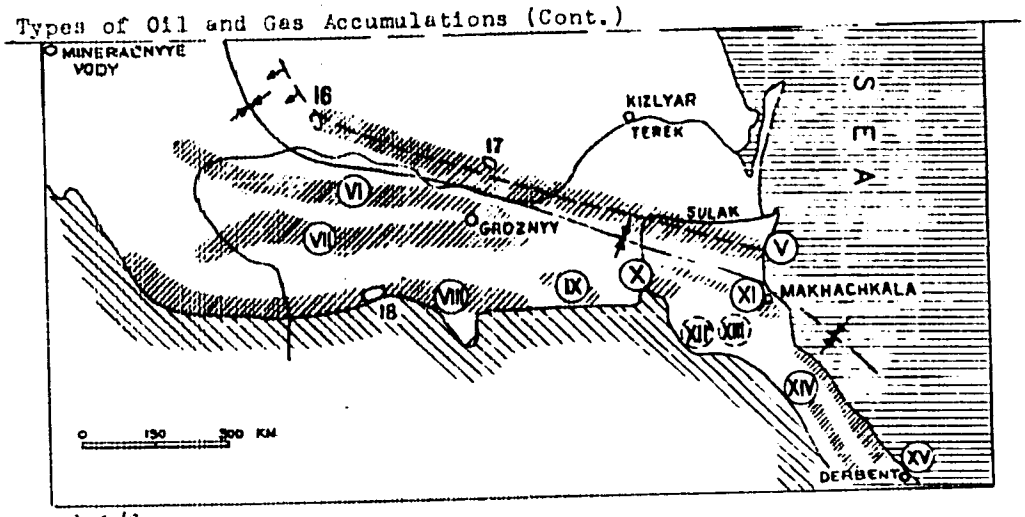
15-57-10-14463

Types of Oil and Gas Accumulations (Cont.)



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15-57-10-14463

Types of Oil and Gas Accumulations (Cont.)

Map showing the oil and gas zones of the eastern fore-Caucasus a) axis of the fore-mountain trough of the Caucasus structure; b) axis of the Manych... downwarp; c) the platform threshold of the fore-mountain trough; d) surface outcrops of Mesozoic rocks on the north slope of the Caucasus; e) oil and gas zones: I--Promyslovo-Remontnenskaya, III--Prikumsko-Kugul'tinskaya, IV--Achikulak-Blagodarnenskaya, V--platform threshold, VI--Terek, VII--Sunzhenskaya, VIII--Chernogorskaya, Benoyskaya, X--Khadum, XI--Narat-Tyubinskaya homocline, XIV--western south Dagestan, XV--eastern south Dagestan; f) conjectured oil and gas zones: II--Kaspiysko-Manychskaya, XII--Kukurtauskaya, XIII--El'damskaya; g) anticlinal uplifts: 1--Promyslovskoye 2--Olenichevo, 3--Tsubukskoye, 4--Peschanoye, 3 und 5, Stepnoyskoye, 6--Kaspiyskoye, 7--Achinerskoye, 8--Russkiy khutor (Russian farm), 9--Ozek-Suat, 10--Zimnyaya Stavka, 11--Velichayevskoye,

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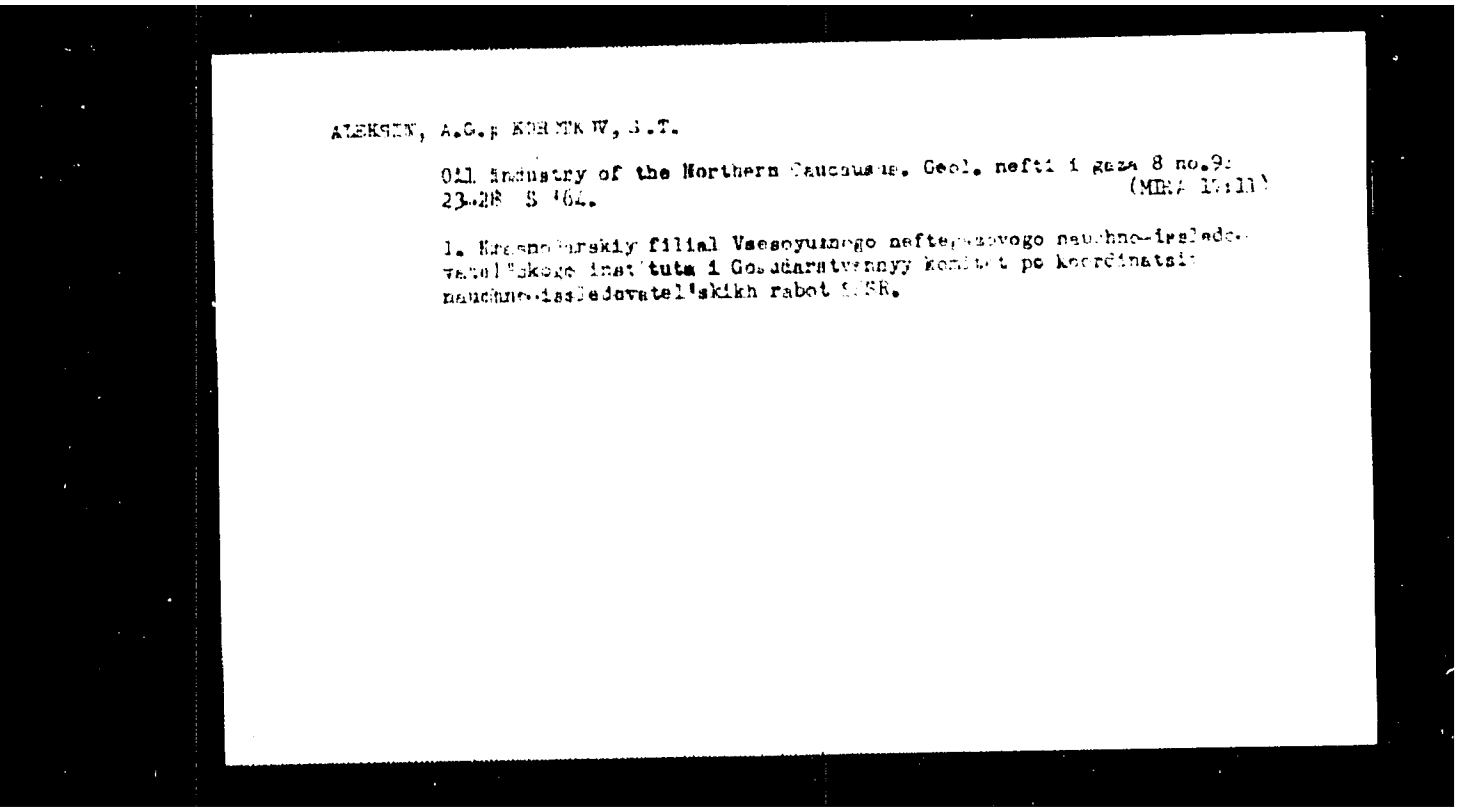
15-57-10-14463

Types of Oil and Gas Accumulations (Cont.)

12--Achikulak, 13--Pravokumskoye, 14--Praskoveyskoye, 15--Budennovsk, 16--Mozdok structural ledge, 17--Chervlennaya, 18--Datykhskoye

N. A. Yeremenko

Card 6/6



ALEKSIN, A.G.; KORNILOV, S.T.

Oil industry of the Northern Caucasus. Geol. nefti i gaza 8 no.9:
23-28 S '64. (MIRA 17:11)

1. Krasnodarskiy filial Vsesoyuznogo neftegazovogo nauchno-issledovatel'skogo instituta i Gosudarstvennyy komitet po koordinatsii nauchno-issledovatel'skikh rabot SSSR.

ALEKSIN, A.G.

Definition of terms used for accumulations of petroleum and gas.
Sov. geol. no.57:48-57 '57. (MIRA 10:8)
(Petroleum geology--Terminology)

ALEKSIN, A.G.; TSATUROV, A.I.

Basic results of drilling key wells in the Terek-Kuma plain. (MIRA 11:6)
Trudy VNIGRI no.111:232-253 '57.
(Terek Valley--Boring) (Kuma Valley--Boring)

11(2,4) SOV/9-59-4-4/11

AUTHOR: Aleksin, A.G.

TITLE: A Principal Set-Up of Exploration and Prospecting Methods for Oil and Gas (O printsipial'noy skheme metodiki poiskov i razvedki skopleniy nefti i gaza)

PERIODICAL: Geologiya nefti i gaza, 1959, Nr 4, pp 24-31 (USSR)

ABSTRACT: An analysis of geological prospecting carried out in different regions of the Soviet Union points to the lack of a clearly established method. The author suggests a method based on the continuous investigation of gas and oil accumulations, which are categorized as follows: oil-and gas-bearing basins; zones of oil and gas accumulations; fields; beds. The exploration of new areas for the purpose of opening oil and gas deposits is divided into four operation stages, i.e. 1) Determining oil and gas basin possibilities; 2) investigation of basic structural elements; 3) preparation for deep drilling and evaluation of gas and oil bearing properties; 4) investigation of the bed and preparation for exploitation. Coordination of scientific research and practical work is necessary. Scientific conclusions made on the basis of material obtained by preceding exploration

Card 1/2

A Principal Set-Up of Exploration and Prospecting Methods for Oil and Gas

are to be used for planning of the subsequent stage of operations. Scientific data are to be recorded in geological documents in the form of maps.
There are 3 Soviet references and 1 table.

ASSOCIATION: GNTK SSSR

ALEKSIN, A.G.

Increasing the efficiency of oil and gas prospecting. Neft. khoz. 37 no.3:8-14 Mr '59. (MIRA 12:5)
(Petroleum geology)
(Gas, Natural--Geology)

YEROFEYEV, N.S.; KOZLOV, A.L.; SAVCHENKO, V.P.; YELIN, N.D.; ALEKSIN, A.G.; MAKSIMOV, S.P.; DAKHNOV, V.N.; SHMELEV, A.A.; KOZHUKHOV, V.A.; ANDRIANOV, N.I.; KOPOSOV, I.A.; YENIKEYEV, P.N.; KALANTAROV, A.P., vedushchiy red.; TROFIMOV, A.V., tekhn.red.

[Efficient method of prospecting for gas fields; studies of the temporary commission of the State Scientific and Technical Committee of the U.S.S.R.] Ratsional'naia metodika razvedki gazovykh mestorozhdenii; materialy vremennoi komissii GNTK SSSR. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1960. 125 p. (MIRA 13:3)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy nauchno-tekhnicheskiy komitet.
(Gas, Natural) (Prospecting)

ALEKSIN, A.

Concerning the book "Gas resources of the U.S.S.R." by IU.I. Bokserman and others. Reviewed by A. Aleksin. Neft. khoz. 38 no.4:69-70 Ap '60. (MIRA 14:8)

(Gas, Natural) (Bokserman, IU.I.) (Borisov, A.A.) (Brod, I.O.) (Vasil'ev, V.G.)

ANDRIANOV, Nikolay Ivanovich; BUBNOV, Yevgeniy Sergeyevich; GNEVUSHEV, Mikhail Andreyevich; IOANNESYAN, Rollen Arsen'yevich; LITVINOV, Nikolay Nikolayevich; MEYERSON, Yevgeniy Grigor'yevich; MINDLIN, Yakov Borisovich; ROMANTSEV, Yakov Antonovich; ALEKSIN, A.G., red.; KARPUKOVA, S.M., vedushchiy red.; POLOSINA, A.S., tekhn. red.

[Diamond drilling] Almaznoe burenie. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1961. 170 p. (MIRA 14:9)
(Boring) (Diamonds, Industrial)

ALEKSIN, A.G., kand. nauk (U.S.S.R.)

The petroleum and gas industry of North Caucasia in a new development stage. Nafta 18 no.4:107-109 Ap '62.

BROD, I.O.; ALEKSIN, A.G.; BELOV, K.A.; KUPRIN, P.N.; NESMEYANOV, D.V.; POL'STER, L.A.; TSATUROV, A.I.

Middle Caspian oil- and gas-bearing basin; appearance of regularities in the spread of oil and gas accumulations in central and eastern Ciscaucasia and in the Kara-Bogaz region. Zakonom. razm. polezn. iskop. 5:483-535 '62. (MIRA 15:12)

1. Kompleksnaya neftegazovaya geologicheskaya ekspeditsiya AN SSSR, Moskovskiy gosudarstvennyy universitet, Komitet po koordinatsii nauchno-issledovatel'skikh rabot pri Sovete Ministrov SSR i Stavropol'skiy i Checheno-Ingushskiy sovety narodnogo khozyaystva.
(Caspian Sea region—Petroleum geology)
(Caspian Sea region—Gas, Natural—Geology)

1. ALEKSIN, P. Ye.

2. USSR (600)

4. Beets and Beet Sugar

7. Overall mechanization of operations involved in sugarbeet cultivation by use of a three-row beet combine. Dost. sel'khoz no. 5, 1952

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

ALEKSIN, Faddey Yefimovich; REPCHANSKIY, Aleksandr Aleksandrovich; POLYAKOVA, V., red.; KUZNETSOVA, A., tekhn. red.

[Mechanized harvesting of sugar beets for feed] Mekhanizatsiia uborki sakharnoi svekly na kormovye tseli. Moskva, Mosk. rabochii, 1961. 61 p. (MIRA 15:2)
(Sugar beets—Harvesting)

MEL'NIKOV, G. A., ALMEST, F. Ya.

Further improvement of the three-row beet combine SKT-3. Bost. sel'khoz. no. 9, 1952

SO: MIRA. November 1952

ALEKSIN, G.A.; GORLOV, S.I.; D'YAKONOV, A.I.

Determining the time of the formation of gas pools. Geol. nefti i gaza 7 no.3:43-48 Mr '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut, Moskva, i Krasnodarskiy filial Vsesoyuznogo neftegazovogo nauchno-issledovatel'skogo instituta.
(Maikop region—Gas, Natural—Geology)

GORLOV, S.I.; D'YAKONOV, A.I.; ALEKSIN, G.A.

New oil and gas bearing region in the eastern Kuban. Neftegaz. geol. i geofiz. no.6:35-39 '64. (MIRA 17:8)

1. Krasnodarskiy filial Vsesoyuznogo neftegazovogo nauchno-issledovatel'skogo instituta i Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut, Moskva.

SECUJAC, Branko; MATIC, Marija; ALEKSIN, Jedica; POPADIC, Slavko

Staphylococcal pneumonias in children. Srpski arh. celok. lek. 90 no.3:275-282 Mr '62.

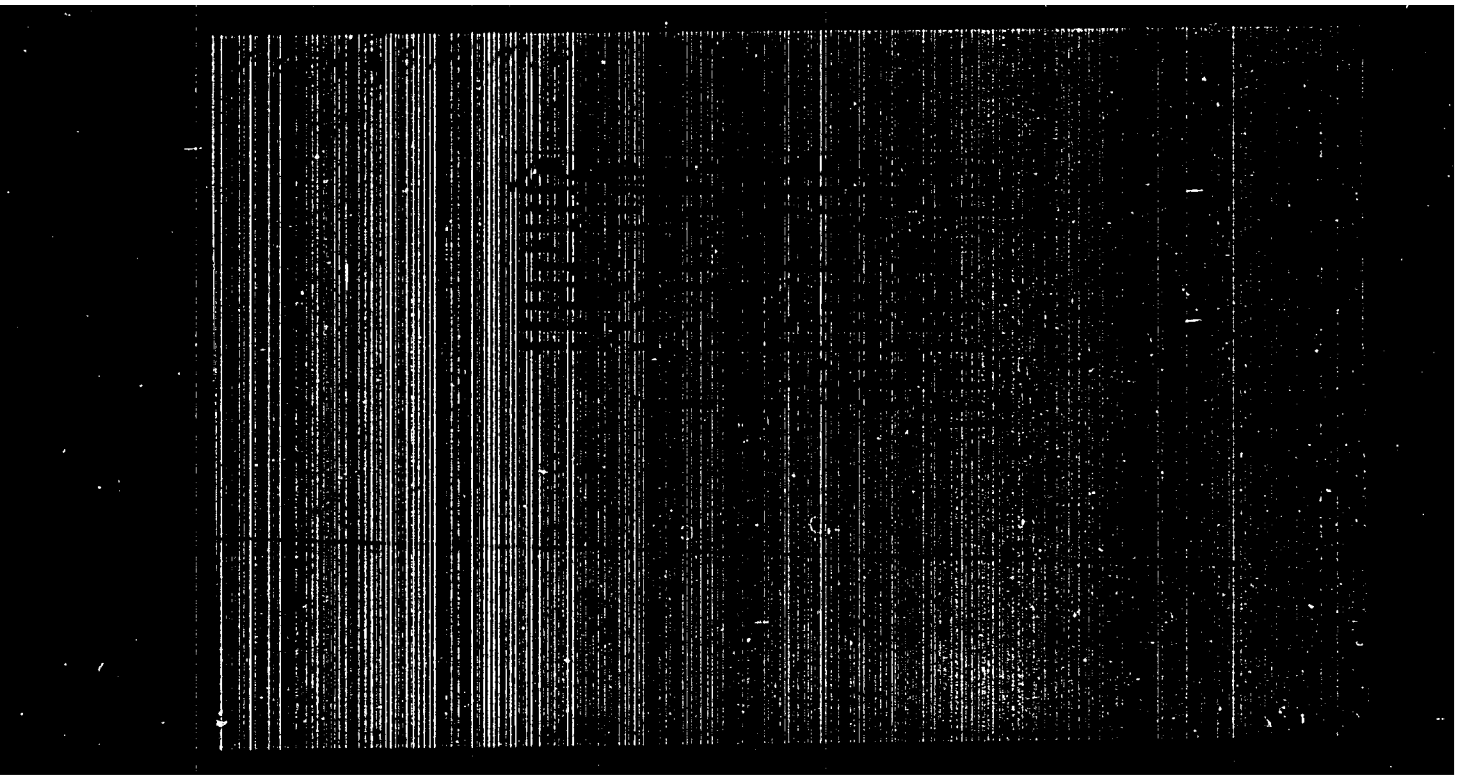
1. Decje odeljenje Opste bolnice "Dorde Joanovic" u Zrenjaninu Nacelnik: dr. Branko Secujac.
(PNEUMONIA in inf & child)
(STAPHYLOCOCCAL INFECTIONS in inf & child)

S

ALEKSIN, L.M.

Catalase and peroxidase activity of Mycobacteria. Mikrobiologiia 34 no.1:61-64 Ja-F '65. (MIRA 18:7)

1. I Leningradskiy meditsinskiy institut im. I.P. Pavlova.



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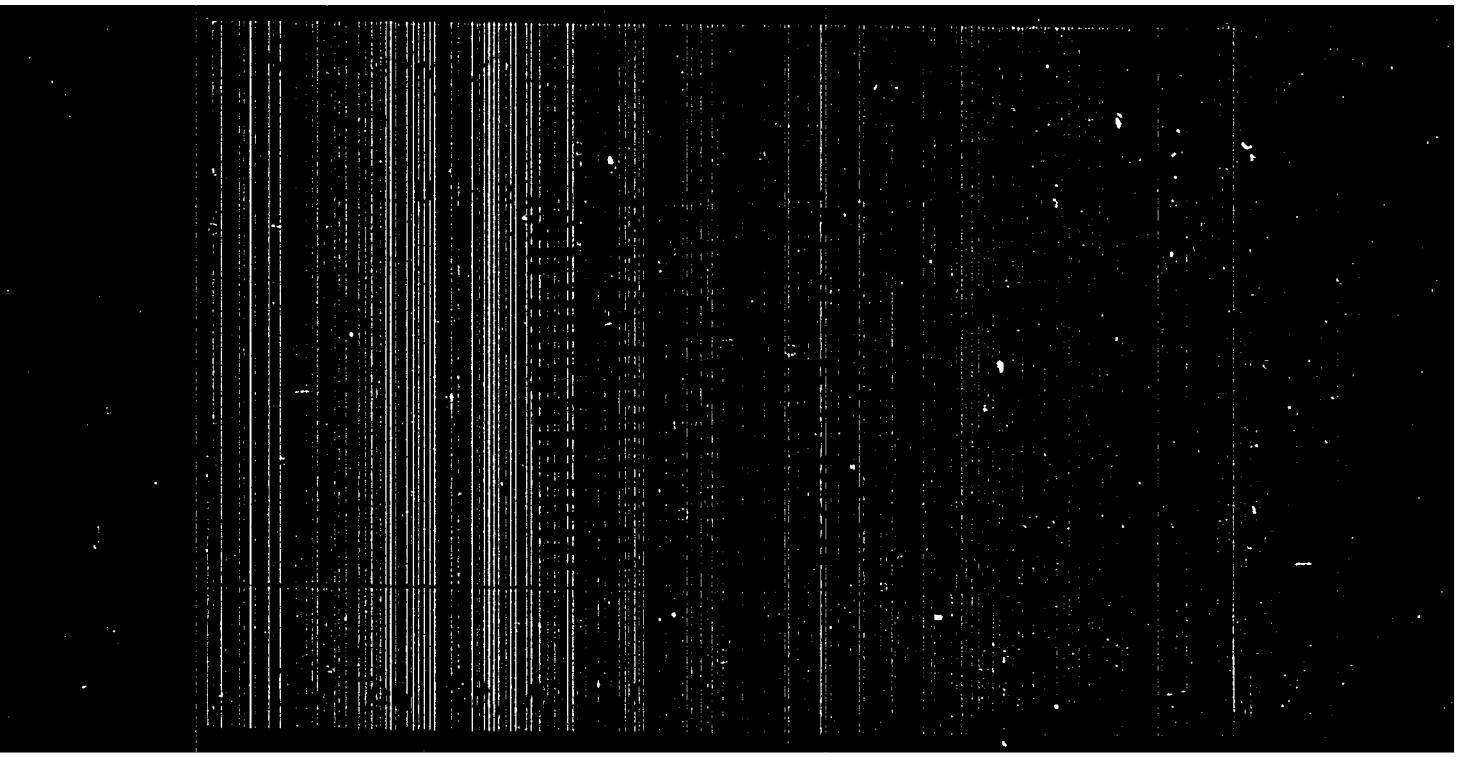

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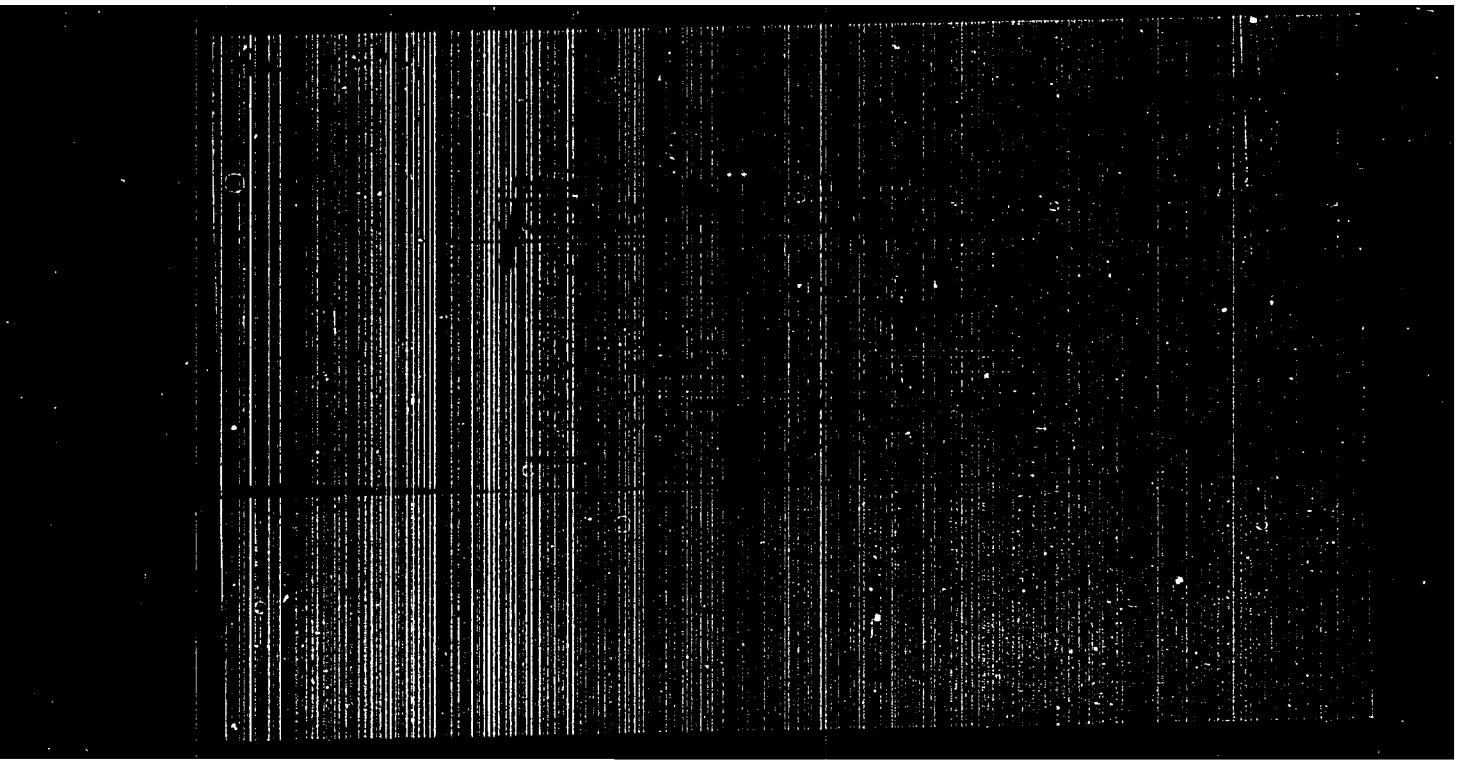

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Aleksin, V.F.

56-4-33/54

AUTHORS: Aleksin, V.F., Volkov, D.V.,

TITLE: Radiation Correction to the Scattering of Particles in the External Magnetic Field and to the Compton Effect in the Scalar Quantum Electrodynamics (Radiatsionnyye popravki k rasseyaniyu chastitsy vo vneshnem pole i k Kompton - effektu v skalyarnoy kvantovoy elektrodinamike) (Letter to the Editor)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 4, pp. 1044 - 1045 (USSR)

ABSTRACT: The expression for the one-photon mass operator of a scalar particle is used to calculate as well the radiation correction to the scattering of scalar particles in the external magnetic field as to calculate the Compton effect. 1.) The differential scattering cross section in Born's approximation has the form:

$$d\sigma/d\Omega = (d\sigma/d\Omega)_0 + (d\sigma/d\Omega)_{\Delta M} + (d\sigma/d\Omega)_{A'},$$

where $d\sigma/d\Omega)_0$ is the differential scattering cross section without the taking into account of the radiation correction. ΔM, A' are the radiation corrections which belong to the

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56-4-33/54

Radiation Correction to the Scattering of Particles in the External Magnetic Field and tot the Compton Effect in the Scalar Quantum Electrodynamics

mass operator and the polarization of the vacuum respectively. The corresponding expressions for these two corrections are derived. 2.) For the Compton effect $d\sigma/d\Omega$ has the form:

$$d\sigma/d\Omega = (\alpha/m)^2 \ (q_{20}/q_{10})^2 \ U,$$ where

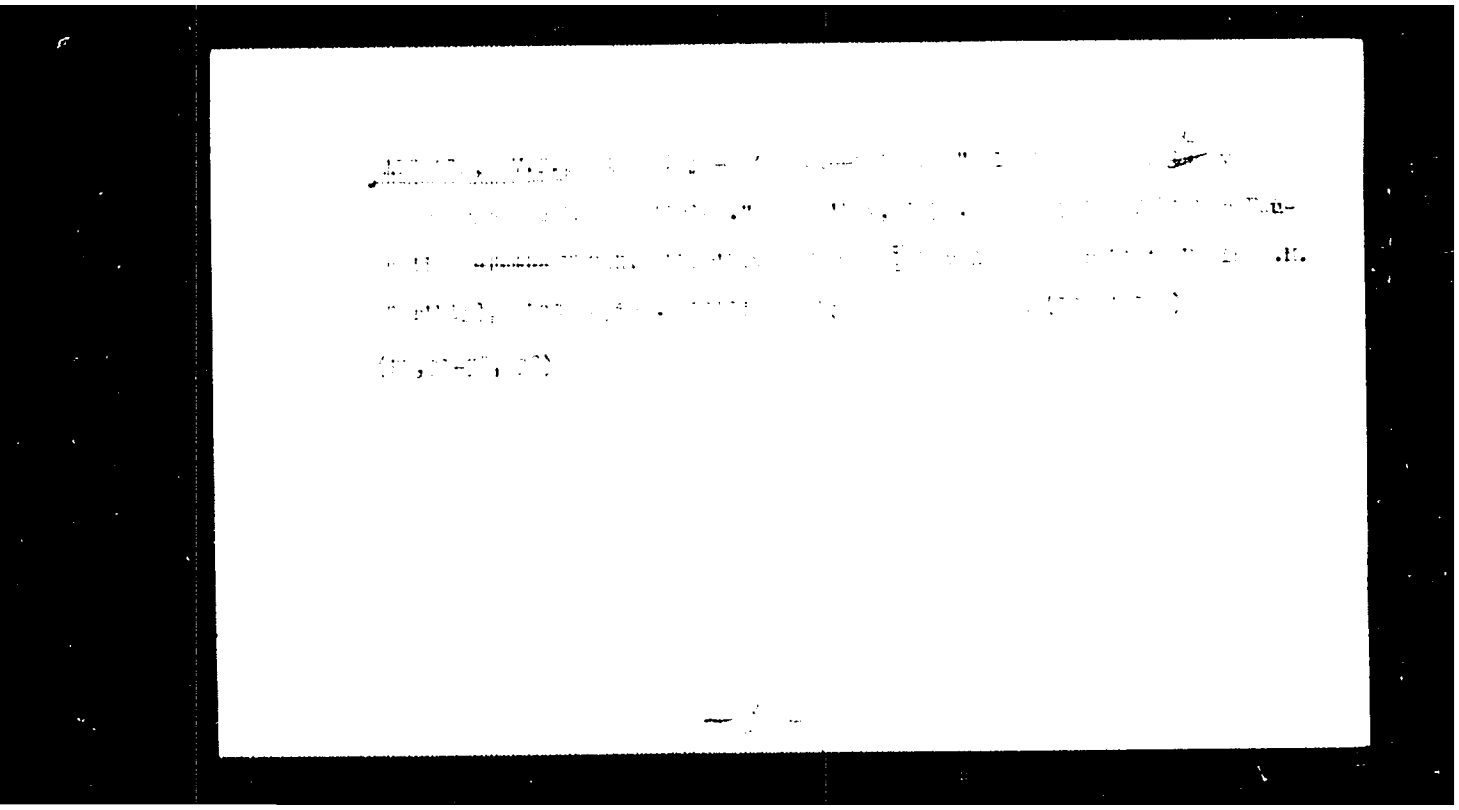
d/Ω - is the solid angle element in the direction of photon scattering and q_{10}/q_{20} - the energy of the inciding and the scattered photons. For U the corresponding equations are derived. There is 1 Slavic reference.

ASSOCIATION: Physico-Technical Institute AN Ukrainian SSR (Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR)

SUBMITTED: May 19, 1957

AVAILABLE: Library of Congress

Card 2/2



ALEKSIN, V.F.

[Magnetic field of a linear current inside an ideally conducting cylinder with a longitudinal slit] Magnitnoe pole lineinogo toka vnutri idealʹno provodiashchego tsilindra s prodolʹnym razrezom. Kharʹkov, fiziko-tekhn. in-t AN USSR, 1960. 381-390 p. (MIRA 17:2)

ALEKSIN, V.F.; YASHIN, V.I.

[Study of plasma stability with the aid of the generalized energy principle] Ob issledovanii ustoichivosti plazmy s pomoshch'iu obobshchennogo energeticheskogo printsipa. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 343-352 p.
(MIRA 17:2)

ALEKSIN, V.F.

[Stability of a "laminated" plasma filament] Ob ustoichivosti "rassloennogo" plazmennogo shnura. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 353-368 p. (MIRA 17:3)

83775

S/056/60/039/003/035/045
B006/B063

24,1410

AUTHORS: Aleksin, V. F., Yashin, V. I.

TITLE: A Study of the Stability of a Plasma With the Aid of a Generalized Energy Principle

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 3(9), pp. 822-826

TEXT: If collisions are infrequent, the generalized energy principle proposed by M. D. Kruskal and S. B. Oberman (Ref. 1) can be applied to study the stability of a plasma; this is why the magnetohydrodynamic approximation is not valid any longer in this case. According to this energy principle, the only necessary and sufficient condition for the plasma stability to be conserved is that $\delta W \geq 0$ for energy variations occurring in the plasma as a result of possible disturbances. So far, the application of the generalized energy principle has been restricted to the demonstration of the comparison theorems regardless of a charge neutrality of the plasma; according to those theorems, a variation in energy due to disturbances is bounded at the lower limit by an energy variation in

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magnetohydrodynamic approximation, and at the upper limit by the approximation of Chew, Goldberger, and Low. In the present paper, the authors employ this principle and, in addition, consider charge neutrality to formulate new comparison theorems for a plasma in a magnetic field, which does not change along the lines of force. The stability conditions are found for a plasma with an arbitrary anisotropic velocity distribution of the particles and situated in a cylindrically symmetric magnetic field. The stability of a plasma in a longitudinal, cylindrical-symmetric magnetic field ($H_r=0$, $H_\varphi=0$, $H=H_z(r)$) is first investigated, and, from the minimization, δW, the sufficient conditions for the plasma stability are obtained: $\eta=H^2/4\pi+p_\perp-p_\parallel\geq 0$; $\gamma=H^2/4\pi+2p_\perp+2q\geq 0$. Then, the authors study the stability of a plasma in an azimuthal magnetic field ($H_r=H_z=0$, $H=H_\varphi(r)$). The relation $H^2/4\pi+p_\perp+2p_\parallel+r\frac{d}{dr}(p_\perp+p_\parallel)-\frac{(H^2/4\pi-p_\parallel)^2}{H^2/4\pi+2p_\perp}\geq 0$ is obtained for the necessary and sufficient condition for the plasma stability with $m=0$ (m - particle mass). For $m\neq 0$, besides

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A Study of the Stability of a Plasma With the Aid of a Generalized Energy Principle

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the conditions $\eta \geq 0$ and $\gamma \geq 0$, also the condition $(m^2-2)\eta - r d\eta/dr - (m^2\eta + k^2r^2\gamma)^{-2}\{\eta\delta[m^2(k^2r^2-m^2)\eta + k^2(m^2+k^2r^2)r^2\gamma] + m^2r[k^2r^2\delta^2 d\eta/dr - (k^2r^2+m^2)\eta^2 d\delta/dr]\} \geq 0$ is given; ($\delta = \eta - \gamma$). The conditions for an isotropic plasma, for both $m = 0$ and $m \neq 0$, are taken from a paper by B. B. Kadomtsev. The authors thank A. I. Akhiyezer, K. N. Stepanov, and A. B. Kitsenko for their advice and discussions. A. A. Vedenov and R. Z. Sagdeyev are mentioned. There are 4 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: April 23, 1960

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B111/B112

AUTHORS: Pakhomov, V. I., Aleksin, V. F., and Stepanov, K. N.

TITLE: Radiation of an electron moving on helical orbits in a magnetically active plasma. I.

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 10, 1961, 1170 - 1184

TEXT: The determination of the radiation intensity of an electron moving in a magnetic field is significant for thermonuclear reactions, radiophysical and astrophysical problems. Several authors have worked in this field: A. G. Sitenko, A. A. Kolomenskiy (Ref. 1: ZhETF, 30, 511, 1956), A. A. Kolomenskiy (Ref. 2: DAN SSSR, 106, 982, 1956), V. Ya. Eydman (Ref. 5: ZhETF, 34, 131, 1958), V. L. Ginzburg, V. V. Zheleznyakov (Ref. 7: Izv. vuzov, Radiofizika, 1, no. 2, 59, 1959), and B. A. Trubnikov, A. Yu. Bazhanova (Ref. 8: Sb. "Fizika plazmy i problema upravlyayemykh termoyadernykh reaktsiy" - " Plasma physics and the problem of controlled thermonuclear reactions", izd. AN SSSR, v. 3, p. 121, 1958). This article deals with the determination of the energy loss of a non-relativistic electron moving on a helical orbit in plasma. The mean thermal velocity

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Radiation of an electron moving on ...

of the electron is much smaller than the velocity of light. The energy absorption due to thermal motion is taken into account. Proceeding from the Maxwell equations and after carrying out a Fourier transformation $\vec{E}(\vec{r},t) = \int \vec{E}(\vec{k},\omega) e^{i\vec{k}\vec{r}-i\omega t}\, d\vec{k}d\omega$ for an anisotropic plasma dispersed in space and time, the authors derive general formulas for $\vec{E}$ and $\vec{H}$ in spherical coordinates, which are used to calculate the intensity of the magnetic bremsstrahlung of the electron. The following relation holds for the frequency of the s-th harmonic ω_s: $\omega_s = s\omega_H + k_\parallel v_\parallel$, where $\omega_H = \frac{eH_0}{mc}$; $k_\parallel$ and $v_\parallel$ are the projections of $\vec{k}$ and $\vec{v}$ onto the direction of the external field. The summand $k_\parallel v_\parallel$ takes the Doppler shift of the frequency into account. The radiation intensity in the solid angle $d\Omega$ is given by $\omega(\chi,\varphi,t)\, d\Omega = \frac{c}{4\pi} \sum_{s,s'=-\infty}^{\infty} (E_{\chi s} H_{\varphi s'} - E_{\varphi s} H_{\chi s'}) R^2 d\Omega$, where $E_{\chi s}$, $E_{\varphi s}$, $H_{\chi s}$, and $H_{\varphi s}$, are the Fourier components of E_χ, E_φ, H_χ, and H_φ, respectively. The magnetic bremsstrahlung of non-relativistic particles in the fundamental frequency in dilute plasma is studied. Since the refractive index

in this case is close to unity, the general formulas become simpler. The solution of the dispersion equation shows that the attenuation factor of the ordinary wave is considerably lower than that of the extraordinary one. Formulas for E_χ, E_φ, H_χ, and H_φ, which describe outgoing and incoming waves, are given. The following relation is derived for the radiation intensity of the extraordinary wave in the first harmonic:

$$w_2 = \frac{e^2 \omega_H^2 v_\perp^2}{8\pi c^3} (1 + \cos^2\chi)\, e^{-2\varkappa_2 R}, \text{ where}$$

$$\varkappa_2 = \frac{1}{4}\sqrt{\frac{\pi}{2}}\,\frac{\Omega^2 (1 + \cos^2\chi)}{\omega_H \beta c_\perp |\cos\chi|} \cdot \exp\left(-\frac{v_\perp^2}{2v_T^2}\right), \quad \beta = v_T/c. \text{ The radiation in}$$

higher harmonics for dilute plasmas is calculated as well. The condition $s\beta n_j \ll 1$ (s - number of harmonics; n_j - refractive index for the ordinary wave (j = 1) and for the extraordinary wave (j = 2)) must be satisfied here. For the radiation intensity of the s-th harmonic in the unit solid angle one obtains

Card 3/6

$$w_{sj}(\chi) = \frac{e^2\omega_H^2}{2\pi c} \beta_\Delta^{2s} U_{sj}(\theta)\, e^{-\beta_\Delta^2 u^2}, \qquad (4,7)$$

where

$$\left.\begin{aligned} U_{sj}(\theta) &= \frac{s^{2s}\sin^{2s}\theta\,(sn_j\sin\theta)^{2s-2}\cos^2\chi\,\Phi_{sj}(\theta)}{2^{2s}(s-1)!\cos^2\theta\left|\frac{d\cos\chi}{d\theta}\right|\left[n_j^2\sin^4\theta(\varepsilon_2-\varepsilon_1)^2+4\varepsilon_3\varepsilon_2^2(\varepsilon_3-n_j^2\sin^2\theta)\right]},\\ \Phi_{sj}(\theta) &= \left(-n_j^2\sin\theta\frac{dn_j}{d\theta}+\varepsilon_3 n_j\cos\theta+\varepsilon_2\sin\theta\frac{dn_j}{d\theta}\right)\times\\ &\times(n_j^2-\varepsilon_1-\varepsilon_2)^2\varepsilon_2\cos\theta+n_j\left[\varepsilon_2 n_j^2\cos^2\theta+(\varepsilon_1+\varepsilon_2)(n_j^2\sin^2\theta-\varepsilon_3)\right]^2,\\ \frac{dn_j}{d\theta} &= \frac{uv\sin\theta\cos\theta\,n_j(n_j^2-1)}{2(1-u-v+uv\cos^2\theta)n_j^2+(2-v)u-2(1-v)^2-uv\cos^2\theta}. \end{aligned}\right\} \qquad (4,8)$$

Although for a low density $n_j \sim 1$, the angular distribution of the radiation intensity of a single electron in the first harmonics differs considerably from that into the vacuum. The emissivity and absorptivity of a plasma for frequencies near $s\omega_H$ are given by

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$$\eta_j(\omega)=\frac{\pi e^2\omega_n}{2\pi\sqrt{2\pi}\,\omega_n\cos\theta}\beta^{|n|-1/2}\varepsilon_j|U_{nj}(0)|e^{-z_n^2},\qquad z_n=\frac{\omega-n\omega_H}{\sqrt{2}\,k_z\beta\cos\theta}. \quad (4.16)$$ (emission),

$\alpha_j(\omega_s) = 2\varkappa_{sj}$ (absorption), where $\varkappa_j = k'_{zj}(k_{zj})\cos\theta$ and $\varkappa_{sj}$ are the corresponding Fourier components. A. I. Akhiyezer is thanked for advice. S. M. Rytov (Ref. 13: Teoriya elektricheskikh fluktuatsiy i teplovogo izlucheniya - Theory of electric fluctuations and thermal radiation, Izd. AN SSSR, M., 1953) is mentioned. There are 1 figure and 13 references: 12 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: Ref. 4: R. Q. Twiss, J. A. Roberts, Aust. J. Phys., 11, no. 3, 424, 1958.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR, Khar'kov (Physico-technical Institute, AS UkrSSR, Khar'kov)

SUBMITTED: January 31, 1961

Card 5/5

30087
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26.7311

AUTHOR: Alekšin, V. F.

TITLE: Calculation of the magnetic field of a stellarator

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 11, 1961, 1284 - 1288

TEXT: The Biot-Savart equation was used in deriving formulas for the components of a helical magnetic field and for the parameters of its magnetic surfaces. At first, the magnetic field of a current-carrying spiral ($x = a\cdot\cos\varphi$, $y = a\cdot\sin\varphi$, $z = a\varphi/\varepsilon$, $\varepsilon = 2\pi a/L$) is represented in the form

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Calculation of the magnetic field of ...

$$H_r = -\frac{2I}{ca}\frac{\sin\theta}{1+r^2-2r\cos\theta}\left\{1-\frac{\varepsilon^2}{2}\left[\frac{r(1+r^2)\cos\theta-2r^2}{1+r^2-2r\cos\theta}+\right.\right.$$
$$\left.+(1+r^2-2r\cos\theta)\left(\frac{1}{2}+\ln\frac{\varepsilon\gamma}{2}\sqrt{1+r^2-2r\cos\theta}\right)\right]+O(\varepsilon^4\ln\varepsilon)\Big\},$$
$$H_\varphi = \frac{2I}{ca}\frac{r-\cos\theta}{1+r^2-2r\cos\theta}\left\{1-\frac{\varepsilon^2}{2}\left[\frac{r(1+r^2)\cos\theta-2r^2}{1+r^2-2r\cos\theta}-\right.\right.$$
$$\left.-(1+r^2-2r\cos\theta)\left(\frac{1}{2}+\ln\frac{\varepsilon\gamma}{2}\sqrt{1+r^2-2r\cos\theta}\right)\right]+O(\varepsilon^4\ln\varepsilon)\Big\}, \quad (1.4).$$
$$H_z = \frac{2I}{ca}\varepsilon\frac{1-r\cos\theta}{1+r^2-2r\cos\theta}\left\{1+\frac{\varepsilon^2}{4}\left[\frac{r^2\sin^2\theta}{1+r^2-2r\cos\theta}-2r\cos\theta-\right.\right.$$
$$-\frac{4r^2\sin^2\theta}{1-r\cos\theta}+\frac{r\cos\theta(1+r^2-2r\cos\theta)}{1-r\cos\theta}\left(1-2\ln\frac{\varepsilon\gamma}{2}\times\right.$$
$$\left.\left.\times\sqrt{1+r^2-2r\cos\theta}\right)\right]+O(\varepsilon^4\ln\varepsilon)\Big\}.$$

The symbols are explained in Figs. 1 and 2. Then, formulas are derived for the magnetic field of a system of 2n spirals with alternating current direction:

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Calculation of the magnetic field of ...

$$\left.\begin{aligned} H_r &= -\frac{4I}{ca}\, nr^{n-1}\,\frac{(1+r^{2n})\sin n\vartheta}{(1+r^{2n})^2-4r^{2n}\cos^2 n\vartheta}\,,\\ H_\varphi &= -\frac{4I}{ca}\, nr^{n-1}\,\frac{(1-r^{2n})\cos n\vartheta}{(1+r^{2n})^2-4r^{2n}\cos^2 n\vartheta}\,,\\ H_z &= \frac{4I}{ca}\, enr^{n-1}\,\frac{(1-r^{2n})\cos n\vartheta}{(1+r^{2n})^2-4r^{2n}\cos^2 n\vartheta}\,. \end{aligned}\right\} \qquad (2.3)$$

With the aid of these formulas it is possible to determine the magnetic field of conductors with arbitrary cross sections. A. I. Morozov and L. S. Solov'yev (DAN, SSSR, 128, 506, 1959) obtained an equation for the cross section of the magnetic surfaces in planes z = const:

$$\int_1^r r\int H_r\,d\vartheta + H_0\,\frac{r^2}{2} = \text{const} \qquad (3.1)\,, \quad \text{where}$$

H_0 is the strength of the longitudinal magnetic field. The magnetic surfaces of the helical field are discussed with the aid of Eqs. (2.3) and (3.1). There are 4 figures and 4 references: 2 Soviet and 2 non-Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov (Physico-technical Institute AS UkrSSR, Khar'kov)

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Calculation of the magnetic field of ...

SUBMITTED: September 10, 1960

Fig. 1

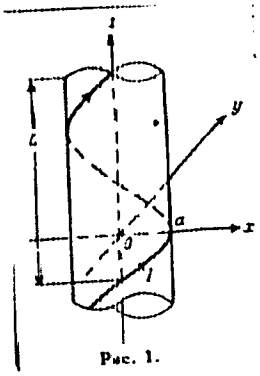

Рис. 1.

Fig. 2

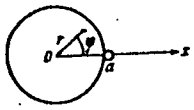

Рис. 2.

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ALEKSIN, V.F.; YASHIN, V.I.

Stability of plasma column with anisotropic particle velocity distribution and arbitrary current distribution. Zhur. eksp. i teor. fiz. 40 no.4:1115-1118 Ap '61. (MIRA 14:7)

1. Fiziko-tekhnicheskiy institut AN Ukrainskoy SSR.
(Plasma (Ionized gases))

S/781/62/000/000/029/036

AUTHOR: Alekhin, V. P.

TITLE: Magnetic field of a linear current inside an ideally conducting cylinder with longitudinal slot

SOURCE: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady II konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tekhn. inst. AN Ukr.SSR, Kiev, Izd-vo AN Ukr. SSR, 1962, [illegible]

TEXT: The field of a current carrying wire placed inside or near a conducting cylinder with a longitudinal slot is determined, as well as the field of a current inside of a cavity made up of two intersecting cylinders. This configuration simulates a plasma pinch in a conducting jacket. The field lines are determined by conformal mapping. The field near the conductor is approximately equal to

$$H = -\frac{2I}{c}\, i \left\{ \frac{1}{z - z_p} - \frac{1}{1 + z_p} + \frac{\pi \arccos/2}{1 + z_p} \cdot \frac{\bar{\omega}_p(\omega_p^2 - \omega_p)}{(\bar{\omega}_p^2 - 1)^2(\omega_p - \bar{\omega}_p)} \right\}$$

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where θ is the polar angle, while a and c are parameters involved in the conformal mapping. The current has one stable and one unstable equilibrium position inside a slotted cylinder, and two stable and one unstable equilibrium position in a cavity consisting of intersecting cylinders. There are critical angles for which there is no equilibrium position. Six figures are included.

36961

S/141/62/005/001/006/024
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3.2600

AUTHORS: Aleksin, V.F. and Stepanov, K.N.

TITLE: On the theory of electromagnetic fluctuations in plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v. 5, no. 1, 1962, 61 - 69

TEXT: Fluctuations in the electromagnetic field, current density and space-charge density can be determined when the correlation function for the density of "extraneous" currents is known. Various calculations have shown that the correlation function for the Fourier components of the "extraneous" current density is of the form:

$$j_m^{CT}(\underline{k}, \omega) j_n^{CT}(\underline{k}', \omega') = \frac{T\varepsilon''_{mn}\omega}{(2\pi)^5} \delta(\omega + \omega')\delta(\underline{k} + \underline{k}') \qquad (1)$$

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On the theory of ....

where T is the plasma temperature

$2\varepsilon''_{mn} = i\left[\varepsilon^{*}_{nm}(\underline{k}, \omega) - \varepsilon_{mn}(\underline{k}, \omega)\right]$ is the anti-hermitian part of the dielectric-constant tensor for the plasma $\varepsilon_{mn}(\underline{k}, \omega)$ and

$$\varphi(\underline{k}, \omega) = \frac{1}{(2\pi)^4} \int\int e^{i(\omega t - kr)} \varphi(r, t)\, dr\, dt \ .$$

In the present paper the authors make use of Eq. (1) to investigate fluctuations in the electromagnetic field in an infinite plasma. A discussion is also given of the motion of the charged particles in plasma under the action of fluctuating electric fields. Formulae are derived for the correlation functions for the electric and magnetic fields in plasma located in a magnetic field. The asymptotic

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On the theory of ....

behaviour of the correlation functions at large and small distances is investigated in the isotropic case. The paper is entirely theoretical and no numerical computations are reported. Acknowledgments to A.I. Akhiyezer, V.I. Kogan and V.P. Silin for discussions and advice. There is 1 figure.

SUBMITTED: April 29, 1961

Card 3/3

AUTHOR/
B/056/62/042/001/037/055
B108/B104

AUTHORS: Annenzer, A. I. Aleksin V. F Bar'yakhtar V. G. Fel'dmanskiy S. V.

TITLE: Influence of radiative effects on relaxation of electrons and electric conductivity of a plasma in a strong magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki v. 42 no. 1 1962, 552 564

TEXT: This paper is to show that emission and absorption of electromagnetic waves by plasma electrons may have a considerable effect on the establishment of the thermal equilibrium of the electrons. Equilibrium of the absolute magnitude of the transverse electron momentum can be reached at nonrelativistic temperatures ($T \ll m_e c^2$) and of the transverse as well as of the longitudinal components of the electron momentum at relativistic temperatures ($T \gtrsim m_e c^2$). The radiative relaxation time has the order of magnitude of the ratio of mean electron energy to mean intensity of electron emission in a magnetic field. If this relaxation time is less than the mean time Card 1/5

Influence of radiative ...

between two Coulomb collisions then it will also determine the relaxation with respect to the corresponding variables. This means it will determine the time of equilibrium distribution of the electrons with respect to their absolute transverse momentum in the nonrelativistic case. The radiative relaxation time is of the order of unity at H = $2.1 \cdot 10^{-5}$ gauss, T = [illegible] and an electron density of 10^3 cm^{-3}, and it decreases with increasing H and T and with decreasing electron density. The transverse component of the electric conductivity of a plasma is determined by the Coulomb collisions as well as by radiative effects. The longitudinal component on the contrary is determined by the Coulomb collisions only. Owing to this fact the electric conductivity of a plasma may be highly anisotropic. Besides the above relaxation also a relaxation of the photon density which manifests itself in a quasi equilibrium distribution of the photons. This distribution which is determined by the instantaneous electron density tends to a quasi equilibrium of a Rayleigh-Jeans distribution somewhat after electron relaxation. L. M. Landau, M. A. Leontovich and V. N. Stepanov are thanked for discussions. Mention is made of B. A. Trubnikov, A. Ye. Rakhmanov and Fizika plazmy i problema upravlyayemykh termoyadernykh reaktsiy (Plasma Phys. [illegible]

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Influence of radiative ...

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physics and problems of controlled thermonuclear reactions). Izd. AN SSSR, p. 121), V. S. Kudryavtsev. (idem, p. 114) and L. E. Gurevich, S. T. Pavlov (ZhTF, 32, 41, 1960). There are 7 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: August 21, 1961

Card 3/3

ACCESSION NR: AT4036043 S/2781/63/000/003/0064/0081

AUTHORS: Aleksin, V. F.; Stepanov, K. N.

TITLE: Spatial correlation of fluctuation electromagnetic fields in a plasma

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 64-81

TOPIC TAGS: plasma research, magnetoactive plasma, plasma electron oscillation, correlation statistics, plasma instability

ABSTRACT: Spatial correlation functions are obtained for electromagnetic fields in anisotropic gyrotropic media (magnetoactive plasma) in the cases when the effects due to the spatial dispersion of

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ACCESSION NR: AT4036043

the medium are small. It is shown that in the transparency region, when the damping is small, the correlation radius coincides with the attenuation length of the electromagnetic wave. General expressions are first derived for the correlation functions, after which spatial correlation functions are obtained for large distances. The correlation functions for high frequency (electron) oscillations are investigated, as are the spatial correlation functions in the low-frequency region. "In conclusion, the authors express deep gratitude to A. I. Akhiyezer and V. I. Pakhomov for a useful discussion and help with the work." Orig. art. has: 8 figures and 35 formulas.

ASSOCIATION: None

SUBMITTED: 00	DATE ACQ: 21May64	ENCL: 00
SUB CODE: ME	NR REF SOV: 007	OTHER: 000

Card 2/2

ACCESSION NR: AT4036062 S/2781/63/000/003/0216/0224

AUTHOR: Aleksin, V. F.

TITLE: Magnetic field of helical currents flowing over the surface of a torus

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 216-224

TOPIC TAGS: helical magnetic field, magnetic trap, magnetic field intensity, magnetic mirror, plasma confinement

ABSTRACT: The paper presents the results of the calculation of the magnetic fields of helical currents flowing in an infinitesimally thin conductor comprising a closed helical line on the surface of a

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ACCESSION NR: AT4036062

circular torus. These calculations become much simpler if use is made of the fact that in real installations the pitch of the helix of the winding and the radius R of the center line of the torus are large compared with the radius of the transverse cross section of the torus a. The magnetic field is best obtained in this case in the form of a series in powers of the small parameter a/R. The calculations are simplified for the case of a small degree of toroidality and a large winding pitch. General expressions are obtained in the case of an n-cusp winding with alternating direction of the current, with consideration of the special cases of double-cusp entry and triple-cusp windings. In the latter case the force lines comprise two magnetic axes, and the corresponding equations can be investigated by the phase-plane method. The geometry of the magnetic force lines and the magnetic surfaces is discussed. Orig. art. has: 2 figures and 14 formulas.

ASSOCIATION: None

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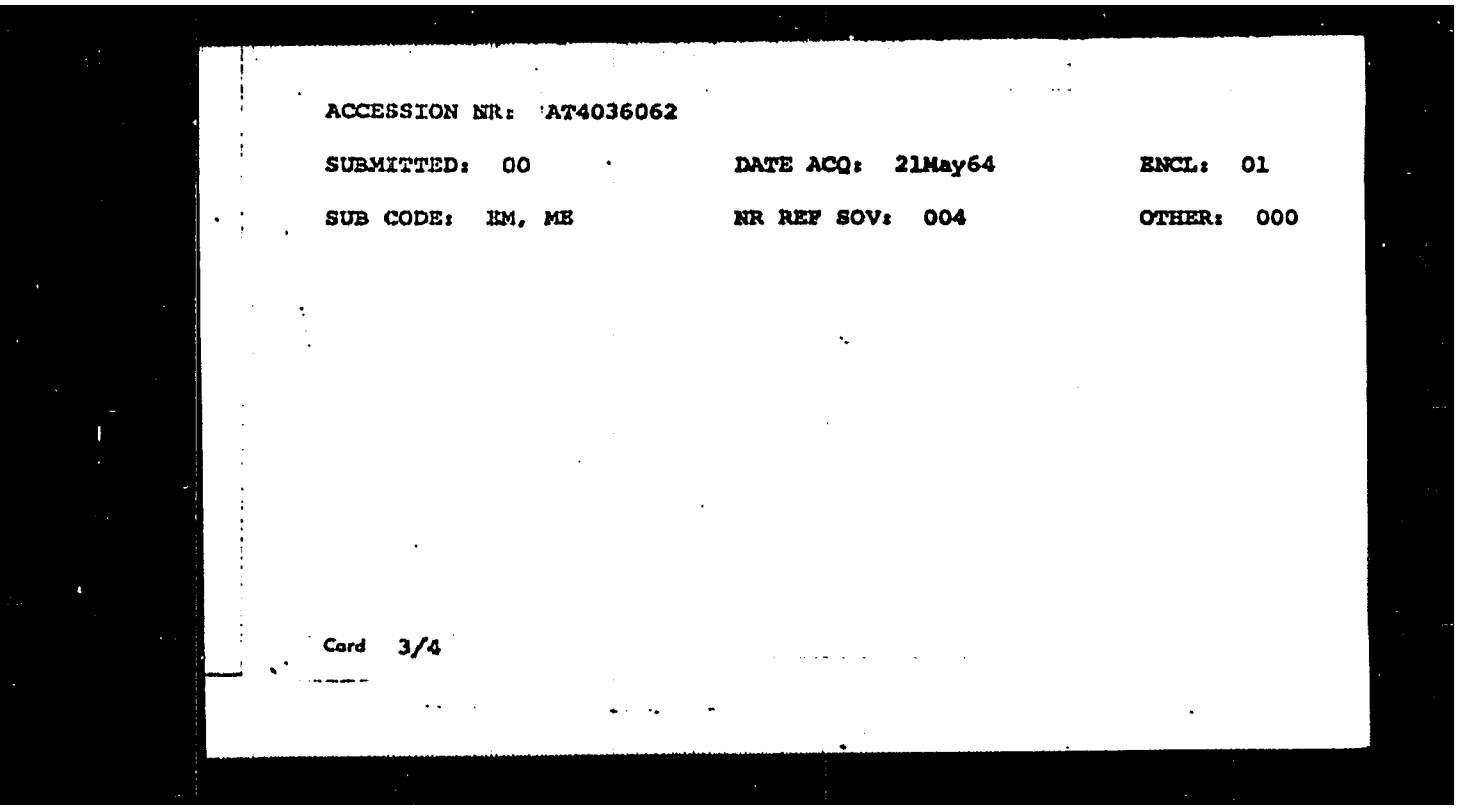

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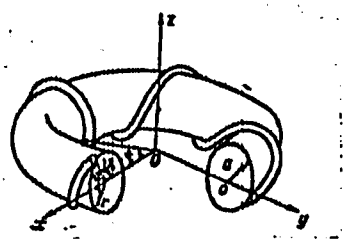

Helical current on surface of torus

Card 4/4

ACCESSION NR: AT4036063 S/2781/63/000/003/0224/0227

AUTHOR: Aleksin, V. F.

TITLE: Behavior of force lines in a helical magnetic field

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 224-227 .

TOPIC TAGS: magnetic field, helical magnetic field, magnetic trap, magnetic mirror, plasma confinement, magnetic field intensity

ABSTRACT: An exact solution is obtained for the differential equation for the force lines in a helical magnetic field in the vicinity of the separatrix, where perturbation theory or the method of averaging are not effective. The case of a three-cusp field with cylin-

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ACCESSION NR: AT4036063

drical symmetry is considered. The equations show that the radial coordinate of the force lines varies with the longitudinal coordinate periodically, with a period that is expressed in terms of elliptic functions. The angular variation is also expressed in terms of the same elliptic functions. The results of the calculation confirm an earlier approximate formula, except near the separatrix, where the error of the first approximation becomes appreciable (ZhTF 3, 31, 1284, 1961). Orig. art. has: 6 formulas and 1 table.

ASSOCIATION: None

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Card 2/2

ACCESSION NR: AT4036075 S/2781/63/000/003/0332/0336

AUTHORS: Aleksin, V. F.; Khizhnyak, N. A.

TITLE: Diffusion of fully ionized plasma transverse to the magnetic field

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 332-336

TOPIC TAGS: plasma diffusion, ionized plasma, diffusion coefficient, plasma magnetic field interaction, magnetic pinch, plasmoid, magnetohydrodynamics, self similarity model

ABSTRACT: It is shown that in a fully ionized gas the coefficient of thermal conductivity is $(M/m)^{1/2}$ times larger than the diffusion co-

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ACCESSION NR: AT4036075

efficient (M -- ion mass/ m -- electron mass), so that the gradient of temperature becomes equalized much more rapidly than the density gradient and the former need be taken into account only on the plasma boundary. The diffusion of a plasma pinch detached from the walls in a longitudinal magnetic field, or the diffusion of a plasmoid in a reference frame connected with the plasmoid, are considered neglecting longitudinal spreading. It is assumed that the plasma is stable against various types of disturbances. It is shown that the self-similar solution describes well the qualitative pattern of diffusion of the plasma pinch transversely to the magnetic field for arbitrary initial smooth particle-density distribution. Self-similar solutions can also be obtained for the temperature distribution. Magnetohydrodynamic instabilities can cause plasma to leave the pinch at a rate close to the thermal velocity of the ions. On the other hand, instability can produce turbulences in the plasma and also consequently increase the diffusion. "In conclusion we are grateful to K. D. Sinel'nikov and A. I. Akhiyezer for continuous interest in the

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ACCESSION NR: AT4036075

work and for a discussion of the results." Orig. art. has: 17 formulas.

ASSOCIATION: None

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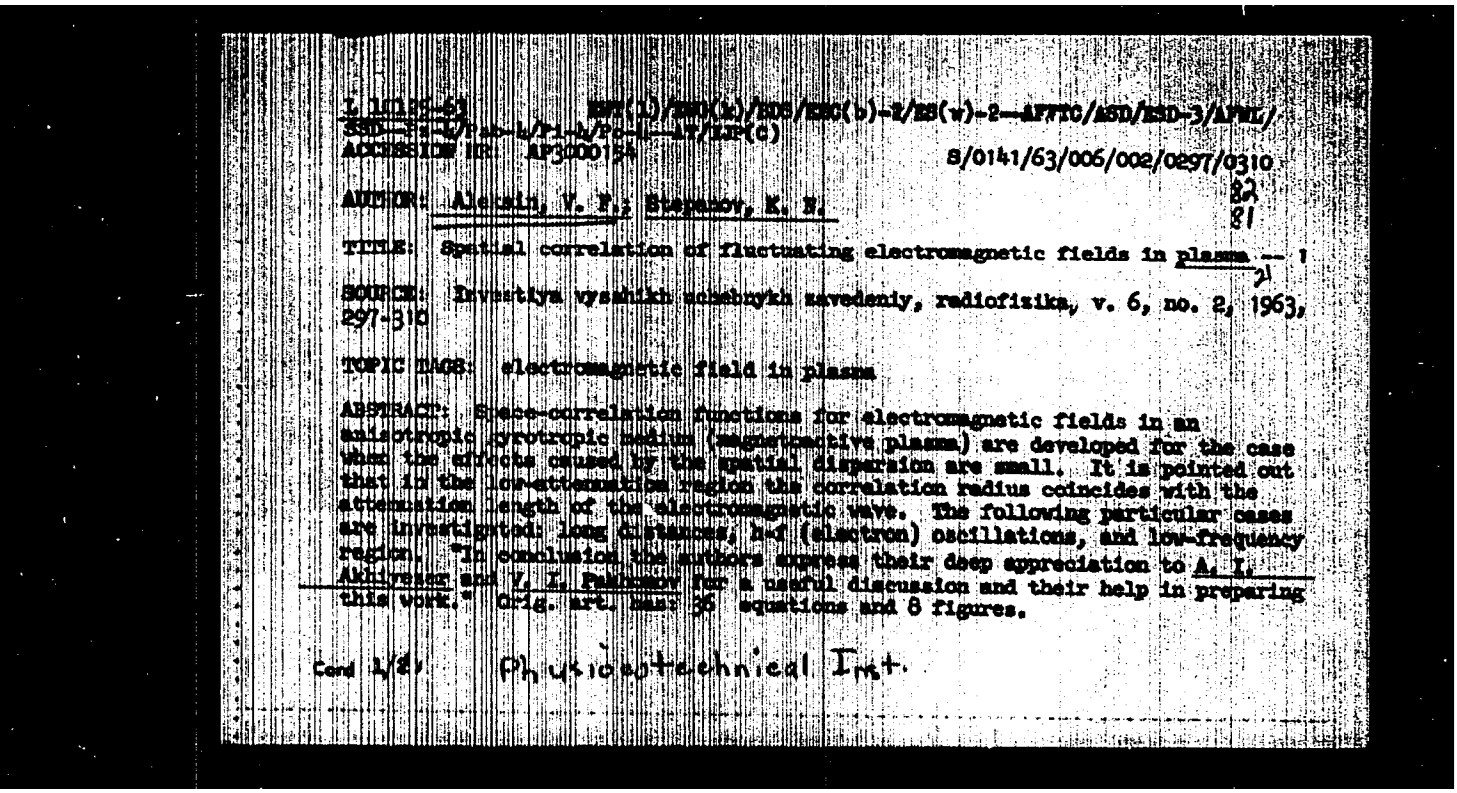

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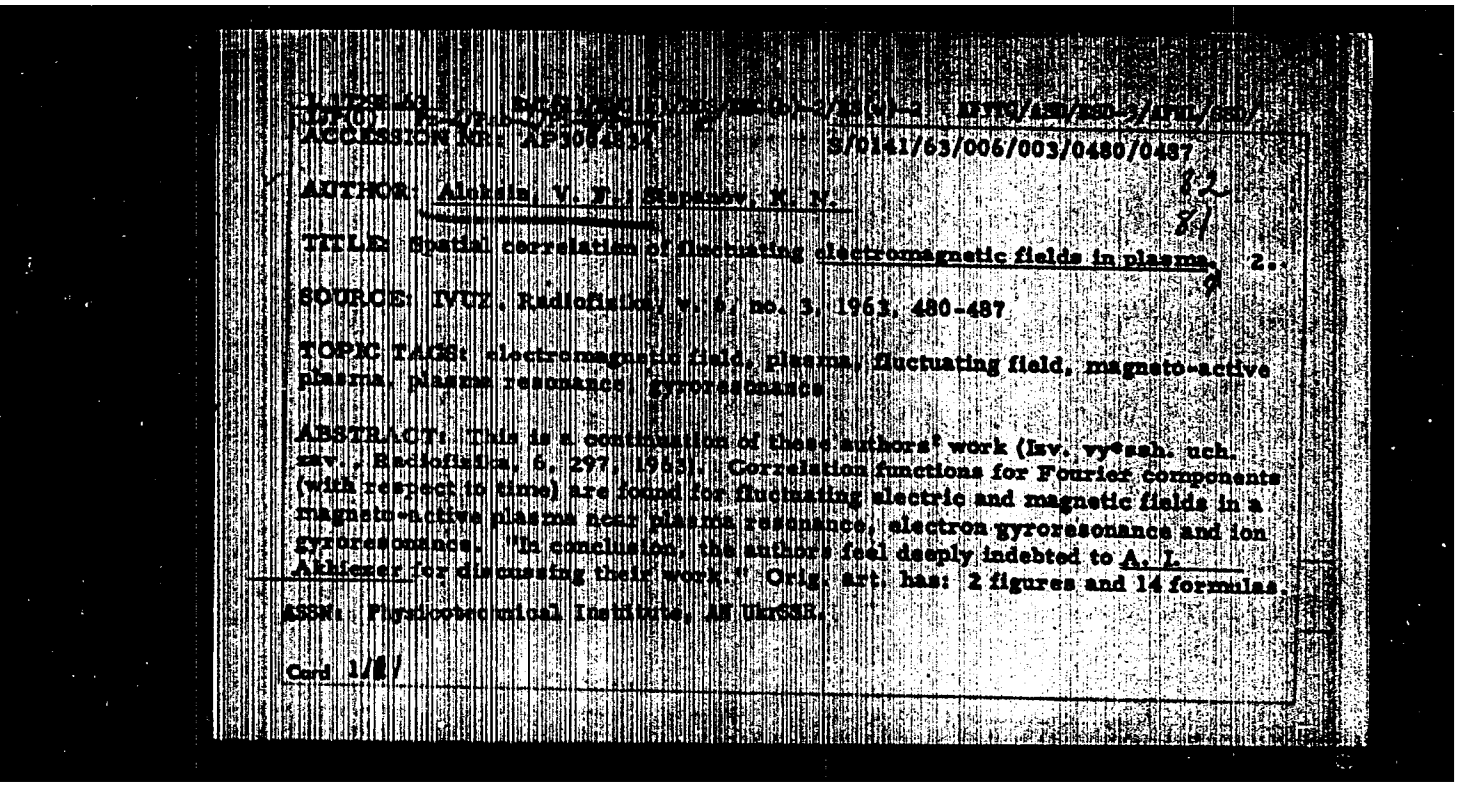
Pab-4/Pr-4/Ps-4--AFWL/IJP(c)
ACCESSION NR: AP3000134 S/0141/63/006/002/0297/0310
82
AUTHOR: Alexin, V. F.; Stepanov, K. N. 81
TITLE: Spatial correlation of fluctuating electromagnetic fields in plasma -- 1
21
SOURCE: Izvestiya vysshikh uchebnykh zavedeniy, radiofizika, v. 6, no. 2, 1963, 297-310

TOPIC TAGS: electromagnetic field in plasma

ABSTRACT: Space-correlation functions for electromagnetic fields in an anisotropic gyrotropic medium (magnetoactive plasma) are developed for the case when the effects caused by the spatial dispersion are small. It is pointed out that in the low-attenuation region the correlation radius coincides with the attenuation length of the electromagnetic wave. The following particular cases are investigated: long distances, h=f (electron) oscillations, and low-frequency region. "In conclusion the authors express their deep appreciation to A. I. Akhiyezer and V. I. Pekhterev for a useful discussion and their help in preparing this work." Orig. art. has: 36 equations and 8 figures.

Card 1/2 Physicotechnical Inst.



ACCESSION NR: AP3004854 S/0141/63/006/003/0480/0487

AUTHOR: Alekseyev, V. P.; Stankov, K. Y.

TITLE: Spatial correlation of fluctuating electromagnetic fields in plasma. 2.

SOURCE: IVUZ. Radiofizika, v. 6, no. 3, 1963, 480-487

TOPIC TAGS: electromagnetic field, plasma, fluctuating field, magneto-active plasma, plasma resonance, gyroresonance

ABSTRACT: This is a continuation of these authors' work (Izv. vyssh. uch. zav., Radiofizika, 6, 297, 1963). Correlation functions for Fourier components (with respect to time) are found for fluctuating electric and magnetic fields in a magneto-active plasma near plasma resonance, electron gyroresonance and ion gyroresonance. "In conclusion, the authors feel deeply indebted to A. L. Al'pert for discussing their work." Orig. art. has: 2 figures and 14 formulas.

ASSN: Physicochemical Institute, AN UkrSSR.

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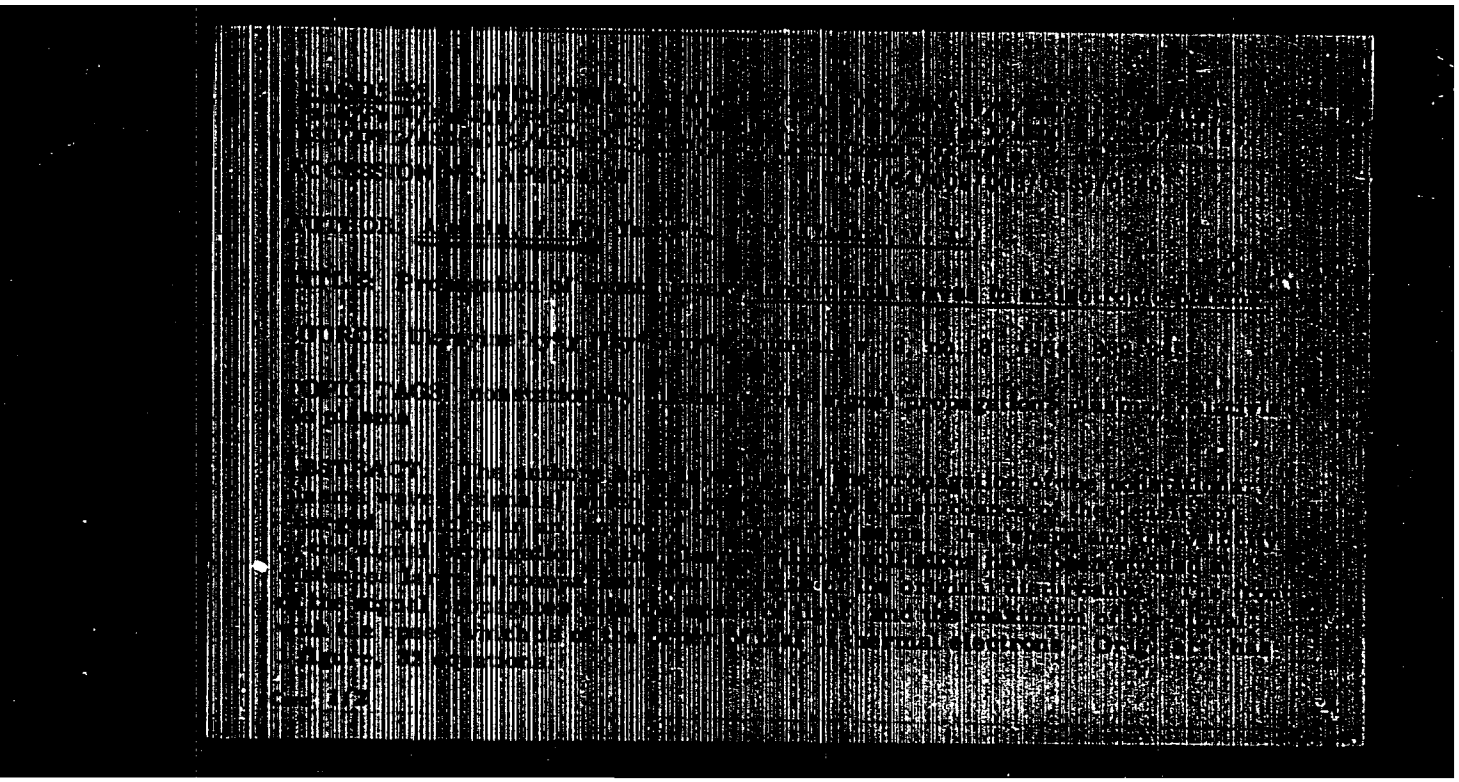

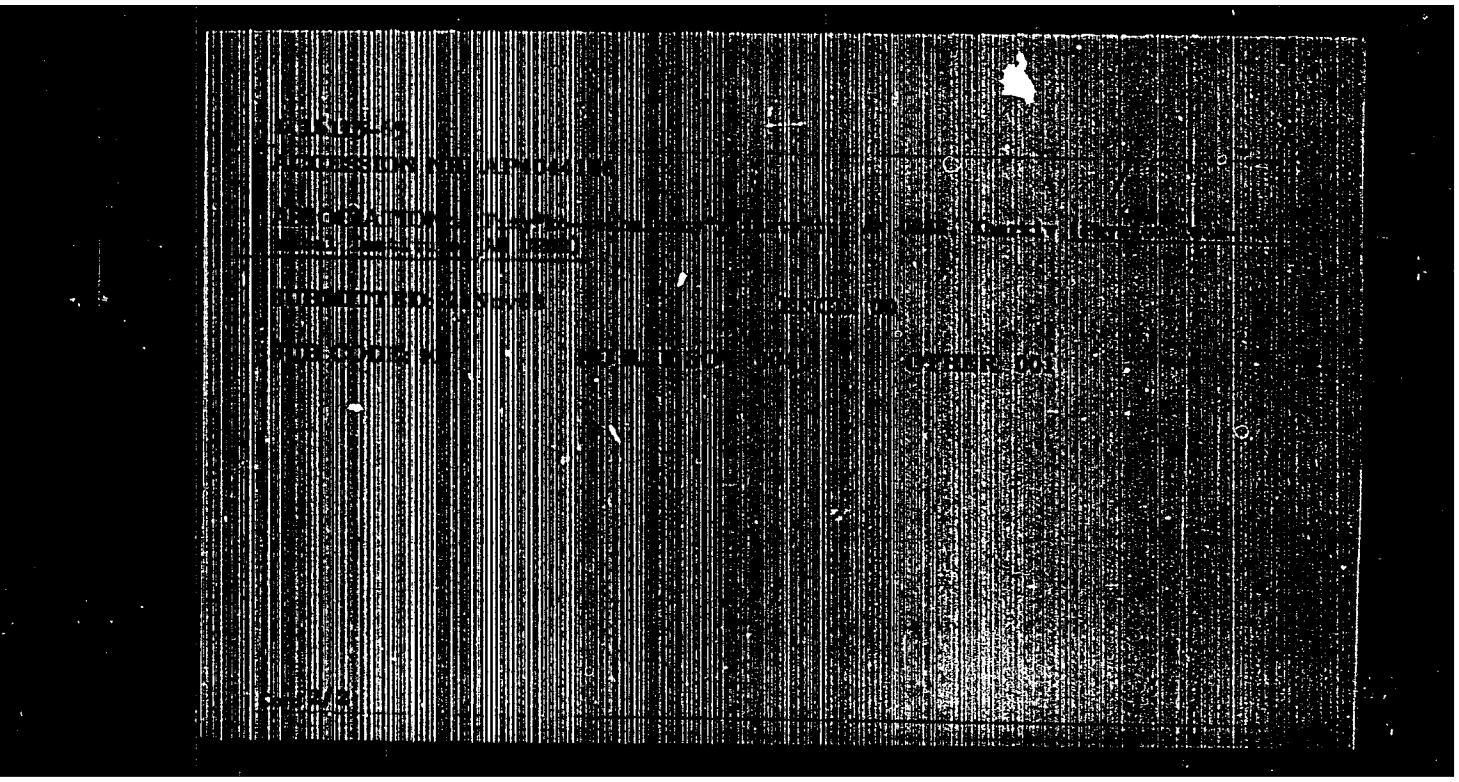

ACCESSION NR: AP4041996 S/0057/64/034/007/1210/1223

AUTHOR: Aleksin, V.F.; Stepanov, K.N.

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.7, 1964, 1210-1223

TOPIC TAGS: plasma, electromagnetic wave generation, plasma electromagnetic wave, cyclotron resonance

ABSTRACT: A detailed linear theory is given of the radiation of electromagnetic waves into an infinite uniform magnetized plasma by the following two current distributions:

$$\mathbf{j}(r, t) = j_0 \cos(k_\parallel z - \omega t)\delta(r_\perp - a)\frac{[\mathbf{hr}]}{r_\perp} \quad \text{and} \quad \mathbf{j} = \frac{j_0}{\pi a^2}\cos(k_\parallel z - \omega t)\mathbf{h}$$

($r_\perp < a$), $\mathbf{j} = 0$ ($r_\perp > a$). Here $\mathbf{j}$ is the current density, $r_\perp$ and z are the radial and axial cylindrical coordinates, t is the time, $\mathbf{r}$ is the position vector, $\mathbf{h}$ is a unit vector in the direction of the applied magnetizing field, and $k_\parallel$, ω, j_0, and a are constants. The dielectric tensor for a magnetized plasma is taken from earlier work of the authors and an associate (V.I.Pakhomov, V.F.Aleksin and K.N.Stepanov, ZhTF 31,1170,1961), and with its aid general expressions are derived for the electric fields produced and the power radiated by the two current distributions. These

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ACCESSION NR: AP4041996

expressions are simplified and discussed in detail for a number of special cases of interest. The hydrodynamic approximation (thermal motion of the plasma particles n neglected) is discussed extensively for both current distributions. The 11 regions into which the various resonances separate the U-V plane are delineated ($U = (\omega_0/\omega)^2$, $V = (\omega_H/\omega)^2$, ω_0 and ω_H are the electron Langmuir and Larmor frequencies respectively), and the waves that can be excited in each of them are enumerated. Particular attention is given to the excitation of waves near the electron and ion cyclotron resonances by the azimuthal current distribution, and near the two hybrid resonances by the axial distribution. The case in which the high frequency hybrid resonance occurs near a multiple of the electron Larmor frequency is discussed separately, as is also the excitation of longitudinal oscillations by the axial current distribution when $\omega k_\parallel$ is small. The thermal motions and collisions of the plasma particles are taken into account in the discussions of the various resonances when they become important. "In conclusion, the authors express their deep gratitude to A.I.Akhiyezer for suggesting the problem and for his interest in the work." Orig.art.has: 83 formulas, 2 figures and 1 table.

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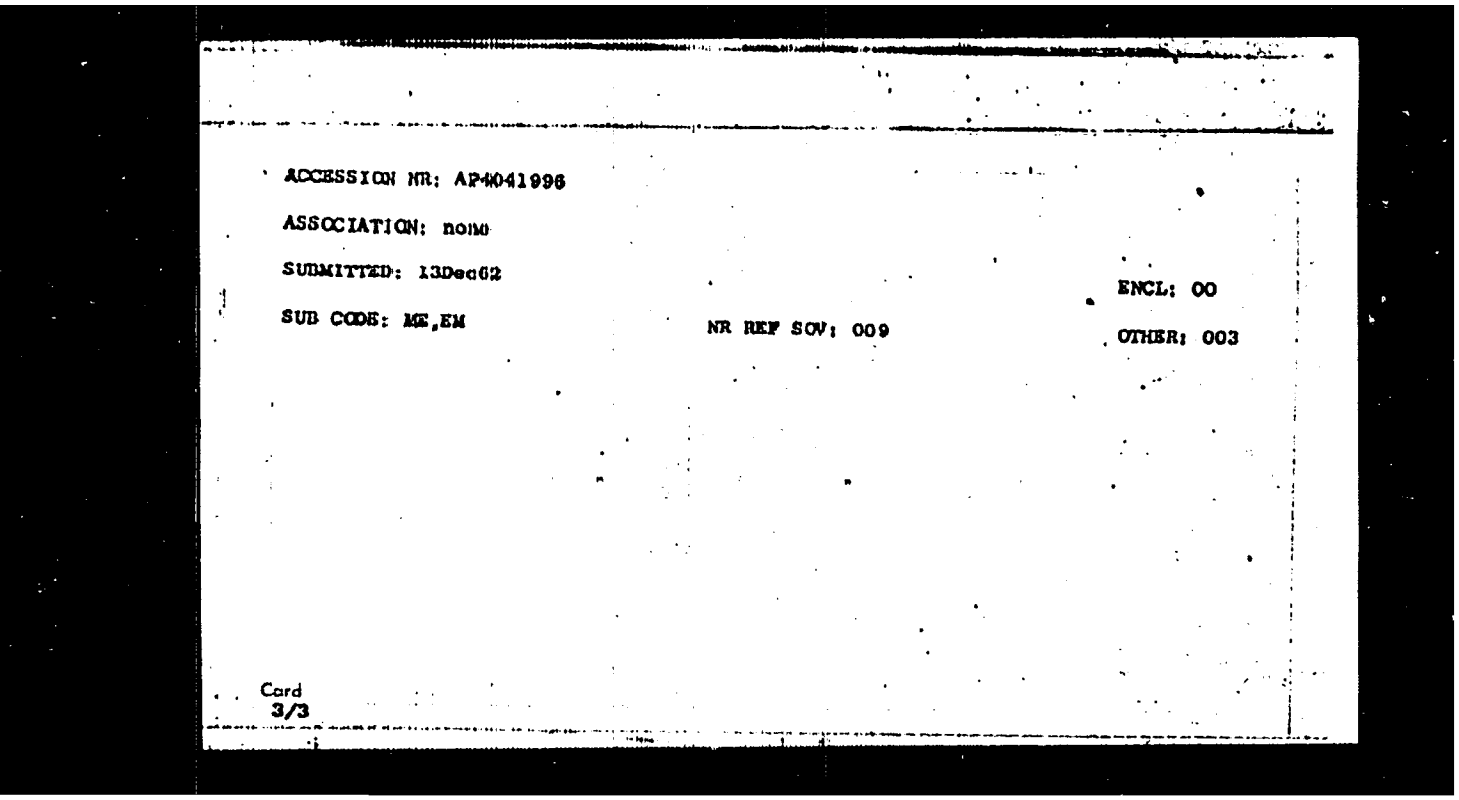

ACCESSION NR: AP4041996

ASSOCIATION: none

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NR REF SOV: 009

OTHER: 003

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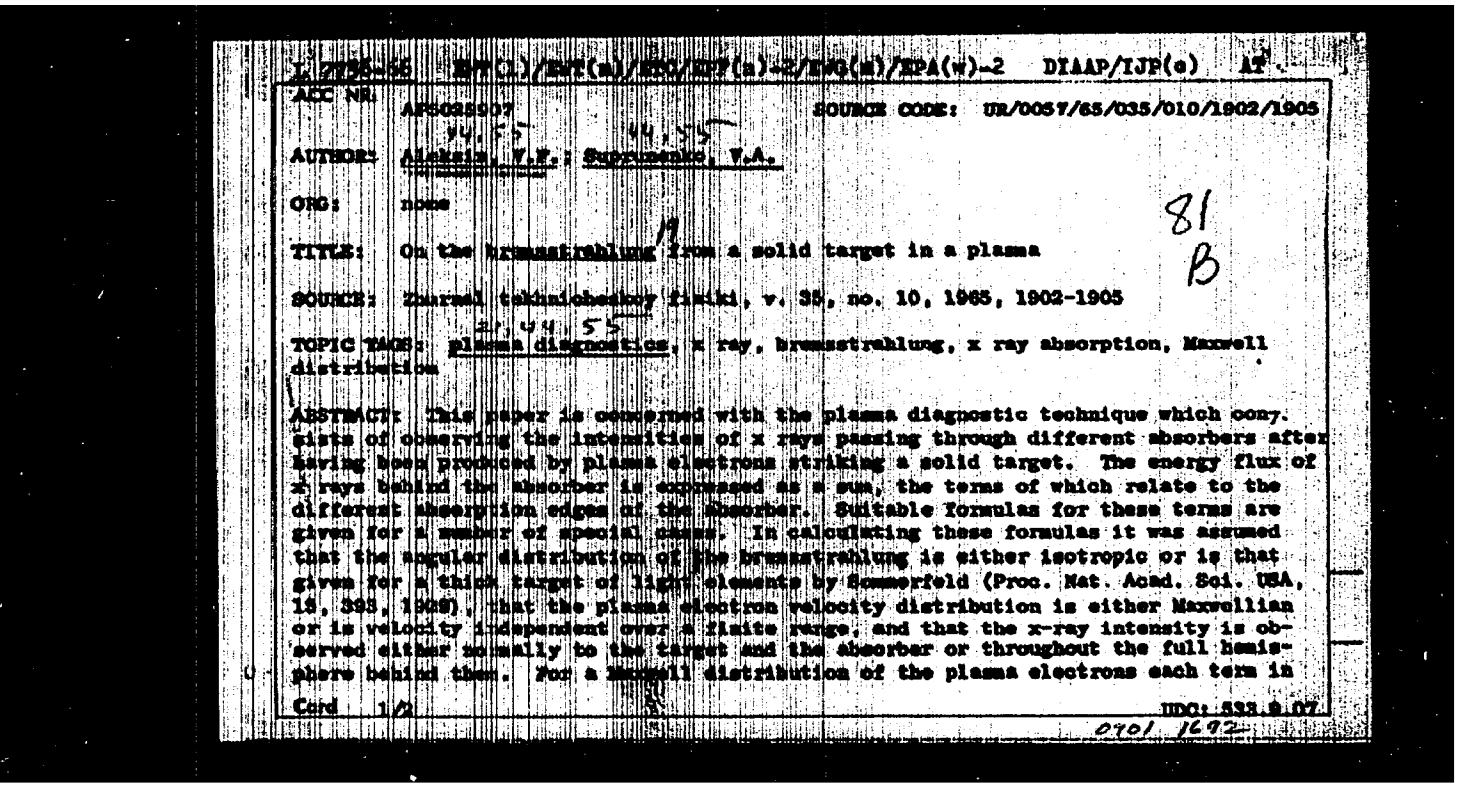

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ACC NR: AP6028907 SOURCE CODE: UR/0057/65/035/010/1902/1905

AUTHOR: Alekseyev, V.F.; Suprunenko, V.A.

ORG: none

TITLE: On the bremsstrahlung from a solid target in a plasma

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 10, 1965, 1902-1905

TOPIC TAGS: plasma diagnostics, x ray, bremsstrahlung, x ray absorption, Maxwell distribution

ABSTRACT: This paper is concerned with the plasma diagnostic technique which consists of observing the intensities of x rays passing through different absorbers after having been produced by plasma electrons striking a solid target. The energy flux of x rays behind the absorber is expressed as a sum, the terms of which relate to the different absorption edges of the absorber. Suitable formulas for these terms are given for a number of special cases. In calculating these formulas it was assumed that the angular distribution of the bremsstrahlung is either isotropic or is that given for a thick target of light elements by Sommerfeld (Proc. Nat. Acad. Sci. USA, 18, 393, 1932), that the plasma electron velocity distribution is either Maxwellian or is velocity independent over a finite range, and that the x-ray intensity is observed either normally to the target and the absorber or throughout the full hemisphere behind them. For a Maxwell distribution of the plasma electrons each term in

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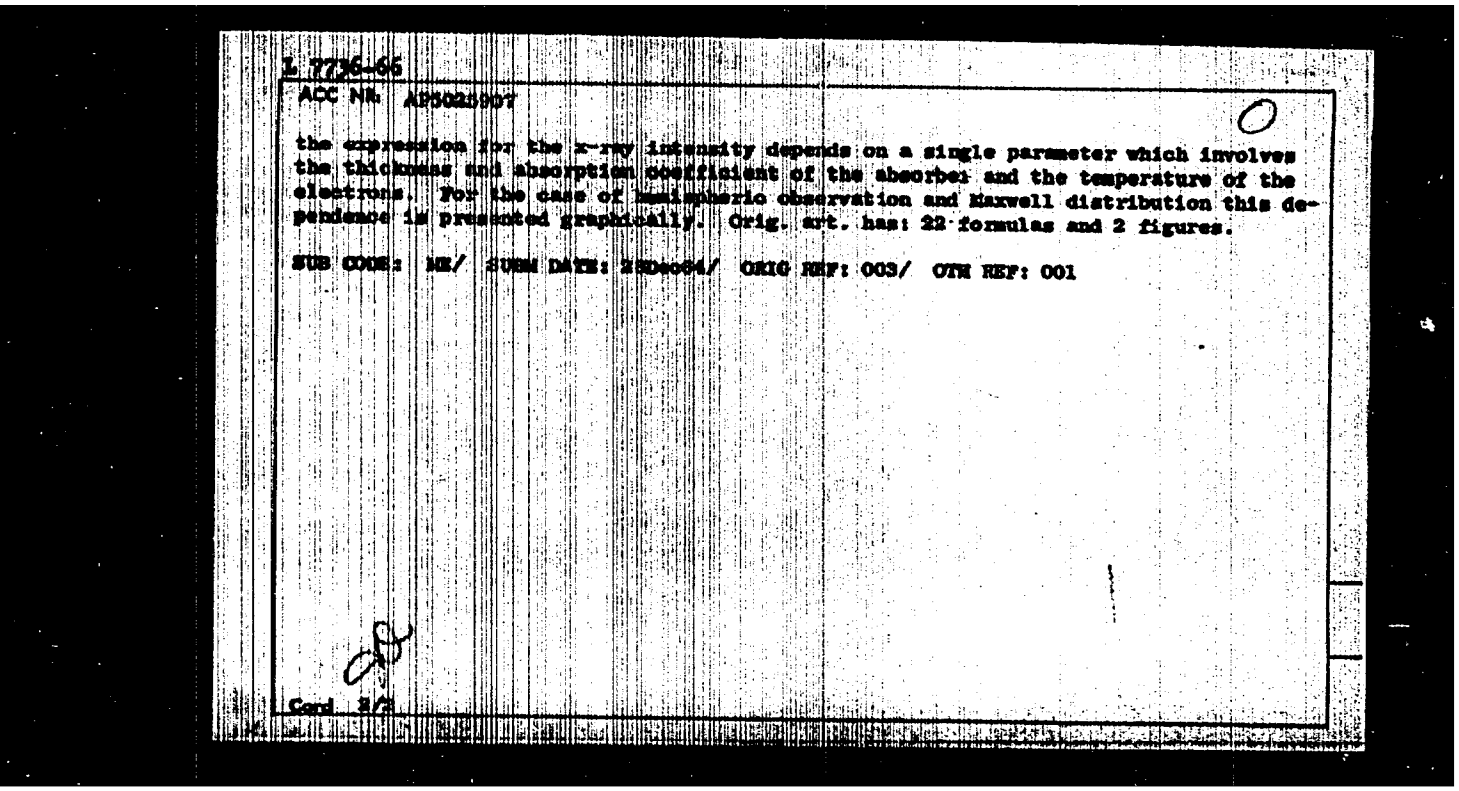

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the expression for the x-ray intensity depends on a single parameter which involves the thickness and absorption coefficient of the absorber and the temperature of the electrons. For the case of hemispheric observation and Maxwell distribution this dependence is presented graphically. Orig. art. has: 22 formulas and 2 figures.

SUB CODE: ME/ SUBM DATE: 28Dec64/ ORIG REF: 003/ OTH REF: 001

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