YUDITSKIY, D. G.; ZVORYKIN, V. V.; ANPILOV, G. D.

Steam expenditure in the production of alcohol from molasses and in the processing of baker's yeast. Spirt. prom. 28 no.6: 29-33 '62. (MIRA 16:1)

1. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlennosti im. Mikoyana (for Yuditskiy). 2. Upravleniye "Kiyevenergonaladka" (for Zvorykin, Anpilov).

(Distilling industries--Costs)

1. ANPILOGOV, G. N.; SOLOV'YEV, A. I.

2. USSR (600)

4. Geology and Geography

7. Outlines of the History of Russian Geography, M. S. Vodnarskiy. (Popular Scientific Series, Press of Acad Sci USSR, 1947). Reviewed by G. N. Anpilogov and A. I. Solov'yev, Sov. Kniga, No. 4, 1948.

9. [redacted] Report U-3081, 16 Jan. 1953, Unclassified.

ANPILOGOV, I., elektrosvarshchik; MAYMUSHIN, P.; CHISTOV, S., inzh.; KURBANGALEYEV, A.; TRET'YACHENKO, B.

Worker correspondents of the periodical of the All-Union Central Council of Trade Unions "Okhrana truda i sotsial'noe strakhovanie" make a surprise inspection. Okhr.truda i sots. strakh. 3 no.6:46-50 Je '60. (MIRA 13:7)

1. Reydovaya brigada zhurnala "Okhrana truda i sotsial'noye strakhovaniye" (for all). 2. Ufimskiy neftepererabatyvayushchiy zavod (for Anpilogov). 3. Otvetstvennyy sekretar' gazety "Neftepererabotchik"(for Maymushin). 4. Tekhnicheskiy inspektor oblastnogo soveta profsoyuzov Bashkirskogo sovnarkhoza (for Kurbangaleyev). 5. Spetsial'nyy korrespondent zhurnala "Okhrana truda i sotsial'noye strakhovaniye" (for Tret'yachenko).
(Bashkiria--Industrial hygiene)

ANPILOGOV, I.

Smooth operation in the basis of success. Sov.profsoyuza 5 no.7:40-43 Jl '57. (MLRA 10:8)

1.Upravlyayushchiy stroitel'nym trestom No.130, g. Ivanovo.
(Building)

ANPILOOOV, I.I., inzhener.

Coordinated construction of apartment houses. Nov.tekh.i pered. op.v stroi. 19 no.10:4-7 O '57. (MIRA 10:11)
(Ivanovo--Apartment houses)

SERGEYEV, A.A., red.; AMPILOGOV, I.M., red.; ASSONOV, V.A., red.; BABAYANTS, M.A., red.; BABOKIN, I.A., red.; BALAMUTOV, A.D., red.; BOGOROD-SKIY, N.N., red.; BOLONENKO, D.N., red.; BUCHNEV, V.K., red.; VAKHMINTSEV, G.S., red.; VORONKOV, A.K., red.; GARKALENKO, K.I., red.; GORBATOV, P.Ye., red.; GOLOVLEV, V.Ya., red.; DOKUCHAYEV, M.M., red.; DUBNOV, L.V., red.; YEVTEYEV, A.D., red.; YEREMENKO, Ye.K., red.; ZENIN, N.I., red.; KRIVONOGOV, K.K., red.; KUPALOV-YAROPOLK, I.K., red.; MATSYUK, V.G., red.; NIKOLAYEV, S.I., red.; ONISHCHUK, K.N., red.; PETROV, K.P., red.; PILYUGIN, B.A., red.; PLATONOVA, A.A., red.; POLESIN, Ya.L., red.; POKROVSKIY, L.A., red.; POMERUN, D.Ye., red.; POLYUSHKIN, A.Kh., red.; REYKHER, V.P., red.; SEDOV, N.A., red.; SIDORENKO, I.T., red.; FIDELEV, A.A., red.; CHAKHMAKHCHEV, A.G., red.; CHERNODUROV, M.Ya., red.; SHUMAKOV, A.A., red.; YARE-MENKO, N.Ye., red.; PARTSEVSKIY, V.N., red.izd-va; ATTOPOVICH, M.K., tekhn.red.

[Standard safety regulations for blasting operations] Edinye pravila bezopasnosti pri vzryvnykh rabotakh. Izd.2. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1958. 318 p. (MIRA 13:1)

1. Russia (1923- U.S.S.R.) Komitet po nadzoru za bezopasnym vedeniyem rabot v promyshlennosti i gornomu nadzoru.
(Mining engineering--Safety measures)

DOROFEYEV, N.M.; ANPILOGOV, I.V.

Method for puncturing the abdominal wall in peritoneoscopy.
Vest.khir. 89 no.9:127-128 S '62. (MIRA 15:12)

1. Iz Verkhne-Lyubashskoy rayonnoy bol'nitsy (glavnyy vrach - T.I.Yarygina) Kurskoy oblasti. Adres avtorov: Kurskaya oblast', selo Verkhniy Lyubash, rayonnaya bol'nitsa.
(PERITONEOSCOPE) (PUNCTURES (MEDICINE)

AN[illegible]OV, I.V.

Gastric torsion. Vest. khir. 93 no.12:102-103 D '64.
(MIRA 18:5)

1. Iz Verkhne-Lyubazhskoy bol'nitsy (glavnyy vrach - T.I. Yarygina) Fatezhskogo rayona Kurskoy oblasti.

S/080/63/036/001/014/026
D204/D307

AUTHORS: Meleshko, V.P., Izmaylova, D.R., Chervinskaya, O.V. and Anpilova, N.S.

TITLE: Characteristics of the regeneration of anion-exchanging resins of various types

PERIODICAL: Zhurnal prikladnoy khimii, v. 36, no. 1, 1963, 130 - 134

TEXT: The present work was motivated by the incompleteness and lack of systematization of literature dealing with the above subject, and is concerned with the regeneration of the more important Soviet industrial anionites; АН-1, АН-2Ф, ЭДЭ-10П, АВ-16, and АВ-17 (AN-1, AN-2F, EDE-10P, AV-16 and AV-17). The resins were prepared by treatment with sat. NaCl, washing with water, packing into a column, threefold successive washing with 0.5 N NaOH, and 0.02 N HCl, and finally by washing with 5 volumes of distilled H_2O per vol. of resin. In the regeneration tests, samples of the resin thus prepared were then packed into

Card 1/2

KOZHEVNIKOV, A.N.; LAZEBNIKOV, Yu.S., dots.; MIROSHNIK, B.Ye., dots.; SHADRIN, N.A., prof.; Prinimali uchastiye: SUBBOTIN, B.K., st. prepod.; VOROTNIKOV, V.I., dots.; ANPILOGOV, R.G., retsenzent; ALEKSEYEV, V.B., retsenzent; LYUBOMUDROV, A.P., retsenzent; CHERNOV, P.N., retsenzent; PESKOVA, L.N., red.; BOBROVA, Ye.N., tekhn. red.;

[Economics of railroad engineering] Ekonomika zheleznodorozhnogo stroitel'stva. [By] A.N.Kozhevnikov i dr. Moskva, Transzheldorizdat, 1963. 242 p. (MIRA 17:1)

OGANESOV, I.S.; KASPE, M.I.; ANPILOGOV, R.G., retsenzent; KOLTUNOVA, M.P., red.; BOBROVA, Ye.N., tekhn. red.

[Planning, business accounting and the analysis of the production and administrative operations of transportation construction enterprises] Planirovanie, khoziaistvennyi raschet i analiz proizvodstvenno-khoziaistvennoi deiatel'nosti organizatsii transportnogo stroitel'stva, Moskva, Transzheldorizdat, 1963. 330 p. (MIRA 17:2)

LEVIN, B.I.; ANPILOGOV, R.G.; BOGATYREV, A.F.; BRYKIN, S.V.; GOL'DMAN, M.S.; DAVYDOV, G.V.; ZADORIN, B.M.; ZERENINOV, A.M.; LAPUSHKIN, A.D.; LEDENEV, V.I.; MURAV'YEV, V.I.; OGANESOV, I.S.; PETROV, N.I.; SIDORIN, V.K.; SOLDATOV, Ye.G., obshchiy red.; KARAMYSHEV, I.A., red.; PESKOVA, L.N., red.; KHITROV, P.A., tekhn.red.

[Manual for studying the economics of construction in the transportation industry] V pomoshch' izuchaiushchim ekonomiku transportnogo stroitel'stva. Moskva, Gos.transp.zhel-dor. izd-vo, 1959. 271 p. (MIRA 12:7)
(Construction industry) (Transportation)

ANPILOGOV, R.G.; MURAV'YEV, V.I., retsenzent; KOLTUNOVA, M.P., red.; VOROB'YEVA, L.V., tekhn. red.

[Organization and planning of transportation construction] Organizatsiia i planirovanie transportnogo stroitel'stva. Moskva, Transzheldorizdat, 1963. 73 p. (MIRA 17:2)

ANPILOGOV, R.G.

Great work of builders of transportation systems. Transp. stroi. 14 no.1:2 Ja '64. (MIRA 17:8)

1. Nachal'nik Planovo-proizvodstvennogo upravleniya Gosudarstvennogo proizvodstvennogo komiteta po transportnomu stroitel'stvu SSSR.

ANTIPOV, K.

GAPT, V. and K. ANTIPOV.

Kapital'noe vosstanovlenie vtorykh putei. [Large scale restoration of second tracks]. (Zhel-dor. transport, no. 7, 1947, p. 9-16).
Lists the railroads receiving double-tracking.

DLC: HE7.Z5

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

Journal of the Iron and Steel Institute
Vol. 176 Part 3
Mar. 1954
Foundry Practice

Centrifugal Casting of Piston Rings. P. I. Anpilogov. (*Liteinoe Proizvodstvo*, 1953, 8, (1), 4–6). [In Russian]. The qualities required of piston rings for high-speed Diesel engines are considered, and the experimental replacement of the cored mould by centrifugal casting for the production of the ring pots (cylinders from which the rings are cut) is described. For producing the iron used in the experiments, the operation of the cupola and the casting process were adjusted so that a hot iron with a high combined-carbon content was obtained. Good rings were made by centrifugal casting from an iron with the composition: Total C 3·16–3·70%, combined C 0·63–0·88%, Mn 0·79–1·27%, Si 1·33–1·93%, S 0·02–0·08%, P 0·32–0·58%, Cr 0·14–0·38%.—S. E.

BOBRO, Yuriy Georgiyevich; ANPILOGOV, R.I., inzh., retsenzent; SOROKA, M.S., red.

[Heat-resistant and growth-resistant cast iron] Zharostoikie i rostoustoichivye chuguny. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 167 p. (MIRA 13:7)
(Cast iron--Metallography)
(Heat-resistant alloys)

FIRSTOV, Aleksey Nikolayevich; SMIRNOV, Fedor Ivanovich; BUDYLIN, Mikhail Mikhaylovich; AMPILOGOV, R.I., insh., retsenzent; PYASIK, I.B., insh., red.; FURER, P.Ya., red.

[Mechanization of casting in shell molds] Mekhanizatsiia lit'ia v obolochkovye formy. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1960. 174 p. (MIRA 13:7)
(Founding--Equipment and supplies)

ANPILOGOV, R.I.

"Magnesium cast iron" by K.I. Vashchenko, L. Sofroni. Reviewed by R.I. Anpilogov. Lit. proizv. no. 4:48-3 of cover Ap '61.
(MIRA 14:4)

(Cast iron) (Vashchenko, K.I.)
(Sofroni, L.)

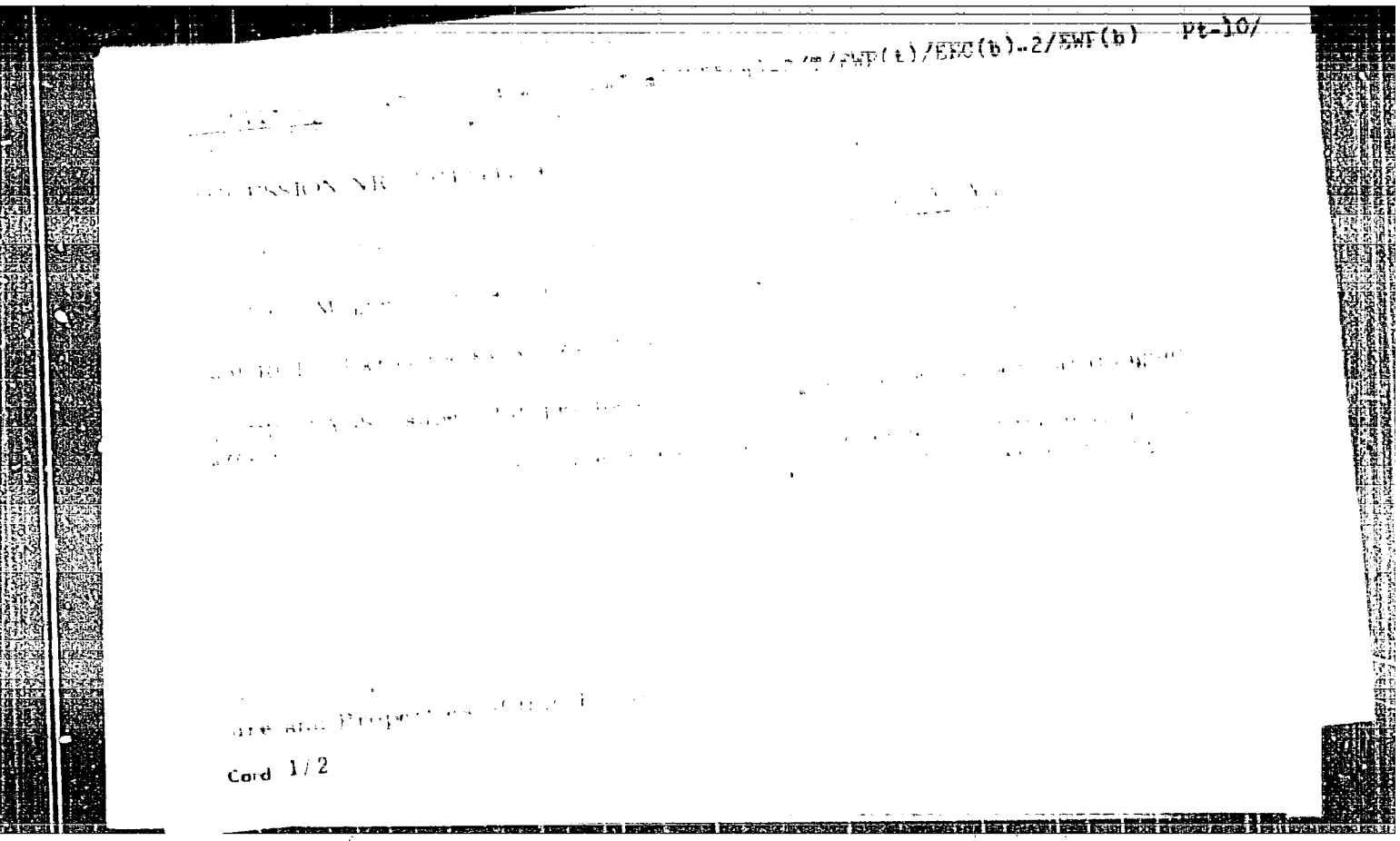
KRYLOV, Vladimir Iosifovich; BRONTVAYN, Leon Robertovich; ANPILOGOV, R.I., inzh., retsenzent; TARASOVICH, V.S., inzh., red.; FURER, P.Yu., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn.red.

[Guide to melting with high-frequency currents] Pamiatka plavil'shchika-vysokochastotnika. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 112 p. (MIRA 14:4)
(Precision casting) (Induction heating)

ANPILOGOV, V.V., inzh.

Ways to lower the cost of reinforced concrete in industrial construction by using large-diameter reinforcement. Energ. stroi. no.22:79-81 '61. (MIRA 15:7)

1. Stroitel'noye upravleniye "Frunzeenergostroy".
(Reinforced concrete)



L 16118-65
ACCESSION NR: AP4044174

oxidation and by the super paramagnetic effect. Orig. art. has: 2 figures.

ASSOCIATION: Institut kibernetiki AN UkrSSR, Kiev Institute of Cybernetics, AN UkrSSR

SUBMITTED: 13Sep63 ENCL: 00

SUB CODE: SS, MM NO REF SOV: 000 OTHER: 007

Card 2/2

ANPILOGOVA, V.A. [Anpilohova, V.A.]

Chemical methods of controlling rose diseases. Visnyk Bot.sada AN URSR no.1:135-141 '59. (MIRA 13:8)
(Kiev--Roses--Diseases and pests) (Fungicides)

SHERSTOBITOVA, M.; POLUEKTOV, N.; ANPILOGOVA, Yu.; YAKUSHINA, O.; ORLOVSKAYA, R.

More on veterinary control. Miss. ind. SSSR 29 no.2:20 '58. (MIRA 11:5)

1. Barnaul'skiy myasokombinat.
(Meat inspection)

ANFILOV, A.A., general-mayor aviatsii, Geroy Sovetskogo Soyuza, voyennyy letchik pervogo klassa

The rear and flights. Vest.Vozd.Fl. no.8:62-63 Ag '61. (MIRA 14:8)
(Airplanes, Military--Maintenance and repair)

ANFILOV, A.Ya.; IGNATOV, N.N.; [illegible]

Technology of manufacturing press powders with dewatering of the slip in drier drums. Stek. i ker. 22 no.7:39-41 Jl '65. (MIRA 18:9)

1. Voronezhskiy zavod keramicheskikh izdeliy.

ZVORYKIN, V.V.; ANTILOV, G.D.

Steam, air and water consumption in the Plakhtyanka and Nemeshayev plants of antibiotic feeds. Spirt. prom. 28 no.6:25-29 '62. (MIRA 16:10)

1. Kiyevenergonaladka.

ANFILOV, N.I., veterinarnyy vrach

Using antibiotics for treating calves affected with pasteurellosis.
Veterinariia no.12:54-55 D '63. (MIRA 17:2)

1. Sovkhoz "Vityazevo" Krasnodarskogo kraya.

ANPILOV, V., starshiy leytenant

Good work depends on friendly relations with other seamen.
Komm.Vooruzh.Sil 2 no.15:61-64 Ag '62. (MIRA 15:7)
(Russia--Navy)

AKSENOV, Valentin Ivanovich, kand.tekhn.nauk; ANPILOV, V.P., inzh., otv. red.; MAKHKAMOV, U., tekhn.red.

[Capacity value of the expansion of tracks on railroad lines and its potentials under the conditions of diesel and electric traction] Emkost' putevogo razvitiia zheleznykh dorog i ee rezervy v usloviiakh teplovoznoi i elektrovoznoi tiagi. Tashkent, 1960. 71 p. (Tashkent. Institut inzhenerov zheleznodozhnogo transporta. Trudy, no.13). (MIRA 15:2)

(Railroads—Management)

MELESHKO, V.P.; ANPILOVA, N.S.; ROMANOV, M.N.; CHERVINSKAYA, O.V

Economic method of regenerating cation-exchanging filters in thorough desalting of water. Zhur. prikl. khim. 33 no.11:2481-2486 N '60. (MIRA 14:4)
(Base-exchanging substances)
(Filters and filtration)

MELESHKO, V.P.; ANPILOVA, N.S.; ROMANOV, M.N.; CHERVINSKAYA, O.V.

Operation of filters with a mixed-bed ion exchangers. Zhur.prikl. khim. 35 nb.1:60-66 Ja '62. (MIRA 15:1)
(Filters and filtration) (Ion exchange resins)

MELESHKO, V.P.; IZMAYLOVA, D.R.; CHERVINSKAYA, O.V.; ANPILOVA, N.S.

Particular features of the regeneration of various type anion-exchange resins. Zhur.prikl.khim. 36 no.1:130-134 Ja '63. (MIRA 16:5)
(Ion exchange resins)

AMPILOVA, V.I.

Taxonomic position of Coregonus sardinella baunti, Muchomedijarov, 1948. Dokl.AN SSSR 111 no.4:898-900 D '56. (MLRA 10:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut ozernogo i rechnogo rybnogo khozyaystva.
(Buryat-Mongolia--Whitefishes)

ANPILOVA, V.I.

Development of the reproductive system in lavarets with spawning in early spring under new habitat conditions. Vop. ekol. 5:7 '62. (MIRA 16:6)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut ozernogo i rechnogo rybnogo khozyaystva, Leningrad.
(Whitefishes) (Acclimatization)

ANREP, V.K.

RT-154 (Poisoning from fish and fish poison). Otravlenie ryboi i rybnyi iad. Vrach', 6: 213-216, April 4, 1885.

BAZYLENKO, G. I., kand. tekhn. nauk; YERMILOV, S. S., kand. tekhn. nauk; AMREYEV, A. S.; MAKAROVSKIY, O. D.

Results of investigating tractor trains with trailers having driving axles. Avt. prom. no.11:13-17 N '60. (MIRA 13:11)
(Tractor trains)

AMRIYEVSKIY, A.I.; KARELIN, N.N.

Measuring the viscosity of nontransparent liquids. Priborostroenie no.4:24-25 Ap '56. (MLRA 9:8)
(Viscosity--Measurement)

EGLE, K.; ANSABERG, I.

Sergeev-Tsenskii and Soviet Latvia. In Russian. Vestis Latv ak no.5:181-187 '60. (KEAI 10:7)
(Sergeev-Tsenskii, Sergei Nikolaevich)
(Russian fiction--History and criticism)

TOLKUSHEV, G.I.; SHCHERBAK, G.S.; ANSABAYEV, A.A.

Efficiency of using slab charges. Izv.AN Kazakh.SSR.Ser.gor.dela no.2:57-64 '61. (MIRA 15:2)
(Blasting)

AKSATAROV, A.A.

Methods of the transmission of intestinal infections on Alma-Ata. Report No.1. Zdrav. Kazakh. 21 no.10:54-56 '61. (MIRA 15:2)
(ALMA-ATA--INTESTINES--DISEASES)
(ALMA-ATA--WATER SUPPLY)

ANSBERG, A.

[Estonian S.S.R.; its economy and culture] Estonskaia SSR; ekonomika i kul'tura. Tallinn, Estonskoe gos. izd-vo, 1960. 197 p. (MIRA 15:3)

(Estonia)

[redacted], R. A.

ANSBERG, G. A.

PA 161T35

USSR/Electricity - Rectifiers, Mercury Arc — Power Supply, Railroad — Mar 50

"The 'Single Star' Condition in Single-Anode Rectifiers," G. A. Ansberg, $1\frac{1}{2}$ pp

"Prom Energet" No 3

Some years ago USSR industry began delivering new single-anode mercury arc rectifiers to railroad traction installations. They have two serious defects: (1) they consume a lot of power for their own requirements; (2) they are apt to lapse into a "single star" condition.

[redacted] 161T35

USSR/Electricity - Rectifiers, Mercury Arc (Contd) — Mar 50

First defect can be corrected only by much research and design work. Describes two ways of dealing with (2), one of which worked successfully at Iset' substation on Sverdlovsk Railroad.

[redacted] 161T35

SIDOROV,N.N., kandidat tekhnicheskikh nauk, dotsent.; SHELESHKOV,K.K., kandidat tekhnicheskikh nauk; ANSHERG,G.A., inzhener; PLAKS,A.V., inzhener

Improving the electric circuits of direct current trunk line electric locomotives. Sbor. LIIZHT no.145:52-73 '53.
(Electric locomotives) (MLRA 8:10)

ANSHERG, G.A., inzhener, aspirant

Protection of the power system of d-c electric locomotives which use electric braking. Sbor. LIIZHT no.145:91-98 '53.
(Electric locomotives) (MLRA 8:10)

ANSHERO, O.A., kand.tekhn.nauk (Rostov-na-Donu)

Development of power supply equipment in relation to extent of traffic movement. Zhel. dor. transp. 40 no.1:49-53 Ja '58. (MIRA 11:1)

(Railroads--Electric equipment)

AMBERG, G.A., kand.tekhn.nauk

Transient processes in the power networks of a.c. locomotives. [Trudy] LIIZHT no.193:48-57 '62. (MIRA 15:12)

1. Rostovskiy institut inzhenerov zheleznodorozhnogo transporta.

(Electric locomotives)

ANSBERG, N. A.

Genetic Classification of the Quaternary Clays of Latvian SSR

The author proposes a detailed scheme of the genetic classification of the quaternary clays of the Latvian SSR. The quaternary clays are divided into (a) residual or primary, and (b) sedimentary or redeposited, which latter one is further divided into transgression clays of the Baltic basin (deposits of fresh-water stages of baltic glacial lakes, and deposits of salt water stages of the Littoral Sea) and continental-non-glacial clays (marine clays, and clay deposits of thawing waters of glaciers). (RZhGeol, No. 5, 1955) Izv. AN Laty SSR, No. 3, 1954, 125-33 (Latvian resume)

SO: Sum. No. 744, 8 Dec 55 - Supplementary Survey of Soviet Scientific Abstracts (17)

AJNSHTEIN, N.A.

Tectonics of the western part of the Northern Caucasus (basin of the Kuban' and Belaya Rivers). Vest.Len.un.10 no.1:125-137 Ja '55.
(Caucasus, Northern--Geology, Structural) (MLRA 8:4)

ANSBERG, N.A.

Hypothesis rotational forces in orogeny. Vest.LGU 18 no.6: 137-143 '63. (MIRA 16:4)

(Mountains)

ANGBERG, N. A.

Relation of the endogenous and exogenous energy sources of geological processes. Vest LGU 19 no. 6:7-11 '64.
(MIRA 17:5)

TARMISTO, V., kand. geogr. nauk; Prinimali uchastiye: RENTER, R.; VINT, E.; ELENURM, Kh.[Ellenurm, H.]; REBANE, I.; ANSBERG, T.; DAVYDOVA, T., red.; LIIVAND, T., tekhn. red.

[The Estonian S.S.R.]Estonskaia SSR. Tallinn, Estonskoe gos. izd-vo, 1962. 635 p. (MIRA 15:11)
(Estonia)

ANSBERG, Ye.A.

Chlorine-bromine ratio in underground waters of the Fergana Valley [with summary in English]. Vest.LGU 13 no.12:72-86 '58. (MIRA 11:12)

(Fergana Valley--Water, Underground) (Halogens)

ANSBERG, Ye.A.

Some characteristics of the chemical composition of waters in Creatceous sediments of the Fergana Valley. Vest LGU 17 no.18:5-17 '62. (MIRA 15:10)

(Fergana—Water, Underground—Composition)

ANSBERG, Ye.A., assistent; BOROVITSKIY, V.P., dotn.; BUTS, Sh.F., dotr.; Prinimali uchastiye: SERGEYEV, V.A., dots.; SAMARINA, V.S., st. nauchn. sotr.; SKOKYNINA, N.P., red.

[Practice in general hydrogeology] Praktikum po obshchei gidrogeologii. Leningrad, Izd-vo Leningr. univ., 1965. 231 p. (MIRA 18:4)

1. Kafedra gidrogeologii Leningradskogo gosudarstvennogo universiteta im. A.A.Zhdanova (for Buts, Ansberg, Sergeyev). 2. Institut Zemnoy kory, Leningrad (for Samarina). 3. Gornyy institut, Leningrad (for Borovitskiy).

ANSCHERLIK, A., ins.

Automatic device for measuring total and perceptible water basicity (p and m values). Bul EGU no.4:10-12 '62.

ANSCHERLIK, Arnost, inz. (Praha); GREGORA, Otakar, inz. (Praha); BOHM, Ferdinand (Praha)

Method and equipment for the measurement of solid particle quantity in flowing gases. Energetika Cz 13 no.6:336 Je '63.

L 29462-66

ACC NR: AP6006158 (A) SOURCE CODE: CZ/0078/0007/000/010/0019/0019

AUTHOR: Anscherlik, Arnost (engineer, Prague)

ORG: None

22
B

TITLE: A photoelectric compensation device for a colorimetric analyzer. CZ Pat. No. PV 6831-62

SOURCE: Vynalezy, no. 10, 1965, 19

TOPIC TAGS: colorimetric analysis, colorimetry, photoelectric cell

ABSTRACT: A photoelectric compensation device for a discontinuously operating colorimetric analyzer is described in which the interrupting diaphragm alternately blocks the light beam coming from one source and passing through the measuring cell or the compensating cell. One of the cells is automatically shaded by the measuring cell which is mechanically linked to a potentiometer connected to the recording apparatus which contains one photoelectric cell, and consists of a first and second converging lens between which is positioned the measuring cell, the compensation cell and the interrupting diaphragm. A lamp is positioned at the focus of the first converging lens and a photoelectric cell at the focus of the second converging lens. An electric motor connected to the interrupting diaphragm is mechanically linked through a gear box with the measuring cell and a sliding potentiometer.

SUB CODE: 09, 14, 20/ SUBM DATE: 04Dec62

Card 1/1

ANSCHERLIK, Arnost, inz. (Praha)

Dosing apparatus. Energetika Cs 12 no.10:555 O '62.

L 33681-66
ACC NR: AP6024254

SOURCE CODE: CZ/0080/66/000/002/0031/0036

AUTHOR: Anscherlik, Arnost (Engineer)

ORG: Power Research Institute (Vyzkumny ustav energeticky)

TITLE: New colorimetric and coulometric analyzers

SOURCE: Automatizace, no. 2, 1966, 31-36

TOPIC TAGS: electric power engineering, colorimetric analysis

ABSTRACT: The article presents a list of sixteen requirements for analyzers to be used in chemical production or for analyses in power engineering. Two new types of colorimetric and coulometric analyzers having sectional design, block arrangement and valveless dosing are described. Orig. art. has: 11 figures. [JPRS]

SUB CODE: 07, 10 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 002

Card 1/1 PB

UDC: 535.8: 637.721.8

AUTHORS: Ansel'm, A.A., Shekhter, V.M. 56-2-24/47

TITLE: Note on the Production of π-Mesons by Protons on Nuclei of Various Elements (O roshdenii π-mesonov protonami na yadrakh razlichnykh elementov)

PERIODICAL: Zhurnal Eksperim. i Teoret.Fiziki, 1957,Vol. 33, Nr 2(8) pp. 481-484, (USSR)

ABSTRACT: The present paper investigates the dependency of the probability of the production of pions on the occasion of the collision of protons with nuclei containing A nucleons. In the range of heavy nuclei the observed production rate of pions increases with growing A with a rate less then $A^{2/3}$. In order to explain this fact it can be assumed, that a considerable absorption of photons striking the nucleus takes place apart from a great probability for the absorption of the pion generated within the nucleus. Absorption here means the effective disparition of protons which are able to generate pions from the beam of radiation. A number of other causes for the deviation from the $A^{3/2}$- law are particularized. The absorption of mesons is supposed to be large effectively over the entire periodic system. The expression for the cross-section is transformed. In the case of $\varkappa R \gg 1$ ($R = R_0 A^{1/3}$-, denoting the radius of the nucleus and $\varkappa$ a parameter) only a thin layer on the surface of the nucleus with the thickness $\sim 1/\varkappa$ contributes to the cross section. The physical meaning of the various terms in the expression XXX for the

Card 1/2

AUTHOR: Ansel'm, A.A.

TITLE: The Scattering of Slow Neutrons on Diatomic Molecules. 56-3-13/59
(Rasseyaniye medlennykh neytronov dvukhatomnymi molekulami)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 3, pp 625-635 (USSR)

ABSTRACT: The cross section for elastic and inelastic neutron scattering is theoretically calculated for molecules which consist of 2 equal or 2 different atoms. The zero oscillation of the molecules is taken into account. The general formulae obtained can be applied to the scattering on T_2, HT and DT-molecules. The comparison of the experimentally found data for the scattering cross section on these molecules with the values obtained from the derived formulae creates the possibility to determine the amplitude of the neutron scattering on the tritium nucleus.

ASSOCIATION: Leningrad Physical-Technical Institute AN USSR
(Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR)

SUBMITTED: January 4, 1957

AVAILABLE: Library of Congress

Card 1/1

AUTHORS: Ansel'm, A. A., Shekhter, V. M. SOV/56-34-3-42/55

TITLE: On a Possible Asymmetry of the Particles and Antiparticles in Weak Interactions (O vozmozhnoy nesimmetrii chastits i antichastits v slabykh vzaimodeystviyakh)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 3, pp. 761 - 762 (USSR)

ABSTRACT: The latest experimental data on the β-ν-correlation show that the positron decay processes of Ne^{19} and A^{35} can be explained by a mixture of the A- and V-variants of β-interaction, while the electron decays of He^{6} and of the free neutrons are dependent on the T- and obviously on the S--variant. In the positron decay of Co^{58} the experiments analogously show a weak interference of the Fermi interaction and the Gamov-Teller interaction, while this interference is very great in the electron decay of Au^{198} and Sc^{46}. When all these experiments are looked upon as correct these facts sharply contradict the present theory. When various processes are taken to be the cause for the

Card 1/4

On a Possible Asymmetry of the Particles and Antiparticles in Weak Interactions

processes $n \rightleftarrows p + e^- + \bar{\nu}$ and $p \rightleftarrows n + e^+ + \nu$ this means a renunciation of the symmetry of the particles and antiparticles in weak interactions. Then the antiparticles are no longer an exact analogon of the corresponding particles with opposite charge. Their masses can, for instance, differ by an amount of about g^2 (square of the constant of weak interactions). First the self-adjoint, relativistically invariant Hamiltonian of the β-decay is put down, containing e^-, e^+, ν and $\bar{\nu}$ in an asymmetric way. At a time inversion all constants are to be substituted by their conjugated complex values. The usual theory of β-decay is obtained when certain constants are equal to one another. A similar separation into a positive frequency part and a negative frequency part can also be carried out with the operation of the nucleons. It is, however, not certain if this has any sense. The above mentioned Hamiltonian is non-local and therefore holds $\left[H(x_1), H(x_2)\right] \neq 0$; when x_1 and x_2 are separated from each other by a space-like interval. This commutator contains the functions $S(x_1-x_2)$, instead of the function $S(x_1-x_2)$, which do not

On a Possible Asymmetry of the Particles and Antiparticles in Weak Interactions

disappear outside the lightcone. When the operators S^+ and S^- refer to electrons this means the abolition of the causality in the weak interactions at distances of about $\hbar/m_e c$. There is no such localization for a neutrino field. This is a serious objection against the considerations given here. As, however, the theoretical principles earlier regarded as absolutely correct (the conservation of the parity and the invariance with respect to the charge conjugatedness) were generally dropped. An experimental checking of the scheme developed here is nevertheless useful. An exact comparison of the ratio between the probabilities of β^+-decay and K-capture of one and the same nucleus with the value predicted by the usual theory would be especially desirable. An analogous but difficult experiment is the comparison between β^+-decay and the absorption of the antineutrino by a proton. There are 3 references, 0 of which are Soviet.

SOV/56-34-3-42/55

On a Possible Asymmetry of the Particles and Antiparticles in Weak Interactions

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR
(Physical-Technical Institute Leningrad AS USSR)

SUBMITTED: December 9, 1957

Card 4/4

AUTHORS: Anisovich, V. V., Anselm, A. A. 56-34-4-32/60

TITLE: The Non-Conservation of Parity in the Processes of the Capture of a Neutrino by Protons and Deuterons (Nesokhraneniye chetnosti v protsessakh zakhvata neytrino protonami i deytronami)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 995-997 (USSR)

ABSTRACT: This paper gives formulas for the cross sections of the induced β-decay of the protons ($p + \nu \rightarrow n + e^+$) and of the deuterons ($d + \bar{\nu} \rightarrow 2n + e^+$), taking into account the polarization of the impinging antineutrinos. In this connection also the target-nuclei are presumed to be polarized. First of all an expression for the density matrix of a polarized particle-beam with the spin 1/2 and the mass 0, is written down. In the tests dealing with the induced β-decay, neutrinos which are emitted from a reactor are used. Under these conditions a polarization of the neutrino other than the longitudinal one is difficult. The computations carried out in the usual way lead to quite an extensive expression for the cross section of the capture of an antineutrino by protons. The expression is given in this

Card 1/3

paper. Let the Hamiltonian of the interaction be assumed to have the same form as with T.D. Lee, and C.N. Yang (Ref 2). At the capture of a neutrino by polarized protons it is possible to determine whether parity with respect to time is conserved in this process. By measuring the total number of electrons, flying right and left of the plane $\vec{q}, \vec{\zeta}$, the expression $\sigma_+ - \sigma_- = (a\gamma/4\pi)p^2 \zeta \sin\vartheta$ is obtained for the difference of the cross sections. $\vec{q}$ denotes the momentum of the impinging anti-neutrinos, ζ - the polarization vector of the protons and ϑ - the angle between $\vec{q}$ and $\vec{\zeta}$. If parity with respect to time is maintained, it is true that $\sigma_+ = \sigma_-$. The main consideration of the authors is in this case the fact that the neutrons are produced mainly in the S-state at the reaction $d + \vec{\nu} \rightarrow 2n + e^+$ and that $(\vec{p}' - \vec{q}')^2/4M\varepsilon_0 \ll 1$ is true. $\vec{p}' - \vec{q}'$ denotes the total momentum and ε_0 - the binding energy of the deuteron. The expression resulting under those circumstances for the cross section $d\sigma$ is written down and the significance of the terms occurring therein is briefly explained. In conclusion the authors thank I.M. Shmushkevich and V.N. Gribov for their useful advice and discussions. There are 4 references, 0 of which are Soviet.

Card 2/3

The Non-Conservation of Parity in the Process of the Capture of a Neutrino by Protons and Deuterons

56-34-4-32/60

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Institute of Physics and Technology, AS USSR)

SUBMITTED: December 9, 1957

1. B-particles--Decay 2. Pasitrons--Nuclear reactions
3. Neutrinos--Polarization

Card 3/3

SOV/56-35-6-31/44

24(5)

AUTHOR: Ansel'm, A. A.

TITLE: The Asymptotic Theory of One-Dimensional Four-Fermion Interaction (Asimptoticheskaya teoriya odnomernogo chetyrekhfermionnogo vzaimodeystviya)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1522-1531 (USSR)

ABSTRACT: In the introduction investigations of this subject carried out by other authors are discussed. Thus, L. D. Landau, A. A. Abrikosov and I. M. Khalatnikov (Ref 1) derived a solution of the quantum-electrodynamic equations in the asymptotic range $p^2 \gg m^2$ (where p denotes the four-momentum of the particles and m - their mass), which, for the bare charge e_0 and the renormalized - e_c results in: $e_c^2 = e_0^2/\left[1 + (e_0^2/3\pi)L\right]$, which leads to difficulties with respect to $L \to \infty$ and, besides, does not agree with the Lehmann (Leman) theorem (Ref 2) as regards the conclusions drawn. Thirring (Tirring) gave an exact solution of one-dimensional four-fermion interaction (Ref 8). In the present paper the author investigates a fermion field interacting with itself and having a single space- and

Card 1/3

The Asymptotic Theory of One-Dimensional Four-Fermion Interaction

a single time coordinate. By summating an infinite number of graphs, asymptotic expressions are found for the vertex part in Green (Grin)'s function. It is shown that the here developed variant of the field theory is free from divergences and that renormalization of the charge is lacking. It was further found that, while the one-limit procedure leads to a correct expression for the first term in the expansion of the exact solution in an asymptotic series, the two-limit procedure yields an incorrect result. In conclusion, the results are compared with those obtained by Thirring. Also a paper by M. Ye. Mayer and D. V. Shirkov, who obtained a similar expression for the vertex part as the author, is discussed.
The author thanks K. A. Ter-Martirosyan, at whose suggestion work was carried out, for his assistance and interest, and they further express their gratitude to I. Ya. Pomeranchuk and A. D. Galanin for discussing the results obtained. There are 6 figures and 10 references, 4 of which are Soviet.

The Asymptotic Theory of One-Dimensional Four-Fermion Interaction SOV/56-35-6-31/44

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physico-Technical Institute of the Academy of Sciences, USSR)

SUBMITTED: July 9, 1958

Card 3/3

24(5)

AUTHOR: Ansel'm, A. A. SOV/56-36-3-33/71

TITLE: A Model of a Field Theory With a Nonvanishing Renormalized Charge (Model' teorii polya s neischezayushchim perenormirovannym zaryadom)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 3, pp 863-868 (USSR)

ABSTRACT: As shown by the author already in one of his earlier papers (Ref 2), it may be assumed that in this model of the relativistically invariant field theory the connection between renormalized and bare charge is such that in the case of a passage to the limit to point interaction, the renormalized charge does not vanish. A thorough investigation shows, however, that as a result of a special reduction of the series terms in the perturbation theory, the theory in general contains no divergences, so that the renormalized charge is lacking and the problem of zero charge in general does not arise. In the present paper the author investigates two spatially onedimensional spin fields which are in four-fermion interaction both with themselves and mutually. In this connection, a logarithmic divergence occurs in the vertex part,

Card 1/3

and consequently, an infinite renormalization of the charge takes place. However, in deviation from the various three-dimensional variants of the field theory, where it has hitherto not been possible to avoid the vanishing of the renormalized charge in the local theory, it turns out to be possible, in the model dealt with in this case, to develop a renormalized solution (or, more exactly, an asymptotic solution for great momenta), viz. for arbitrary values of the renormalized charge. Mathematically, procedure is as follows: The vertex part in its general form is

$$\Gamma = \sum_{i,k} \alpha_{ik} (\tau_i \times \tau_k) \sum_{\mu} (\sigma_\mu \times \sigma_\mu) .$$

Its first term is expanded in series and appears in spinor form

$$\Gamma = \left[\alpha_1(\tau_1 \times \tau_2) + \alpha_2(\tau_2 \times \tau_2) + 2\alpha_3(\tau_1 \times \tau_2)\right] \sum_{\mu} (\sigma_\mu \times \sigma_\mu)$$

For the α_i the equation $f_i(\xi) = \frac{1}{2\pi} \int_{\xi}^{L} \alpha_i^2(z)dz$

A Model of a Field Theory With a Nonvanishing Renormalized Charge SOV/56-36-3-33/71

as well as 3 further equations of the form (6) hold. In the following, the integral equation of the form

$$\Gamma(\xi) = \lambda + \frac{1}{\pi}\int_{\xi}^{L} \varphi^2(z)dz \text{ and that of the form}$$

$$\varphi(\xi) = \nu + \frac{1}{2\pi}\int_{\xi}^{L} \left[f(z) - \varphi(z)\right]\varphi(z)dz \qquad (6) \text{ is solved}$$

and investigated, and the conditions under which the renormalized charge may possess an arbitrary, nonvanishing value are investigated, for which purpose the results of reference are partly used. The method of developing integral equations for Γ in the asymptotic domain $p^2 \gg m^2$ originates from Dyatlov, Sudakov, and Ter-Martirosyan (Ref 4). There are 5 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Physico-Technical Institute of the Academy of Sciences, USSR)

SUBMITTED: September 13, 1958

Card 3/3

21(7), 24(5)
AUTHORS: Ansel'm, A. A., Gribov, V. N.

SOV/56-36-6-37/66

TITLE: On the Possibility of Determining the π-π-Scattering Amplitude by Analysis of the Reactions $\gamma + p \rightarrow n + \pi + \pi$ Near Threshold (O vozmozhnosti opredeleniya amplitud π-π-rasseyaniya iz analiza reaktsiy $\gamma + p \rightarrow n + \pi + \pi$ vblizi poroga)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 6, pp 1890 - 1893 (USSR)

ABSTRACT: In view of the fact that hitherto hardly any reliable data concerning π-π-interaction have been available, the authors decided, in continuation of earlier papers by Gribov (Refs 1 - 3), to carry out further investigations in this field. They show to what extent the experimental investigation of the photoproduction of two pions near threshold is able to supply information concerning the π-π-scattering amplitudes at zero energy. Part 1 of the paper deals with the case in which pion interaction at low energies is not of resonance character. In this case it is possible, for the purpose of determining the energy- and angular distribution of reactions near threshold, to use Gribov's method (Refs 1 - 3), which had originally been developed for β-meson decay. By an analysis of the possible pion photoproduction reactions: $\gamma + p \rightarrow p + \pi^+ + \pi^-$,

Card 1/2

On the Possibility of Determining the π-π-Scattering Amplitude SOV/56-36-6-37/66
by Analysis of the Reactions $\gamma + p \rightarrow N + \pi + \pi$ Near Threshold

$\gamma + p \rightarrow p + \pi^0 + \pi^0$, and $\gamma + p \rightarrow n + \pi^+ + \pi^0$ it is possible to determine the π-π scattering amplitudes by means of formulas (1) and (3). The latter gives the development of the squares of the matrix elements of the processes $|\langle p\pi^+\pi^-|S|p\gamma\rangle|^2$, $|\langle p\pi^0\pi^0|S|p\gamma\rangle|^2$, and $|\langle n\pi^+\pi^0|S|p\gamma\rangle|^2$ with an accuracy including linear terms. In part 2 of the paper the case is investigated in which π-π scattering reaction has resonance character at low energies. The energy distribution occurring in this case has already been investigated for other reactions(Ref 4). Whereas, in the former case (no resonance) the π-π scattering amplitude a was of the order of magnitude of the effective radius of the forces (the Compton wavelength of the pion), the influence of pion interaction in the latter case is of the order of magnitude 1 ($ka \approx 1$). Formula (6) corresponds to (3); it also applies to states with isotopic spin 0 and 2 (1 is impossible) and zero energy. The authors finally thank S. V. Dresvin for carrying out several calculations. There are 5 references, 2 of which are Soviet.

SUBMITTED: January 19, 1959
Card 2/2

21(7) SOV/56-37-2-25/56

AUTHORS: Ansel'm, A. A., Gribov, V. N.

TITLE: On the Possibility of Determining the Amplitude of π-Meson-π-Meson Charge Exchange by Analysing the $\pi^- + p = N + \pi^+ + \pi^-$ Reactions Near the Threshold

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 2(8), pp 501-503 (USSR)

ABSTRACT: In a previous paper by the authors (Ref 1) it has been shown that the experimental investigation of the photoproduction of two pions near the threshold furnishes data on the charge exchange amplitude of mesons $(\pi^+, \pi^-) \to 2\pi^0$ at zero energy. This report presents similar results for the production of a pion pair by the collision of a pion with a proton. In this case it is possible to use a somewhat different method for the interpretation of the experimental information owing to the knowledge of the phases of the scattering of the pions on nucleons (δ_{31} and δ_{11}). When a negative pion collides with a proton three reactions with a production of two pions are possible: $\pi^- + p \to n + \pi^+ + \pi^-$ (1a), $\pi^- + p \to n + \pi^- + \pi^0$ (1b), $\pi^- + p \to p + \pi^- + \pi^0$ (1c). Similar as for the photoproduction of two pions it is possible to give the squares of the matrix elements for the above reactions with an accuracy to within

Card 1/3

On the Possibility of Determining the Amplitude of π-Meson-π-Meson Charge Exchange by Analyzing the $\pi^- + p = N + \pi^+ + \pi^-$ Reactions Near the Threshold

the terms linear in kr_0, if the interaction in the final state is considered. These lengthy expressions are written down and discussed. A contribution is made to the matrix elements of these reactions at the threshold energy by the state $P_{1/2}$ of the system (π^-,p). The state (π^-,p) is a superposition with $T = 1/2$ and $T = 3/2$ with respect to the isotopic spin. If, however, the state of the system (N,π,π) is characterized by the total isotopic spin T and the isotopic spin T_{12} of both pions, $T = 1/2$, $T_{12} = 0$ or $T = 3/2$, $T_{12} = 2$ are possible in the final state. Hence, the three amplitudes λ_i can be expressed by the two isotopically invariant matrix elements $\langle {}^1/_2\ 0|s|{}^1/_2\rangle, \langle {}^3/_2\ 2|s|{}^3/_2\rangle$. The phases of these matrix elements occur in the initial state owing to the interaction and coincide with the phases δ_{11} and δ_{31} of the pion-nucleon scattering in the states $P_{1/2}$ with the isotopic spin $T = 1/2$ and $T = 3/2$ (at an energy corresponding to the threshold value of the reactions in question). The absolute value of $\varrho_{12}\sin\varphi_{12}$, which determines the order of magnitude of the

On the Possibility of Determining the Amplitude of π-Meson-π-Meson Charge Exchange by Analysing the $\pi^- + p = N + \pi^+ + \pi^-$ Reactions Near the Threshold

effect, depends upon $\delta_{31} - \delta_{11}$ and x . If the value of $\varrho_{12} \sin \varphi_{12}$ has been determined, it is, for example, sufficient to investigate the dependence of the total cross section of the reaction (1a) upon the energy of the incident negative pion. This method is , in principle, also applicable to the photoproduction of two pions on a proton. The authors express their gratitude to B. M. Pontekorvo for the interest shown in their work and for the discussion of the results. There are 1 figure and 4 references, 2 of which are Soviet.

SUBMITTED: March 9, 1959

ANSEL'M, A. A., CAND PHYS-MATH SCI, "CERTAIN PROBLEMS OF ASYMPTOTIC BEHAVIOR OF GREEN'S FUNCTIONS AND SCATTERING AMPLITUDES UNDER HIGH AND LOW ENERGIES." MOSCOW, 1960. (ACAD SCI USSR, INST OF THEORETICAL AND EXPER PHYSICS). (KL, 3-61, 202).

accuracy up to a numerical parameter. In the first part of the paper the author investigates the behavior of the Green photon function at energies not much higher than the critical one (which do not correspond to the non-physical pole occurring in general calculations in the Green function). Determination of the charge dependence of the D-function shows that this function is either not charge-dependent at all, or to an exponentially low extent. The latter case corresponds to the divergence of the non-logarithmic character of the renormalization constant in the exact solution of the equations of quantum electrodynamics, and appears to be absolutely plausible. In the second part of the paper the quantum electrodynamic model at very high values of the renormalized coupling constant is investigated. It is found to be possible, within a very wide range, to determine the energy dependence of the Green function with exactitude. In order to obtain a result, it must be assumed that the part played by the mass term in the Lagrangian does not increase too quickly with an increase of the coupling constant. Finally, the author discusses the problem of the zero-charge in connection with the results of this paper. It is found that these results by no means change the argumentation of L. D. Landau and Pomeranchuk, although, from the beginning, they base

83738

On Some General Properties of the Photon Propagation Function in Quantum Electrodynamics

S/056/60/038/004/031/048
B006/B056

upon the assumption of the lack of a zero charge. The author finally thanks V. N. Gribov, K. A. Ter-Martirosyan, I. T. Dyatlov, and V. M. Shekhter for discussions. There are 4 figures and 5 references: 2 Soviet, 1 British, 1 US, and 1 Italian.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Institute of Physics and Technology of the Academy of Sciences, USSR)

SUBMITTED: November 14, 1959

Card 3/3

S/056/60/038/006/038/049/XX
B006/B070

24.6900 (1138, 1191, 1559)

AUTHOR: Anselm, A. A.

TITLE: Solution of Equations for the Meson-Meson Scattering Amplitude in the Asymptotic Region

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960 Vol. 38, No. 6, pp. 1887-1890

TEXT: The object of the present study was to obtain an exact solution of the system of integral equations obtained in Refs. ' and 2 for the meson meson scattering amplitudes. In this system the amplitudes are functions of two variables (the transferred momentum and the energy). Independently, another amplitude equation was derived which contains only one variable and corresponds to the case when all invariants of the problem are of the same order of magnitude. But this equation could not be obtained from the system of integral equations; moreover, the system of integral equations could be solved only for some limiting cases. In the present paper, the equation containing one variable is derived directly from the system of

Solution of Equations for the Meson-Meson Scattering Amplitude in the Asymptotic Region

S/056/60/038/006/038/049/XX
B006/B070

equations, and an exact solution is obtained for this system. The solutions for the limiting cases agree with those of Refs. 1 and 2 if allowance is made for the errors of calculation in these papers. V. V Anisovich is thanked for valuable comments. There are 2 Soviet references.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Institute of Physics and Technology of the Academy of Sciences USSR)

SUBMITTED: February 2 1960

Card 2/2

S/056/62/042/001/035/048
B125/B102

AUTHORS: Anisovich, V. V., Ansel'm, A. A., Gribov, V. N.

TITLE: Contribution to the theory of the $\pi + N \to N + \pi + \pi$ and $\gamma + N \to N + \pi + \pi$ reactions near the threshold

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 224-235

TEXT: The amplitudes and cross sections of the reactions $\pi + N \to N + \pi + \pi$ and $\gamma + N \to N + \pi + \pi$ are considered with an accuracy to terms quadratic in threshold momenta. The dependence of the cross sections on the kinetic energy of the corresponding particles is expressed in an explicit form by separating the terms that are linear with respect to the relative momenta from the energy dependence of the cross section. At sufficiently small M^2 the dispersion relation

$$A(S_{23}, M^2) = A((m_2 + m_3)^2, M^2) + \\ + \frac{S_{23} - (m_2 + m_3)^2}{\pi} \int_{(m_2+m_3)^2}^{\infty} \frac{A_1(S', M^2)\, dS'}{[S' - (m_2 + m_3)^2][S' - S]} \qquad (1)$$

Card 1/11

corresponds to the graph shown in Fig. 1. This graph is mainly triangular, and depends on the square of the energy (M^2) of the incident particles in the center-of-mass system and on the square of the energy S_{23} of the particles 2 and 3 in their center-of-mass system. The lower integration boundary of (1) is $S_{23} = (m_2 + m_3)^2$. (1) is affected by the anomalous singularities occurring if M^2 increases; although it keeps its form for $M^2 > (m_1 + m_2 + m_3)$, $A_1(S_{23}, M^2)$ becomes complex in the interval $(m_2 + m_3)^2 < S_{23} < (M - m_1)^2$. Using the unitarity condition

(2)

Contribution to the theory ...

which holds in the channel S_{23} and the dispersion relation

$$B(t) = \frac{t-(m_1+m_2)^2}{\pi} \int_{(m_1+m_2)^2}^{\infty} \frac{B_1(t')\,dt'}{[t'-(m_1+m_2)^2]\,[t'-t]} \qquad (4)$$

for the variable t the authors obtain

$$A_1(x^2) = -\lambda a_{13} a_{23} \sqrt{\frac{m_1 m_2 m_3}{m_1+m_2+m_3}} \frac{x^2}{\mu_{12}} \frac{1}{6}(1+2\beta_3). \qquad (13)$$

$$A(x^2) = -\lambda a_{13} a_{23} \sqrt{\frac{m_1 m_2 m_3}{m_1+m_2+m_3}} \frac{1}{6}(1+2\beta_3) \frac{x^2}{\mu_{12}} \frac{1}{\pi} \ln \frac{\mu^2}{x^2} \quad \text{and} \quad (14)$$

from (1) for the diagram of Fig. 1 again shown in Fig. 4. A_1 denotes the absorption part.

Card 3/11

Contribution to the theory ...

$$M = M_0 (1 + ik_{12}a_{12} + ik_{13}a_{13} + ik_{23}a_{23} + a_{12}a_{13} [J_1(k_{12}) + J_1(k_{13}) + \\ + \varkappa_1(k_{12}) + \varkappa_1(k_{13})] + a_{12}a_{23} [J_2(k_{12}) + J_2(k_{23}) + \varkappa_2(k_{12}) + \varkappa_2(k_{23})] + \\ + a_{13}a_{23} [J_3(k_{13}) + J_3(k_{23}) + \varkappa_3(k_{13}) + \varkappa_3(k_{23})] + C_1k_{12}^2 + C_2k_{13}^2 + C_3k_{23}^2);$$

$$J_\alpha(k_{ll}) = I_\alpha(x_{ll}), \qquad \varkappa_\alpha(k_{ll}) = K_\alpha(x_{ll}), \qquad x_{ll} = k_{ll}/\sqrt{2\mu_{ll}E},$$

$$E = M - m_1 - m_2 - m_3, \qquad \beta_1 = m_1(m_1 + m_2 + m_3)/(m_1 + m_2)(m_1 + m_3), \qquad (15)$$

$$I_\alpha(x) = -2E\sqrt{\frac{m_1m_2m_3}{m_1+m_2+m_3}}\frac{2x\arccos x}{\pi\sqrt{1-x^2}}\left[\beta_\alpha + x^2\frac{1-4\beta_\alpha}{3}\right],$$

$$K_\alpha(x) = -2E\sqrt{\frac{m_1m_2m_3}{m_1+m_2+m_3}}\frac{1}{\pi}\ln\frac{\mu}{E}\left[\frac{1}{6}(1+2\beta_\alpha) - x^2\frac{1-4\beta_\alpha}{3}\right].$$

gives the total amplitude of the process $M \to m_1, m_2, m_3$ which is exact to the quadratic terms. The residual term in the dispersion relation for the function $A(0,K^2)$ contributes to the amplitude of the process only at zero energy. The total cross section

Card 4/11

$$\sigma = \text{const}\cdot E^2\left[1 + AE\ln(\mu/E) + BE\right],$$

$$A = -\frac{8}{\pi}\sqrt{\frac{m_1m_2m_3}{m_1 + m_2 + m_3}}\left[a_{12}a_{13}\beta_1 + a_{12}a_{23}\beta_2 + a_{13}a_{23}\beta_3\right]. \qquad (17)$$

is obtained from the differential cross section of the reaction after integration over the phase volume. Such an energy dependence is observed in the production of two pions by one positive pion and a γ-quantum on a proton. The total cross section of pion production by negative pions and γ-quanta contains, however, terms $\sim E^2\sqrt{E}$. In the second part of the present paper this theory developed for neutral particles is applied to the production of two pions by pions and γ-quanta on nucleons. In the corresponding results only the charges of the corresponding particles have to be considered. The reactions $\pi^- + p \longrightarrow \pi^+ + \pi^- + n$ (18.1), $\pi^- + p \longrightarrow \pi^0 + \pi^0 + n$ (18.2), $\pi^- + p \longrightarrow \pi^- + \pi^0 + p$ (18.3) have the squares

Contribution to the theory ...

$$|\langle\pi^+\pi^-n|S|\pi^-p\rangle|^2 = \rho_1^2\{1 + k_{12}\alpha_{12}a_e + 2k_{12}\alpha_{12}b_e + \beta_1[k_{12}k_{12} + J_1(k_{12}) + J_1(k_{12})] + \beta_2[k_{12}k_{23} + J_1(k_{12}) + J_1(k_{23})] + \beta_3[k_{12}k_{23} + J_3(k_{12}) + J_3(k_{23})] + \beta_4[J_1(k_{12}) + J_1(k_{12})] + \beta_5 J_3(k_{12}) + C_1k_{12}^2 + C_2k_{12}^2\};$$ (23.1),

$$\beta_1 = 2(a_0 + \tfrac{1}{2}\beta_{12}a_e)(b_0 + \beta_{12}b_e) + \alpha_{12}\alpha_{12}a_eb_e.$$

$$\beta_2 = 2(a_0 + \tfrac{1}{2}\beta_{12}a_e)b_e, \qquad \beta_3 = 2(b_0 + \beta_{12}b_e)b_e.$$

$$\beta_4 = 2a_eb_e\beta_{12} - a_eb_e(\beta_{12}\beta_{12} + \alpha_{12}\alpha_{12}), \quad \beta_5 = 2(b_e)^2(\beta_{12} - \sqrt{2}\beta_{12}).$$

$$|\langle\pi^0\pi^0n|S|\pi^-p\rangle|^2 = \rho_2\{1 + 2k_{12}\alpha_{23}a_e + 2(k_{12} + k_{23})\alpha_{23}b_e + \gamma_1[k_{12}(k_{12} + k_{23}) + 2J_1(k_{12}) + J_1(k_{12}) + J_1(k_{23})] + \gamma_2[k_{12}k_{23} + J_3(k_{12}) + J_3(k_{23})] + \gamma_3[2J_1(k_{12}) + J_1(k_{12}) + J_1(k_{23})] + \gamma_4[J_3(k_{12}) + J_3(k_{23})] + D_1k_{12}^2\};$$

$$\gamma_1 = 2\alpha_{21}\alpha_{23}a_eb_e + 2(\tfrac{1}{2}a_0^2 + \beta_{21}a_e)(b_0^2 + \beta_{23}b_e),$$

$$\gamma_2 = 2(b_0^2 + \beta_{12}b_e)^2, \quad \gamma_3 = -2(\alpha_{21}\alpha_{23} + \beta_{21}\beta_{23})a_eb_e + \beta_{23}a_eb_e,$$ (23.2), and

$$\gamma_4 = 2(b_e)^2(\beta_{21} - \beta_{23}^2).$$

$$|\langle\pi^-\pi^0p|S|\pi^-p\rangle|^2 = \rho_3^2\{1 + 2k_{12}\alpha_{32}b_e + 2k_{23}\alpha_{21}b_e + \delta_1[k_{12}k_{12} + J_1(k_{12}) + J_1(k_{12})] + \delta_2[k_{12}k_{23} + J_1(k_{12}) + J_1(k_{23})] + \delta_3[k_{12}k_{23} + J_3(k_{12}) + J_3(k_{23})] + \delta_4[J_1(k_{12}) - J_1(k_{23})] + \delta_5 J_3(k_{12}) + \delta_6 J_3(k_{23}) + F_1k_{12}^2 + F_2k_{12}^2;$$

Card 6/11

Contribution to the theory ...

$$\delta_1 = 2a_3(b_3 + \beta_{33}b_3), \quad \delta_2 = 2a_3(b_3^0 + \beta_{31}b_3). \qquad (23.3)$$
$$\delta_3 = 2(b_3 + \beta_{33}b_3)(b_3^0 + \beta_{31}b_3) + 2a_{31}a_{33}(b_3)^2,$$
$$\delta_4 = 2a_3b_3(\beta_{31} - \tfrac{1}{5}\beta_{33}), \quad \delta_5 = 2(b_3)^2[1 - a_{31}a_{33} - \beta_{31}\beta_{33}],$$
$$\delta_6 = -2(b_3)^2[a_{31}a_{33} + \beta_{33}\beta_{33}] + 2\beta_{31}(b_3)^2\sqrt{2}.$$

(23.3)

of the matrix elements and the amplitudes

$$\lambda_1 = -\frac{\sqrt{2}}{3}F_{11}e^{i\delta_{11}} + \frac{1}{3\sqrt{5}}F_{31}e^{i\delta_{31}}, \qquad (27)$$
$$\lambda_2 = \frac{\sqrt{2}}{3}F_{11}e^{i\delta_{11}} + \frac{2}{3\sqrt{5}}F_{31}e^{i\delta_{31}}, \quad \lambda_3 = -\frac{1}{\sqrt{10}}F_{31}e^{i\delta_{31}}.$$

(27).

$$\left\langle \tfrac{1}{2}\,0\left|S\right|\tfrac{1}{2}\right\rangle = F_{11}e^{i\delta_{11}}, \quad \left\langle \tfrac{3}{2}\,2\left|S\right|\tfrac{3}{2}\right\rangle = F_{31}e^{i\delta_{31}}, \qquad (26)$$

denote the isotopically invariant matrix elements of the production of two

Card 7/ 11

Contribution to the theory ...

pions in states with T = 0 (total isotopic spin 1/2) and with T = 2 (total spin 3/2). The amplitudes of the photoproduction of two pions at zero energy A_1 are expressed by the matrix elements of photoproduction in states with total isotopic spins 1/2 and 3/2 at a total angular momentum of -1/2. Also the amplitudes of the two reactions

$\pi^- + p \to \pi^+ + \pi^+ + n$ and $\pi^+ + p \to \pi^+ + \pi^0 + p$ at zero energy can be expressed by the already mentioned matrix element of the production of one pion in a state with the total isotopic spin 3/2. The total $\pi^{\pm}p$ interaction cross sections are

$$\sigma(\pi^+\pi^-p \mid \pi^-p) = p_1^3E^3(1 + A_1\sqrt{E} + B_1E\ln(\mu/E)),$$
$$\sigma(\pi^0\pi^0n \mid \pi^-p) = p_2^3E^3(1 + A_2\sqrt{E} + B_2E\ln(\mu/E)),$$
$$\sigma(\pi^-\pi^0p \mid \pi^-p) = p_3^3E^3(1 + A_3\sqrt{E} + B_3E\ln(\mu/E));$$

$$A_1 = \frac{32}{15\pi}\left(a_{11}a_e + 2\sqrt{\frac{2M}{M+1}}a_{12}b_e\right), \qquad A_2 = \frac{32}{15\pi}\left(2a_{21}a_e + 4\sqrt{\frac{2M}{M+1}}a_{22}b_e\right) \quad (35) \text{ and}$$

Card 8/11

$$A_3 = \frac{32}{15\pi}\left(2a_{33}b_e + 2\right]\sqrt{\frac{2M}{M+1}}\,a_{31}b_e\Big),$$

$$B_1 = -\frac{4}{\pi}\frac{\sqrt{M(M+2)}}{M+1}\left[2a_3b_s^0 + \beta_{13}a_eb_s^0 + \beta_{13}a_3b_e\right] -$$

$$-\frac{8}{\pi}\frac{M\sqrt{M(M+2)}}{(M+1)^3}\left[b_sb_{3s} + \frac{1}{2}\beta_{13}(b_e)^2 + \beta_{13}b_s^0b_e\right].$$

$$B_2 = -\frac{4}{\pi}\frac{\sqrt{M(M+2)}}{M+1}\left[a_2^0b_s^0 + 2\beta_{21}a_eb_s^0 + 2\beta_{22}a_2b_e\right] -$$

$$-\frac{8}{\pi}\frac{M\sqrt{M(M+2)}}{(M+1)^3}\left[(b_s^0)^2 + \beta_{21}(b_e)^2 + 2\beta_{22}b_s^0b_e\right].$$

$$B_3 = -\frac{4}{\pi}\frac{\sqrt{M(M+2)}}{M+1}\left[a_3(b_s^0 + b_s) + \beta_{31}a_3b_e + \beta_{32}a_3b_e\right] -$$

$$-\frac{8}{\pi}\frac{M\sqrt{M(M+2)}}{(M+1)^3}\left[b_eb_s^0 + \frac{1}{2}(b_e)^2 + \beta_{31}b_s^0b_e + \beta_{32}b_s^0b_e\right].$$

Card 9/11

Contribution to the theory ...

$$\sigma(\pi^+\pi^+n \mid \pi^+p) = \frac{4}{9}|F_{31}|^2E^2\left(1 + BE\ln\frac{\mu}{E}\right),$$

$$\sigma(\pi^+\pi^0p \mid \pi^+p) = \frac{1}{10}|F_{31}|^2E^2\left(1 + B'E\ln\frac{\mu}{E}\right); \qquad (36).$$

$$B = -\frac{4}{\pi}\frac{\sqrt{M(M+2)}}{M+1}|2a_3(\tfrac{1}{6}b_{3/2} + \tfrac{5}{6}b_{1/2})| -$$

$$-\frac{8}{\pi}\frac{M\sqrt{M(M+2)}}{(M+1)^3}|\tfrac{1}{6}(5b_{3/2}^2 + 5b_{3/2}b_{1/2} - b_{1/2}^2)|, \quad B' = B.$$

The authors thank G. S. Danilov and I. I. Dyatlov for valuable discussions. There are 4 figures and 10 references: 6 Soviet and 4 non-Soviet. The three references to English-language publications read as follows: V. N. Gribov. Nucl. Phys., 5, 653, 1958; S. Mandelstam. Phys. Rev. Lett., 4, 84, 1960; P. V. Landshoff, S. B. Treiman. Nuovo Cim., 19, 1249, 1961; R. E. Cutkosky. Journ. Math. Phys., 1, 429, 1960.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut (Leningrad Physicotechnical Institute)

SUBMITTED: July 29, 1961

Card 10/11

S/056/62/043/003/026/063
B102/B104

AUTHORS: Anisovich, V. V., Anse'm, A. A., Gribov, V. N., Dyatlov, I.T.

TITLE: Anomalous thresholds and interaction in the final state

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 906-908

TEXT: The authors study the influence of anomalous three-particle production amplitude singularities on the analytical amplitude properties when two of the particles have small energies. It is shown from the example of meson production in meson-nucleon collisions (graph Fig. 1) that the presence of anomalous terms in the dispersion relations do not influence the amplitude expansion in a power series of the threshold moments. This graph has a logarithmic singularity at $s = 4\mu^2$ (Sawyer, Phys. Rev. Lett. 7, 213, 1961) and an anomalous one at

$$s_0 = \frac{\mu^2(W^2+3M^2-\mu^2)}{2M^2} - i\frac{\mu}{2M^2}\sqrt{4M^2-\mu^2}\,[W^2-2W(M^2+\mu^2)+ \\ +(M^2-\mu^2)^2]^{1/2}, \qquad (1)$$

Card 1/2

where $s = (k_1+p_1)^2$ is the total energy of the system in the c. m. s., M the nucleon mass and μ the meson mass. For super-threshold energies $s > (M+2\mu)^2$ in dispersion representation

$$A_1(s) = \frac{1}{\pi}\int_C \frac{A_1(s')\,ds'}{s'-s} = \frac{1}{\pi}\int_{s_0}^{4\mu^2} \frac{\rho(s')\,ds'}{s'-s} + \frac{1}{\pi}\int_{4\mu^2}^{\infty} \frac{A_1(s')\,ds'}{s'-s}; \quad \rho(s') = A_1^+(s') - A_1^-(s'). \qquad (2.3)$$

With this separation the logarithmic singularity of the first integral is compensated by the second, so that $A_1(s)$ is determined by the unitarity condition for $s > (\sqrt{W} + M)^2$. For smaller s it is possible to obtain $A_1(s)$ as analytic continuation from the region $s > (\sqrt{W}+M)^2$. For point vertices and $s > (\sqrt{W}+M)^2$,

Card 2/3

S/056/62/043/003/033/063
B108/B102

AUTHORS: Anselʹm, A. A., Shekhter, V. M.

TITLE: μ^+-molecules

PERIODICAL: Zhurnal eksperimentalʹnoy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 958 - 962

TEXT: μ^+-molecules contain a μ^+-meson in the place of a proton. They are formed when μ^+-mesons are slowed down in a hydrogen-containing substance. Actually, μ^+-molecules differ from the analogous ordinary molecules only as regards the nuclear vibrations, because μ^+ and p have different masses. This difference leads also to slightly different binding energies. Hence differences between ordinary and μ^+-molecules will appear in their rotational and vibrational spectra. This offers a possibility of determining the mass of the μ^+-meson. The production probability ν of μ^+-molecules is limited by the lifetime τ of the μ^+-mesons ($2.2 \cdot 10^{-6}$ sec).