RUDICS, Imre, dr.

Resection of epiphrenal diverticulum of esophagus. Magy. sebeszet 9 no.4:263-266 Aug 56.

1. A Budapesti Orvostudomanyi Egyetem Sebesztovabbkepzo Klinikajanak (Igazgato: Littman, Imre egyetemi tanar) kozlemenye.
(ESOPHAGUS, diverticula
epiphrenic, surg., resection (Hun))

[illegible], [illegible].

"Stratification of Fruit Tree Seeds", p. 17, ([illegible], Vol. 2, No. [illegible], June 19[illegible], Belgrade, Yugoslavia)

SO: Monthly List of East European Accessions (EEAL), LC, Vol. [illegible], No. [illegible], March 19[illegible], Uncl.

[illegible], L.

"[illegible] Regional Division of Fruit Production in Serbia", p. 24, (ZBIRNIK RADOVA, Vol. [illegible], No. 6, June 1954, Belgrade, Yugoslavia)

SO: Monthly List of East European Accessions (EEAL), LC, Vol. 4, No. 3, March 1955, Unc.

RUDIC-VRANIC, J.

Subotica and its metayers. p. 94.

Periodical: ZBORNIK ZA PRIRODNE NAUKE. Matica srpska. Novi Sad.

SCIENCE

No. 9, 1955.

SO: Monthly List of East European Accessions (EEAI) LC

Vol. 8, No. 4
April 1959, Uncl.

VLODAVETS, V.I.; RUDICH, K.N.

Symposium on welded tuffs in the Soviet Union. Sov.geol. 4 no.12:138-142 D '61. (MIRA 15:2)

1. Geologicheskiy institut AN SSSR.
(Volcanic ash, tuff, etc.)

"Magma Formations of the Central Parts of the Sarythcev chain and Its Content of Ore."

dissertation defended for the degree of **Candidate** of Geological Sciences, at the Inst. for the Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry. (Jan-Jul 1957)

Defense of Dissertations
Sect. of Geological-Geographical Sci.
Vest. AN SSSR, 1957, v. 27, N . 12 pp. 113-115.

RUDICH, K.N., otv. red.; MARENINA, T.Yu., red.izd-va; DOROKHINA, I.N., tekhn. red.

[Geological and geophysical studies in volcanic regions] Geologicheskie i geofizicheskie issledovaniia v vulkanicheskikh oblastiakh. Moskva, Izd-vo AN SSSR, 1963. 165 p. (MIRA 16:12)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut vulkanologii.

(Volcanoes)

RUDICH, K.N.

"Postgranite" dikes in the Berelekh Basin (sources of the Kolyma River). Sov. geol. 3 no.6:131-134 Je '60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut p'yezoopticheskogo syr'ya.

(Berelekh Valley--Dikes (Geology))

SOV/124-57-8-9531

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 137 (USSR)

AUTHOR: Rudich, M.A

TITLE: Allowing for the Combined Effect of Bents Interconnected by Rigid Coverings (Uchet sovmestnoy raboty ram pri nalichii zhestkikh perekrytiy)

PERIODICAL: Nauchn. zap. L'vovsk. politekhn. in-t, 1956, Nr 41, pp 3-15

ABSTRACT: By the usual methods of structural mechanics an analysis is made of a system of bents interconnected by coverings which are absolutely rigid within their own planes. The author neglects the flexure of the frame members in the horizontal plane due to twisting of the system with respect to a vertical axis; neglected also is the torsional reaction of the struts. It is considered that the load is applied to the bents within their own planes only.

I. K. Snitko

Card 1/1

RUDICH, S.I. [Rudych, S.I.], kand.tekhn.nauk; STOYANOV, I.V.[Stoianov, I.V.], inzh.

Operation of the "Esoks" reed mower. Mekh.sil'. hosp. 9 no.3:33 Mr '58. (MIRA 11:4)

(Reed (Botany) (Mowing machines)

RUDICH, Sergey Ivanovich, kand.tekhn.nauk; TSITSILIANO, Denis Denisovich, kand.tekhn.nauk; NAGORNYY, A.G. [Nahornyi, A.H.], red.; CHEREVATSKIY, S.A. [Cherevats'kyi, S.A.], tekhn.red.

[Mechanization of the procurement and placement of local fertilizers] Mekhanizatsiia zahotivli ta vnesennia mistsevykh dobryv. Kyiv, Derzh.vyd-vo sil's'kohospodars'koi lit-ry URSR, 1961. 150 p. (MIRA 15:5)
(Ukraine--Fertilizers and manures)

RUDICH, V.

Helping brigades of communist labor. NTO 2 no.12:39-40 D '60.
(MIRA 14:3)

1. Predsedatel' pervichnoy organizatsii khopchatobumazhnoy fabriki imeni M.V. Frunze, g. Moskva.
(Moscow—Cotton manufacture)

RUDICH, V. F.

RUDICH, V. F. -- "The Process of Formation of Concepts on History among Pupils in the First Four Classes." Moscow State Pedagogical Inst imeni V. I. Lenin. Moscow, 1955. (Dissertation for the Degree of Candidate in Pedagogical Sciences).

So.: Knizhnaya Letopis', No. 2, 1956.

RUDICH, Ye. M., SKIBA, S.I.

Principal stages of relief development and recent tectonic in southern Sakhalin. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 14 no.3:209-220 '59. (MIRA 13:6)

1. Kafedra geomorfologii Moskovskogo universiteta.
(Sakhalin--Geology, Structural)

PHASE I BOOK EXPLOITATION [illegible]

Akademiya nauk SSSR. Sovet po seysmologii

Byulleten', No. 8: Voprosy seysmicheskogo [illegible] Council on Seismology, Academy of Sciences [illegible] Division Into Seismological [illegible]) [illegible] copies printed.

Resp. Ed.: S. V. Medvedev, Doctor of Technical [illegible] House: I. A. [illegible], and L. M. [illegible]

PURPOSE: This publication is intended for seismologists.

COVERAGE: The publication contains articles based on [illegible] meeting of the Council on Seismology held in [illegible] articles reflect the present state of work [illegible] ization" and discuss the following problems: [illegible] ization and microregionalization, [illegible] seismology, instruments and [illegible] seismic regions of the USSR, and the [illegible] geological structure. [illegible]

AVAILABLE: Library of Congress

Card 6/6

JA/rn/ec
8-26-60

(15)

RUDICH, Yevgeniy Markovich; PETRUSHEVSKIY, B.A., otv. red.; MIRAKOVA, L.V., red.izd-va; POLENOVA, T.P., tekhn. red.

[Basic characteristics of the tectonic development of Sakhalin, Japan, and the Maritime Territory as the transition zone from the continent to the ocean]Osnovnye zakonomernosti tektonicheskogo razvitiia Primor'ia, Sakhalina i IAponii kak zony perekhoda ot kontinenta k okeanu. Moskva, Izd-vo Akad. nauk SSSR, 1962. 271 p. (MIRA 15:11)
(Soviet Far East--Geology, Structural)
(Japan--Geology, Structural)

S/519/60/000/008/026/031
D051/D113

AUTHOR: Rudich, Ye. M.

TITLE: On the geological basis of the seismicity of Sakhalin Island

SOURCE: Akademiya nauk SSSR. Sovet po seysmologii. Byulleten', no. 8, Moscow, 1960. Voprosy seysmicheskogo rayonirovaniya, 196-199

TEXT: A new scheme of seismic zoning for Sakhalin Island is proposed. It is based on a comparative study of seismostatistical and geologic-tectonic data and supersedes the old system of zonation carried out by G. P. Gorshkov. It also differs from the schemes of V. Ye. Dibrov (Ref. 3: Seysmo-tektonicheskoye rayonirovaniye Sakhalina [Seismic-tectonic zoning of Sakhalin] . DAN SSSR, 113, No. 4, 1957) and M. D. Ferchev (Ref. 4: K voprosu o seysmichnosti ostrova Sakhalina [Contribution to the seismicity of Sakhalin Island] . Nastoyashchiy sbornik), whose evaluation of geological factors is partly rejected. According to the author, during the Tertiary period the southern and central section preserved the character of geosynclinal development, whereas from the end of the Cretaceous period, the northern part remained relatively stable. These two zones are still observed on the island.

Card 1/2

On the geological basis of ....

S/519/60/000/008/026/031
D051/D113

In addition, during the whole of the Mesozoic and Cenozoic periods southern and central Sakhalin were divided into two subzones: a western intrageosynclinal and an eastern intrageanticlinal zone. All these features suggest a decrease in seismicity from south to north and from west to east; this is fully substantiated by seismostatistical data. The author divided the island into five zones of various seismic activity. In many cases the distribution of seismic intensities up to 7 differs from that of M. D. Ferchev's scheme. In the south-west section of the island, an area of intensity 8 is assumed on the basis of Japanese data on earthquakes of intensity 8 in the southern part of the Tatarskiy Strait. The present microseismicity of Sakhalin is explained. There are 1 figure (map of seismic zoning) and 5 references: 4 Soviet and 1 non-Soviet-bloc. The English-language reference is: T. Tametaro. Bull. Earthquake Res. Inst. Tokyo Univ. 10 pt., 1, 1932.

ASSOCIATION: Institut fiziki Zemli AN SSSR (Institute of the Physics of the Earth of the AS USSR)

Card 2/2

SOV/5-58-6-5/13

AUTHOR: Rudich, Ye.M.

TITLE: To the History of the Formation of the Mesozoic-Cenozoic Structure of Sakhalin (K istorii formirovaniya mezozoysko-kaynozoyskoy struktury Sakhalina).

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geoligicheskiy, 1958, Nr 6, p 59-88 (USSR)

ABSTRACT: The author gives an extremely detailed description of the Cretaceous and Tertiary deposits of Sakhalin and of the history of the formation of its structure in the Mesozoic-Cenozoic era. According to his findings, the formation of the West Sakhalin Mountains occurred in the late Upper Miocene epoch, and before that time, the region was a depression (maps Nr 4-9). He disagrees with some of the geologists who think that beginning with the

Card 1/4

To the History of the Formation of the Mesozoic-Cenozoic Structure of Sakhalin

Paleogene time, the West Sakhalin elevation existed. As for the geological development of the island the author fixes the following fundamental stages: 1) the Upper-Cretaceous stage, which embraced the period from the end of the Albian to the Sennonian stages; it was characterized by intensive downward movements; 2) the stage of a continental development, which continued up to the Eocene epoch; 3) the Eocene-Miocene stage, characterized by a considerable sinking of almost the entire island; and 4) the Pliocene-Quaternary stage, when the elevation process started again. In the Upper Cretaceous epoch the Sakhalin depression formed a part of the Nippon geosyncline. This connection became more loose in the Tertiary period, and was not felt at all in the north of the island. The following

To the History of the Formation of the Mesozoic-Cenozoic Structure of Sakhalin

geologists who worked on the island are mentioned by the author: S.N. Alekseychik, A. S. Arkhipenko, N.F. Budnikov, N.A. Voloshinova, A.A. Kapitsa, V.N. Kirkinskaya, L.V. Krishtofovich, I.N. Kuzina, B.S. Nikonov, I.I. Ratnovskiy, S.S. Razmyslova, L.M. Sayapina, Ye. M. Smekhov , L.N. Solomatina, V.V. Tumakov, T.V. Ukhina, N.D. Tsitenko, N.Ye. Yerofeyev, V.N. Vereshchagin, B.M. Shtempel', K.F. Yevseyev, F.G. Lautenshleger, O.G. Redkina, M.I. Borsuk,

SOV/5-58-6-5/13

To the History of the Formation of the Mesozoic-Cenozoic Structure of Sakhalin

N.N. Tikhonovich, I.B. Pleshakov, L.I. Krasnyy, K.F. Rakhmanov, Ya. Ye. Pashchenko, P.D. Shklyayev, R.Z. Genkina, L.M. Zhidkova and A.V. Solov'yev. There are 7 maps, 2 schemes and 1 table, and 17 Soviet references.

Card 4/4

S/030/62/000/011/004/005
D218/D306

AUTHORS: Levin, B.Yu., Doctor of Physical and Mathematical Sciences, and Rudich, Ye.M.

TITLE: The fourth conference on astrogeology

PERIODICAL: Akademiya nauk SSSR. Vestnik. no. 11, 1962, 131 - 134

TEXT: The conference took place on May 7 - 12 in Leningrad. The present authors report that some of the papers read at the conference, and indeed "astrogeology" itself as defined by the participants in this conference, must be treated with some reservation, since there is some doubt as to their scientific validity. Among the papers read at the conference were the following: P.S. Voronov "Main contemporary problems in astrogeology" G.N. Katterfel'd, "Astrogeology, its content, problems and place in the sciences" B.L. Lichkov, "Interaction between the earth's shells and the conditions of its rotation as the cause of all the geological phenomena on the planet"

Card 1/3

The fourth conference ...

B.L. Lichkov and I.I. Shafranovskiy, "The universal importance of some angular quantities characteristic for the earth" G.N. Katterfel'd, "Pregeological era in the history of the earth and its effect on the evolution of the geoid" P.S. Voronov, "On the rotational causes of tangential stresses in the lithosphere and some of their geostructural consequences." M.V. Stovas, "The effect of external factors on the seismicity of the earth." A.V. Shnitnikov, "Tidal force as a factor in landscape dynamics." Papers were also read by F.P. Krendelev, I.G. Klushin, A.A. Khlobustov, R.I. Burtman, V.S. Vasil'yev, A.V. Volin, V.S. Voropinov, A.V. Dolitskiy, O.I. Islamov and G.G. Tamrazyan, but the present authors find themselves unable to take them seriously. The remaining papers were: G.G. Khizanishvili and M.V. Klenova, "The origin of submarine terraces in the light of the rotational dynamics of the earth." V.A. Bunin, "Recent problems in gravitation in the light of classical physics." B.V. Timofeyev, "On the discovery of organic residues in stony meteorites". G.U. Lindberg, "On geocratic oscillations in the ocean level." V.A. Zubakov, "Absolute dating of glaciation in the last 70,000 years." V.V. Kochegur, "Paleomagnetic

The fourth conference ...

studies of basalts in the Soviet Far East." V.S. Lebedev, "Formation of chemical elements in meteorites under the action of cosmic rays." V.F. Derpgol'ts, "The 'hydrochlorosphere' as a planetary source of all natural water in the outer shells of the earth." V.I. Vul'fson, "Free oxygen in the earth's crust." The resolution of the conference noted that the conclusions reached in many of the papers were not sufficiently well argumented, but nevertheless, it was recommended that the proceedings of the conference should be published. The present authors are highly sceptical about the entire venture.

Card 3/3

RUDICH, Ye.M.

Recent movements in Sakhalin. Dokl. AN SSSR 141 no.2:437-440 N '61. (MIRA 14:11)

1. Institut fiziki Zemli im. O.Yu.Shmidta AN SSSR. Predstavleno akademikom A.L.Yanshinym.
(Sakhalin--Earth movements)

RUDICH, Ye.M.

Geological foundations of seismicity in Sakhalin. Biul. Sov. po seism. no.8:196-199 '60. (MIRA 13:10)

1. Institut fiziki Zemli AN SSSR.
(Sakhalin--Seismology)

LEVIN, B.Yu., doktor fiz.-matem.nauk; RUDICH, Ye.M.

Fourth conference on astrogeology. Vest. AN SSSR 32 no.11:131-134 N '62. (MIRA 15:11)
(Earth)

RUDICH, Ye.N.

Papers submitted for the 10th Pacific Science Congress, Honolulu, Hawaii 21 Aug-6 Sep 1961.

Papers submitted for the 10th Pacfic Science Congress, Honolulu, Hawaii 21 Aug-6 Sep 1961.

NAGIBINA, M. S., Institute of Geology - "Mesozoic depressions and troughs of east Asiatic type and their position in the systematics of tectonic forms" (Section VII.C)

NELEPO, B. A., Moscow State University, Physical Faculty - "The gamma-ray spectrometric measurements of artificial radioactivity in upper layers of the ocean" (Section VII.3.5)

NESTEROV, V. G., Chair of Forestry, The Agricultural Academy imeni K. A. Timiryazev - "Forest fire research and methods of fire control" (Section V.B)

OSTROUMOVA, T. A., Institute of Oceanology - "Biogeographical and morphological analysis of reproduction and development of flatfish in the seas of the northwest Pacific" (Section III.C)

OZMIDOV, R. V., Institute of Oceanology - "Investigation of the horizontal turbulent exchange in the Pacific Ocean" (Section VII.B)

PARIN, N. V., Institute of Oceanology - "Regularities in the geographical distribution of flying fishes in the Pacific Ocean" (Section VII.C)

PERGAMENT, M. A., Institute of Geology - "Stratigraphic horizons in the cretaceous deposits of Kamchatka" (Section VII.C)

PETELIN, V. P., Institute of Oceanology - "The processes of recent sedimentation in the western part of the equatorial zone in the Pacific" (Section VII.C.1)

PETRUSHEVSKIY, B. A., Institute of Earth Physics imeni O. Yu. Schmidt - "The seismic geological conditions in the northwestern outlying area of the Pacific basin" (Section VII.C.2)

PONOMAREVA, L. A., Institute of Oceanology - "Euphausiidae in the northern part of the Pacific" (Section III.C)

PORTENKO, L. A., Institute of Zoology - "The problem of the Bering land bridge from the zoological point of view" (Section III.A.3.a)

PUSHCHAROVSKIY, Yu. M., Institute of Geology - "Some specific features in the tectonics of the north part of the Pacific belt" (Section VII.C)

PYRKIN, Yu. P., Moscow State University, Physical Faculty - "A new deep-sea device for recording currents ('MGU')" (Section VII.3.5)

RADKEVICH, Ye. A., Institute of Geology - "On the stability and inheritance of structural elements in the frame of the Pacific Ocean depression" (Section VII.C)

RASS, T. S., OSTROUMOVA, T. A., and GORBUNOVA, N. N., Institute of Oceanology - "Geographical regularities in regard to reproduction and development of mass fishes in the northern part of the Pacific" (Section III.C)

ROMANKEVICH, Ye. A., Institute of Oceanology - "Organic substance in bottom sediments in the western part of the Pacific" (Section VII.C.1)

RUDICH, Ye. M., Institute of Earth Physics imeni O. Yu. Schmidt - "Relations between deep focus earthquakes in the eastern margin of Asia and large structures of the earth crust" (Section VII.C.2)

RYABCHIKOV, A. M., Moscow State University, Geographical Faculty - "The structure of natural zonatic in east Asia" (Section VI.C)

RYKUNOV, L. N., Moscow State University, Physical Faculty, Chair of Hard Crust - "The correlative method for studying microseism" (Section VII.C.2)

SAYDOVA, Kh. M., Institute of Oceanology - "The distribution of bottom lime Foraminifera in the northern part of the Pacific and its use for the reshaping of the paleorelief" (Section VII.C.1)

SAMOYLENKO, V. S., Institute of Oceanology - "Problems concerned with the theory of formation of the temperature regime in seas and oceans" (Section VII.A)

SEMINA, G. I., Institute of Oceanology - "Biogeographical zonation of the Pacific Ocean in regard to phytoplankton" (Section III.A)

SEROVA, M. Ya., Institute of Geology - "Paleogene Foraminifera of Kamchatka" (Section VII.C)

SAVILOV, A. I.

SEVILEV, A. I., Institute of Oceanology - "Velella and Physalia in the pleiston of the Pacific" (Section III.C)

SHEYNMANN, Yu. M., Institute of Earth Physics imeni O. Yu. Schmidt - "Mechanism of ocean-magmas (?) origin" (Section VII.C.2)

SHOSHIN, A. A., The Central Organization of Leningrad - "The main problems of human illness geography and their significance for prophylactic medicine" (Section VII.3.4)

SHUMSKIY, P. A., Institute of Permafrost Studies - "Glaciology of Antarctica" (Section VII.D.1)

SYSOYEV, N. N., Institute of Oceanology - "Methods for measuring deep currents in the ocean and some results of their application in the Pacific Ocean" (Section VII.3.5)

LAI[illegible]SKIY, V.I.; STUPAR', N.I.; RUDICHEV, K.P.; OLEKSENKO, V.V.; YAITSKIY, A.K.

Pouring rimmed steel into bottle shaped ingot molds. Izv. vys. ucheb. zav.; chern. met. 6 no.11:65-69 '63. (MIRA 17:3)

1. Dnepropetrovskiy metallurgicheskiy institut.

LAPITSKIY, V.I., doktor tekhn. nauk, prof.; MARINOV, A.I., inzh.; OYKS, G.N., doktor tekhn. nauk, prof.; OLEKSENKO, V.V., inzh.; ORLOV, V.I., kand. tekhn. nauk; RUDICHEV, K.P., inzh.; STUPAR', N.I., kand. tekhn. nauk, dots.

Reducing the inhomogeneity of large rimming steel ingots (up to 18 t.). Izv. vys. ucheb. zav.; chern. met. no.2:19-33 F '58. (MIRA 11:5)

1. Dnepropetrovskiy metallurgicheskiy institut, Moskovskiy institut stali i zavod "Zaporozhstal'."

(Steel ingots)

RUDICHEV, K. P.

Cand Tech Sci - (diss) "Chemical non-uniformity of large ingots of boiling steel and means for reducing the non-uniformity." Dnepropetrovsk, 1961. 14 pp; (Academy of Sciences Ukrainian SSR, Inst of Ferrous Metallurgy); 200 copies; price not given; (KL, 7-61 sup, 244)

BRAGIN, V.F.; RUDICHEV, K.P.

Intensification is a means of increasing the production and reducing the cost of open-hearth steel. Met. i gornorud. prom. no.6:11-13 N-D '65.

(MIRA 18:12)

SHISHKOVSKAYA, C.M., kand. geograf. nauk; BUDYKHEV, L.M.

Weather forecast for the U.S.S.R. in December 1965. Meteor. i gidrol. no.12:69-72 D '65. (MIRA 18:11)

1. Tsentral'nyy institut prognozov.

LITTMANN, Imre, dr.,; HARKANYI, Istvan, dr.,; PADANYI, Alajos, dr.,;
TOTH, Jozsef, dr.,; RUDICS, Imre, dr.,; TAKATSY, Endre, okl. gm.

Induction and abolishment of ventricular fibrillation by electroshock. Magy. sebeszet 9 no.3:166-169 June 56.

1. A Budapesti Orvostudomanyi Egyetem Sebesztovabbkepzo Klinikajanak kozlemenye Igazgato: Littmann Imre dr., egyetemi tanar.
(VENTRICULAR FIBRILLATION, exper.
induction & abolishment by electric fibrillator-defibrillator appar. in dogs (Hun))

RUDIC- VRANIC, J.

SCIENCE

RUDIC-VRANIC, J. Matica srpska. Novi Sad.

No. 9, 1955. Subotica and its metayers. p. 94.

Monthly Index of East European Accessions (EEAI) LC Vol. 8, No. 4, April, 1959

RUDIGERNE STILLER, Jolan, dr.

Life community of fish ponds. Elet tud 15 no.32:1013-1015
7 Ag '60.

RUDIGERNE STILLER, Jolan, dr.

Australia's indigeneous fauna. Elet tud 15 no.27:852-855
3 Jl '60.

RUDIGER, O.

Zr.Y.

2

(1)

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Metallurgy and Metallography

The system tungsten carbide–titanium carbide–chromium carbide. O. Rudiger. *Metall* 7, 967–9(1953).—In the ternary system WC–TiC–Cr_3C_2 the soly. relations on the Cr-poor side were detd. by röntgenographic and metallographic means. It is shown that WC dissolves neither TiC nor Cr_3C_2 in noteworthy quantities but that in the entire investigated region TiC takes up Cr_3C_2 and WC. The range of lattice consts. and microhardness were detd. In the region of 50% TiC, 23% WC, and 21% Cr_3C_2, a max. of microhardness occurs. Its value is 4300 knoop per sq. mm.

H. Stoertz

LINDEMANN, M.; RUDIGER, W.

The influence of gallbladder stimulation on heart rate and respiratory rhythm to the electrical activity of the cerebral cortex in the cat. Activ. nerv. sup. 4 no.3/4:458-461 '62.

1. Department of Physiology, Medical Faculty, Humboldt University, Berlin.

(GALLBLADDER) (RECEPTORS NEURAL) (RESPIRATION)
(CEREBRAL CORTEX) (HEART)

RUDIGER, W.

Interfering subcortical stimulations and cortical spreading depression. Physiol. Bohemoslov. 11 no.5:392-398 '62.

1. Institute of Physiology, Czechoslovak Academy of Sciences, Prague and Physiological Institute of Humboldt University, Berlin.
(CEREBRAL CORTEX) (CONDITIONED LEARNING)
(MESENCEPHALON) (HYPOTHALAMUS).

RUDIGER, W.; BURES, J.

Cortical spreading depression and tegmental and hypothalamic threshold stimulation producing locomotor flight. Physiol. Bohemoslov. 11 no.5: 399-403 '62.

1. Institute of Physiology, Czechoslovak Academy of Sciences, Prague, and Institute of Physiology, Humboldt University, Berlin.
(CEREBRAL CORTEX) (MESENCEPHALON)
(HYPOTHALAMUS) (AVOIDANCE LEARNING)

BURESOVA, O.; RUDIGER, W.; BURES, J.; FIFKOVA, E.

The role of the hypothalamic drinking centre in unconditioned and conditioned control of water intake. Physiol. Bohemoslov. 11 no.6:492-496 '62.

1. Institute of Physiology, Czechoslovak Academy of Sciences, Prague.
(HYPOTHALAMUS) (REFLEX CONDITIONED) (REFLEX)

RUDIGER, W.; GRASTYAN, E.; MADARASZ, I.

Connection of effects of electric stimulation of the cortical accoustic area to conditioned reflex activity in dogs. Acta physiol. hung. 9 no.1-3:163-172 1956.

1. Physiologisches Institut der Medizinischen Universitat, Pecs.
(REFLEX, CONDITIONED
salivary, inhib. eff. of electric stimulation of cerebral accoustic area in dogs (Ger))
(CEREBRAL VENTRICLES, physiol.
electric stimulation of accoustic area inhibiting conditioned salivary reflexes in dogs (Ger))

RUDIGERNE STILLER, Jolan, dr., kandidatus

The transforming effect of environment on peritrichous Ciliata.
Term tud kozl 6 no.12:549-551 D '62.

1. Termeszettudomanyi Muzeum, Budapest.

RUDIGERNE STILLER, Jolan, dr. kandidatus

Biological examination of village wells. Term tud kozl 6 no.5:213-216 My '62.

1. Termeszettudomanyi Muzeum, Budapest.

RUDIGEROVA, Marie, Inz.

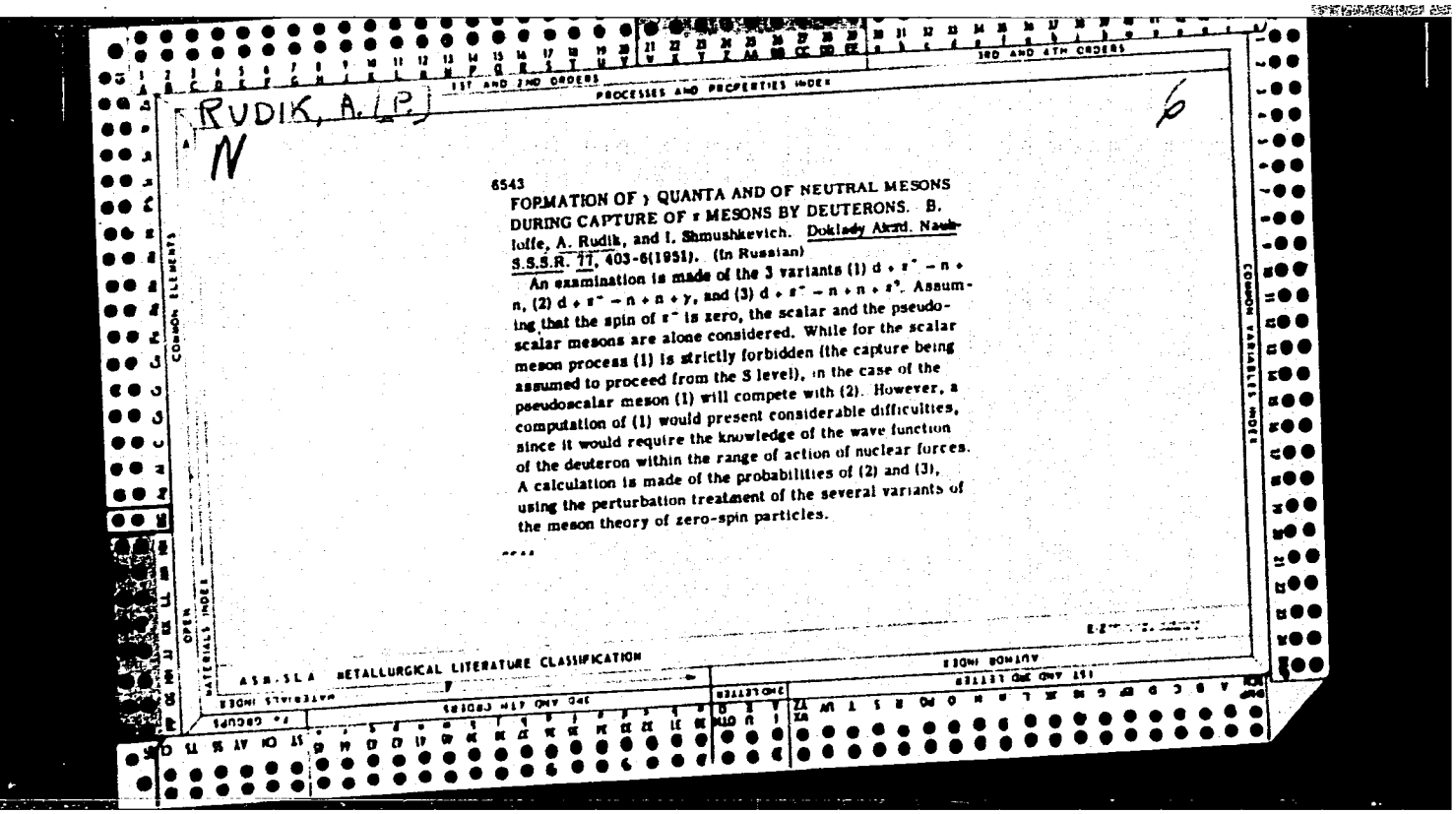
Minimization of Boolean functions. Aplikace mat 10 no.1:49-58 '65.

1. State Research Institute of Heavy Current Engineering, Prague 1-Hradcany, Loretanske namesti 3. Submitted December 18, 1963.

RUDIK, A.I.

Simple designs of low passenger platforms. Transp. stroi. 10 no.8:54 Ag '60. (MIRA 13:8)

1. Starshiy inzhener proizvodstvennogo otdela tresta Donbasstransstroy.
(Railroads--Stations)



RUDIK, A. P.

N

6

6543
FORMATION OF γ QUANTA AND OF NEUTRAL MESONS DURING CAPTURE OF π MESONS BY DEUTERONS. B. Ioffe, A. Rudik, and I. Shmushkevich. Doklady Akad. Nauk S.S.S.R. 77, 403-6(1951). (In Russian)

An examination is made of the 3 variants (1) $d + \pi^- \rightarrow n + n$, (2) $d + \pi^- \rightarrow n + n + \gamma$, and (3) $d + \pi^- \rightarrow n + n + \pi^0$. Assuming that the spin of π^- is zero, the scalar and the pseudoscalar mesons are alone considered. While for the scalar meson process (1) is strictly forbidden (the capture being assumed to proceed from the S level), in the case of the pseudoscalar meson (1) will compete with (2). However, a computation of (1) would present considerable difficulties, since it would require the knowledge of the wave function of the deuteron within the range of action of nuclear forces. A calculation is made of the probabilities of (2) and (3), using the perturbation treatment of the several variants of the meson theory of zero-spin particles.

RUDIK, A. P.

USSR/Nuclear Physics - Mesons, Neutral Jan 52

"Formation of Gamma-Quanta and Neutral Mesons During Capture of "neg pi mesons" π^--Mesons by Deuterons. I," B. L. Ioffe, A. P. Rudik, I. M. Shmushkevich, Acad Sci USSR

"Zhur. Eksper.i Teoret Fiz", Vol XXII, No 1, pp 11-20

A brief exposition of results of present work was published in "Dok Ak. Nauk SSSR" Vol LXXVII, 1951, 403. Calculates the probability of gamma-quanta formation during capture of π^--mesons by deuterons for various variations of the meson theory of particles with zero spin. Considers the capture of pseudoscalar mesons and the capture of scalar mesons. Submitted 22 Mar 51.

204T79

RUDIK, A. P.

USSR/Nuclear Physics - Mesons, Neutral Jan 52

"Formation of Gamma-Quanta and Neutral Mesons During Capture of "neg pi-mesons" π^--Mesons by Deuterons. II," B. L. Ioffe, A. P. Rudik and I. M. Shmushkevich, Acad Sci USSR

"Zhur Eksper i Teoret Fiz" Vol XXII, No 1, pp 21-28

Calculate the probability of capture of π^--mesons by deuterons with the emission of neutral mesons. Computations are carried out for particles of different evenness with zero spin. Agreement with exptl data is obtained only in that case where π^-- and π^0 -mesons are pseudoscalar particles. Submitted 22 Mar 51.

204T80

Rudik, A.P.

USSR •

Interaction of π-mesons with nucleons. B. L. Ioffe and A. P. Rudik. *Zhur. Eksptl. i Teoret. Fis.* 22, 127–8(1952); *Science Abstr.* 56A, 393(1953).—Exptl. orders of magnitude of cross sections for the photoproduction of charged π, capture of π^- by H, and scattering of 85-m.e.v. π^- by H (also the magnitude of the π^0 lifetime $\sim 10^{-14}$ sec.) could not be fitted in lowest order perturbation theory by using pseudoscalar mesons with only one kind of coupling, but suggest pseudoscalar coupling $g^2/\hbar c \sim 1$ and pseudovector $f^2/\hbar c \sim$ /10. K. L. C.

(D) 62

RUDIK, A.

Chemical Abst,
Vol. 48 No. 3
Feb. 10, 1954
Nuclear Phenomena

(3) Nuc Sci

Disintegration of the π-meson. B. Ioffe and A. Rudik. *Doklady Akad. Nauk S.S.S.R.* 82, No. 3, 359–60(1952); cf. Fry, *C.A.* 46, 361*d*.—It has been observed in some cases of the decompn. of the π-meson that the paths of the μ-mesons which are obtained are significantly smaller than those of the usual μ-mesons. In order to explain the different energies of the μ-mesons, it must be assumed that the π-meson decomp. to form at least 3 particles. The simplest assumption is that the π-meson decomp. to give a μ-meson, a neutrino, and a quantum. The probability of the occurrence of this process is calcd. on the assumptions that the spin of the π-meson is equal to zero and that the spins of the neutrino and of the μ-meson are equal to 0.5.
J. Rovtar Leach

8-19-54
RML

RUDIK, A.

Capture of μ^--mesons by deuterons. A. Rudik. *Doklady Akad. Nauk S.S.S.R.* 92, 739–42(1953)(Engl. translation issued as *U.S. At. Energy Comm.* NSF-tr-219, 4 pp. (1954)).—The probabilities of capture are calcd. on the assumption of 5 possible types of interaction, scalar (*S*), vector (*V*), tensor (*T*), axial vector (*A*), and pseudoscalar (*PS*). The ratio of probabilities of capture of a μ^--meson by a deuteron and proton W_D/W_H, is shown to depend essentially on the type of interaction and to be about 0.75 for the *A*, *T*, and *PS* types, and about 0.3 for the *S* and *V* types. The energy spectrum of the neutron forming during the reaction $\mu^- + D \rightarrow n + n + \nu$ is sensitive to the type of interaction. In *S* (or *V*) types, the spectrum has the form of a curve with 2 max.: the 1st is narrower and lies in the region of neutron energy $\sim\epsilon_0/2 \sim 1$ m.e.v.; in the 2nd, the wider one, in the region of energy $\sim\Delta^2/2Mc^2 \sim 5$ m.e.v. In the other types of interaction, the 2nd max. is found to be considerably weakened, and the 1st one passes from the energy $\sim\epsilon_0/2$ to the energy region $\sim\Delta^2/8Mc^2$. The results reported show that the exptl. study of the capture of a μ^--meson by a deuteron makes it possible to establish which of the theoretically admissible types of interaction are realized in nature; W_D/W_H is shown to be ~0.11 for *A*, *T*, and *PS*, and ~0.045 for *S* and *V* types of interaction. James L. Lauer

4-18-55

RUDIK A.P.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1895
AUTHOR IOFFE,B.L., POMERANČUK,I.JA., RUDIK,A.P.
TITLE The Dispersion Relations for the Scattering of Pions by Deuterons.
PERIODICAL Žurn.eksp.i teor.fis,31,fasc.4,712-713 (1956)
Issued: 1 / 1957

The present work investigates the elastic scattering of pions by deuterons with the scattering angle 0. The dispersion relations which correspond to this process differ as follows from the dispersion relations for the scattering of pions by free nucleons: Firstly, the dispersion relations depend on the polarization of deuterons and secondly, only one single dispersion relation for the sum of the scattering amplitudes of positive and negative pions is obtained if COULOMB'S interaction is neglected.
Let the real- and imaginary parts of the amplitude of the scattering of pions with the energy ω by deuterons whose spin projection onto the direction of the motion of the pions is equal to m, be denoted by $D_m(\omega)$ and $A_m(\omega)$ respectively.

By using the connection between the real part of the amplitude of scattering into the angle 0 and the total cross section $A_m(\omega) = (k/4\pi)\sigma_m(\omega)$, (where $k^2 = \omega^2 - \mu^2$ applies and μ denotes the mass of the meson), the following equation is obtained by the ordinary method for the determination of dispersion relations:

$$D_m(\omega) - D_m(\mu) = (2k^2/\pi)\int_0^{\mu} \frac{\omega' A_m(\omega')\,d\omega'}{k'^2(\omega'^2 - \omega^2)} + (k^2/2\pi^2)\int_0^{\infty} \frac{\omega' \sigma_m(\omega')\,d\omega'}{(\omega'^2 - \omega^2)\,k'}$$

Žurn.eksp.i teor.fis,31,fasc.4,712-713 (1956) CARD 2 / 2 PA - 1895

For the determination of the contribution originating from the domain $0 \leq \omega' \leq \mu$ the following expression is used:

$A_m(\omega') = \pi \sum_f |M_m(\omega', \vec{f})|^2 \delta\left[\omega' - \varepsilon_0 - (k'^2/4M) - f^2/M\right]$. Here $M_m(\omega', \vec{f})$ denotes that matrix element which corresponds to the capture of a pion by a deuteron in the state m with the production of two homogeneous nucleons and momentum f of the relative motion. This matrix element is explicitly written down;it differs essentially from zero only in the domain $f \sim k/2$. Also the HAMILTONIAN of the interaction between two nucleons, which is required here, is written down in a general form without taking tensor forces into account. The dispersion relations determined by means of this HAMILTONIAN for deuterons which are polarized parallel, antiparallel, and vertical to the inciding bundle are written down. They contain, apart from the constant g, certain effective values of the potential energy of the interaction between two nucleons in different states. It is from these effective values that the amount of the pole term for deuterons which are polarized vertical to the inciding bundle depends essentially.

INSTITUTION:

BERESTETSKIY, V.B., IOFFE, B.L., RUDIK, A.P., TER-MARTIROSYAN, K.A.
(Acad. Sci. USSR)

"Nonconservation of Parity in the β -Decay."

paper submitted at the A-U Conf. on Nuclear Reactions in Medium and Low Energy Physics, Moscow, 19-27 Nov 57.

89-5 / 22

AUTHOR RUDIK, A.P.,

TITLE The Nonconservation of Parity in the case of Weak Interactions. (Nesokhraneniye chetnosti v slabykh vzaimodeystviyakh - Russian)

PERIODICAL Atomnaia Energiia, 1957, Vol 2, Nr 5, pp 463-468, (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT I) Theoretical investigations. The author among others makes the following reports - The Λ^+ -meson can decayin accocrdance with the two schemata $K_1^+ \rightarrow \pi^+ + \pi^0$, $K_2^+ \rightarrow \pi^+ + \pi^+ + \pi^-$. In this connection there are the following two possibilities, either the K_1^+ - meson and the K_2^+ - are two different particles with the same mass, the same spin, and the same life, which differ as to their interior parities, or these two particles are the same, and in the case of one of the two reactions mentioned parity is not conserved. The author next discusses the possibilities offering themselves as a result of the non-conservation of parity. A physically well-founded method of solving the problem of finding out what laws of conservation apply in the case of weak interactions was supplied by LANDAU, L.D., Nuclear rhysics, Vol 3, p 127 (1957). Landau's ideas, also those concerning two-component neutrinos, are discussed. II) Experimental Results. Quitea short time ago short provisional accounts were given of some experimental work by which the non-conservation of parity in the case of waek interactions with participation of a neutrino was establisned. These experiments dealt, among others, with the following- the angular distribution of electrons on the occasion of the β-decay of polarized nuclei, angular asymmetry on the occasion of π-μ-e- decay pro-

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89-5-2/22

The Nonconservation of rarity in the Case of Weak Interactions.

cesses, the energy dependence of angular asymmetry in the case of $\pi - \mu - e$/ decay acts, the polarization of electrons on the occasion of β-decay. All experimental works discussed here clearly establish the non-conservation of spatial- and charge parity in the case of weak interactions in which a neutrino participates. These works lead to suppose that the neutrino is longitudinal.
(With 3 illustrations)

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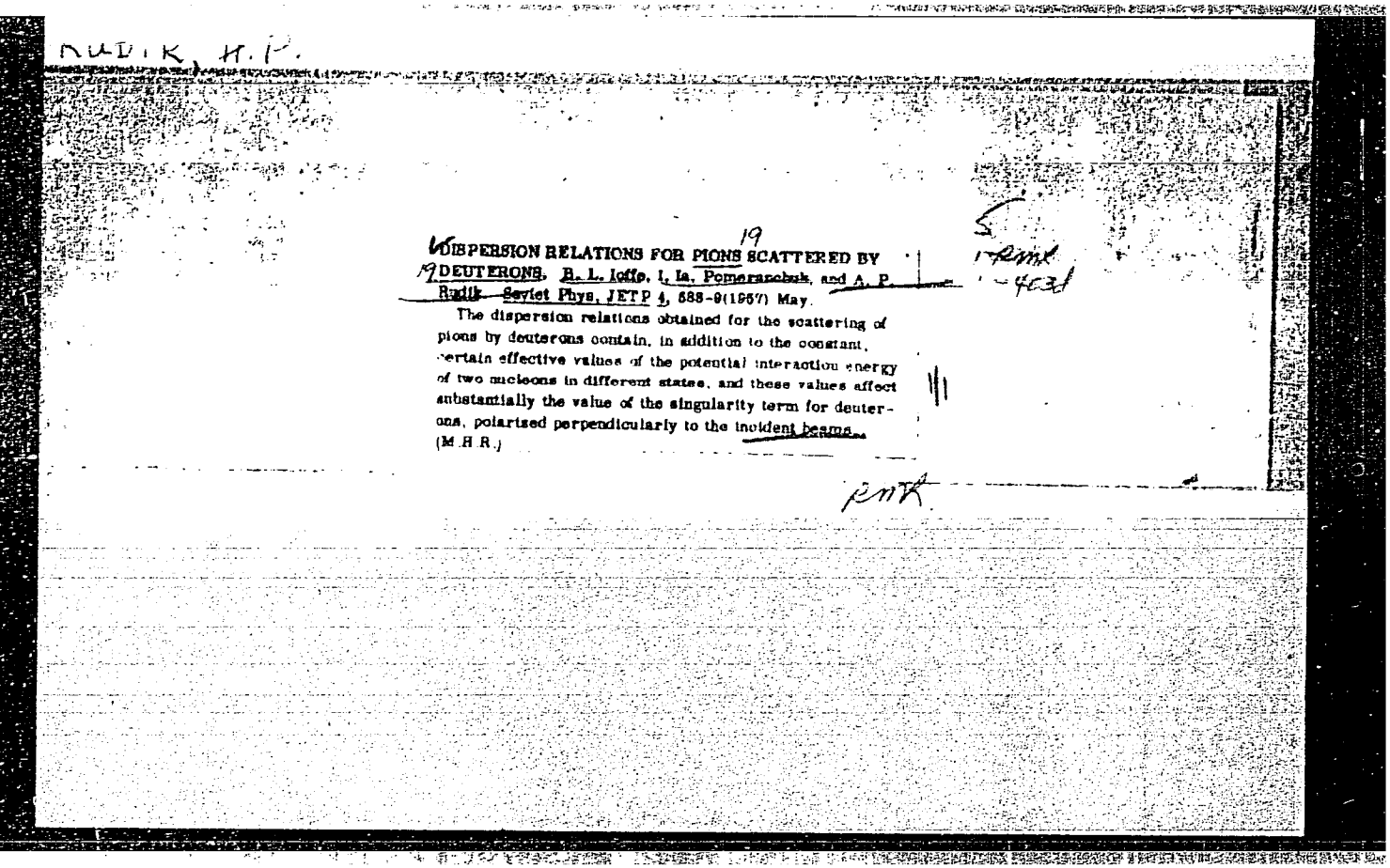

NUDIK, M. P.

DISPERSION RELATIONS FOR PIONS SCATTERED BY DEUTERONS. B. L. Ioffe, I. Ia. Pomeranchuk, and A. P. Rudik. Soviet Phys. JETP 4, 888-9(1957) May.

The dispersion relations obtained for the scattering of pions by deuterons contain, in addition to the constant, certain effective values of the potential interaction energy of two nucleons in different states, and these values affect substantially the value of the singularity term for deuterons, polarized perpendicularly to the incident beams. (M.H.R.)

RUDIK, A.

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POSSIBLE CORRELATIONS IN π-μ-e DECAY, L. Okun' and A. Rudik. Soviet Phys. JETP 5, 520-1(1957) Oct.

If parity is violated in π-μ-e decay, there must be correlations between the orientations of the moments of the μ mesons and the electrons. The results of calculations of such correlations are presented when parity is violated in both the $\pi \rightarrow \mu$ + decay and the $\mu \rightarrow$ e + 2 decay. (L.T.W.)

Rudik, A.P.

PA - 2707

AUTHOR IOFFE B.L., OKUN' L.B., RUDIK A.P.

TITLE On the Problem of Non-Conservation of Parity in the Case of Interactions (K voprosu o nesochranenii chetnosti v slabykh vzaimodeystviyakh,Russian)

PERIODICAL Zhurnal Eksperim. i Teoret.Fiziki,1957, Vol 32, Nr 2, pp 396-397, (U.S.S.R.)

Received 5/1957 Reviewed 6/1957

ABSTRACT The authors here show that, proceeding from the conservation of charge parity, the conclusions are arrived at differ essentially from those drawn by LEE and YANG. The invariance of the HAMILTONIAN with respect to the charge conjugation in the case of different types of interaction leads to certain phase relations between the coefficients. The authors at first studied the decay $\Lambda^0 \to p + \pi$. If the conservation of parity is not required, the HAMILTONIAN of the interaction for this process (if only the existence of a coupling without derivationsis assumed) has the following form: $H = g(\bar{\psi}_p \psi_\Lambda)\varphi_\pi + iG(\bar{\psi}_p \gamma_5 \psi_\Lambda)\varphi_\pi + \tilde{g}(\bar{\psi}_\Lambda \psi_p)\varphi^+_\pi + iG^*(\bar{\psi}_\Lambda \gamma_5 \psi_p)\varphi^+_\pi$.

Here, by the way, the denotations used by FEYNMAN are used. In order that the HAMILTONIAN be invariant, G and g must be real:

If parity is not conserved, the square of the matrix element of transition may, besides scalar terms, contain also pseudoscalar terms. In order to determine whether such pseudoscalar terms exist on the occasion of Λ^0 -decay, the authors examine the decay of a polarized Λ^0-particle at rest. The square of the corresponding matrix element is written down explicitly. Apparently, the pseudoscalar terms can result only from an in-

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On the Problem of Non-Conservation of Parity in the Case of Interactions. PA - 2707

terference term. The pseudoscalar terms proportional to $\vec{\sigma}\vec{p}$ become equal to zero also in the case in which a scalar and a vectorial coupling exists. Also in the case of successive processes $\pi^- + p \rightarrow \Lambda^0 + K^0$, $\Lambda^0 \rightarrow p + \pi^-$ the pseudoscalar terms will be lacking in the differential probability. It is therefore not possible to determine by measuring the angular distribution of the protons whether parity is hereby conserved or not. Also on the occasion of β-decay, phenomena may occur which are connected with the non-conservation of parity. The authors here examine the β-decay of a polarized nucleus. Also in the most simple cases of β-decay, the difference between the possibility of the conservation and non-conservation of spatial parity is lacking if the demand for charge conjugation is taken into account.

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OKUN', L.; RUDIK, A. P

Possible correlations in $\Sigma - \mu - e$ decay. Zhur. eksp. i teor. fiz. 32 no.3:627-628 Mr '57. (MLRA 10:11)
(Electrons) (Mesons)

A. I. RUDIK

"A HEAVY WATER REACTOR CRITICAL EXPERIMENT" by A. I. Rudik

Report presented at 2nd UN Atoms-for-Peace Conference, Geneva, 9-13 Sept 1958

BERESTETSKIY, V.B., IOFFE, B.L., RUDIK, A.P. and TER-MARTIROSYAN, K.A.

(Acad. Sci. USSR)

"β-Decay and NOn-Conservation of Parity," Nuclear Physics, Vol. 5, No. 3, Feb 1958 (No. Holland Publ. Co., Amsterdam)

Abst: Effects due to non-conservation of parity such as longitudinal and transverse polarization of β-electrons, angular distribution of β-electrons from an oriented nucleus (including the case when the direction of the recoil nucleus momentum is fixed) are examined in the present paper for the cases of allowed β-transitions and first order forbidden transitions. It is shown that owing to the influence of the Coulomb field the magnitude of these effects for forbidden transitions in heavy and intermediate neulei is the smae as for allowed transitions, perceptible deviations are observed in light nuclei ($Z \leq 20$). In the particular case of a 0-0 transition comparison with experiment may yield important data on the contribution of pseudoscalar coupling. Unique transitions ($\Delta I = 2$,yes) for which the electron angular distribution of oriented nuclei essentially differs from that for allowed transitions are considered separately.

AUTHORS: Berestetskiy, V. B., Rudik, A. P. SOV/56-35-1-22/59

TITLE: The Polarization of the Internal Conversion Electrons Following a β-Decay (Polyarizatsiya elektronov vnutrenney konversii, sleduyushchey za β-raspadom)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 1, pp 159 - 164 (USSR)

ABSTRACT: The authors in the present paper investigate the connection between the polarization of the conversion electrons and the direction of the electrons emitted during a β-decay. The Coulomb-(Kulon) field of the nucleus is neglected in this connection. For the (axial) vector of the polarization of the conversion electrons the following ansatz is made (for the case of permitted β-transitions): $\langle\vec{\sigma}\rangle = a(\vec{v}\vec{n})\vec{n} + b(\vec{v} - (\vec{v}\vec{n})\vec{n})$ (a and b are constants which depend on the momenta of the nuclear state and the transition energy, $c\vec{v}$ is the velocity of β-electrons, and $\vec{n}$ the unit vector in the direction of the conversion transitions). For the case of a magnetic multipole the following is obtained:

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$\langle\vec{\sigma}\rangle = (r\,\xi/j_2)\vec{n}(\vec{n}\vec{v})$. In this case the polarization is longitudinal and does not depend on the energy of the conversion electron. The following holds for the case of an electric multipole:

$$(\vec{\sigma}) = r\,\frac{L+1}{1+2\kappa+\kappa^2(2L+1)/L}\,\frac{\xi}{j_2}\left\{(\kappa+\kappa^2)(\vec{n}(\vec{n}\vec{v})-\vec{v})+\frac{\kappa^2}{L}(\vec{n}\vec{v})\vec{n}\right\};$$

$\kappa = (\varepsilon-m)/(\varepsilon+m)$

$r = \left[L(L+1)+j_2(j_2+1) - j_1(j_1+1)\right]/2L(L+1)$. In this case a longitudinal as well as a transversal polarization exist, both being dependent on energy. At low velocities v_k of the conversion electrons longitudinal polarization is proportional $(v_k/c)^4$, and transversal polarization $\sim(v_k/c)^2$. In conclusion the authors thank A.I.Alikhanov, Academician, and V.I.Lyubimov for the interest they displayed and for their discussions. There are 3 references, 2 of which are Soviet.

Kupik, A. S.

21(1,8); 24(5) PHASE I BOOK EXPLOITATION SOV/3369

Vsesoyuznaya mezhvuzovskaya konferentsiya po kvantovoy teorii poley i teorii elementarnykh chastits. Uzhgorod, 1958

Problemy sovremennoy teorii elementarnykh chastits. No. 2: Trudy konferentsii... (Problems in the Modern Theory of Elementary Particles. Nr. 2: Transactions of the All-Union Inter-Vuz Conference on the Quantum Field Theory and the Theory of Elementary Particles) Uzhgorod, Zakarpatskoye oblastnoye izd-vo, 1959. 214 p. 5,000 copies printed.

Ed.: Yu. Lomsadze, Docent; Tech. Ed.: M. Belous.

PURPOSE: This book is intended for physicists, particularly those concerned with problems in the field of elementary particles and the quantum theory.

COVERAGE: This book contains articles on elementary particles originally read at the All-Union Inter-Vuz Conference held at Uzhgorod State University on October 26, 1958. Among the topics discussed are: the spinor field theory, the fusion theory, Lorentz contractions, parity studies, nucleon-nucleon scattering, etc. English abstracts accompany each article. References follow each article.

1/4

21(8),24(5)

AUTHORS: Geshkenbeyn, B. V., Nemirovskaya, S. A., Rudik, A. P.

SOV/56-36-2-26/63

TITLE: The Polarization of the β-Electrons From RaE (Polyarizatsiya β-elektronov RaE)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 2, pp 517-525 (USSR)

ABSTRACT: After the nonconservation of spatial parity had become known, the β-decay of RaE was investigated by several research scientists. Lewis (Lyuis)(Ref 1), Fujita (Fuzhita) et al. (Ref 2) also pointed out the possible nonconservation of time parity, and Alikhanov showed by experiment (Ref 3) that the longitudinal polarization of β-electrons from RaE deviates from v/c and that the degree of deviation characterizes the measure of the nonconservation of parity with respect to time. Also in the present paper the authors derive a formula for the longitudinal polarization of the β-electrons, viz. for S- and T- interaction as well as for V-A - interaction, basing upon the results of references 7 and 8. Numerical results are given by a number of tables. Thus, table 1 shows $\langle \sigma \rangle / (v/c)$ for

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S- and T- interaction and table 2 shows the same for V-A at $r_o = 1.17.10^{-13}$. Tables 5 and 6 show $\langle\delta\rangle/(v/c)$ at $F^2 = 6.10^{-3}$(V-A), figure 7 shows $\langle\delta\rangle/(v/c)$ for S- and T- interaction types for various F values. The experimental data relating to the magnitude of the polarization of the RaE β-electrons considerably restrict the region of a possible violation of time parity. VA-interaction type: In the case of nonconservation of time parity the measured extremal polarization excludes $F < 0$ at $F^2 = 6.10^{-3}$ and $F^2 = 3.10^{-3}$. For $F > 0$ experimental and theoretical results agree for $x \approx 0.2(F^2=6.10^{-3})$ or $0.7(F^2=3.10^{-3})$.
ST-interaction type: At $F^2 = 6.10^{-3}$ and $F^2 = 3.10^{-3}$ $F < 0$ is excluded and at $F > 0$ agreement is found for any such F^2 values within the range of $x \approx 1.7$.
The authors finally thank Academician A. I. Alikhanov for

suggesting this work and for his discussions, and they also thank B. L. Ioffe and V. A. Lyubimov for discussions. There are 9 tables and 12 references, 2 of which are Soviet.

SUBMITTED: July 24, 1958 (initially) and October 28, 1958 (after revision)

85697

S/056/60/038/006/040/049/XX
B006/B070

24.6200
AUTHORS: Geshkenbeyn, B. V., Rudik, A. P.

TITLE: The Relationship Between the Polarization of β-Electrons and the Form of the β-Spectrum

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 6, pp. 1894 - 1895

TEXT: The coefficient of the form of the β-spectrum is given by $C(W) = \sum_i M_i(Z,W) f_i(W,X)$; and the longitudinal polarization of β-electrons is given by $\langle \vec{\sigma} \rangle = \frac{\vec{v}}{c} \sum_i M_i(Z,W) f_i(W,X) a_i(Z,W) / \sum_i M_i(Z,W) f_i(W,X)$. (Z - atomic number of the nucleus; W and v - energy and velocity, respectively, of β-electrons; X - nuclear matrix elements; M_i and a_i - complex functions describing the motion of the electrons in the Coulomb field of the daughter nucleus; the function f_i depends on the electron energy and the matrix elements). Both these formulas are briefly discussed in the present paper.

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85697

The Relationship Between the Polarization of β-Electrons and the Form of the β-Spectrum

S/056/60/038/006/040/049/XX
B006/B070

It is pointed out that for Fermi form of the spectrum, the polarization of β-electrons is practically coincident with v/c. As, however, first forbidden β-decays are also known where the longitudinal polarization of β-electrons is essentially different from v/c, the spectrum is not of Fermi type. In this connection the classical example of RaE ($1^- \rightarrow 0^+$) β-decay is discussed. The β-decay of Au^{198} ($2^- \rightarrow 2^+$) is also discussed, for which the longitudinal polarization of β-electrons is widely divergent from v/c for small energies (according to data of A. I. Alikhanov et al.). For high energies it is equal to v/c. These deviations are explained by a deviation of the spectrum from the Fermi form. The cases for P^{32} and In^{114} are analogous (see L. A. Mikaelyan and P. Ye. Spivak). Academician A. I. Alikhanov and V. A. Lyubimov are thanked for their interest in the work. There are 10 references: 6 Soviet, 3 US, and 1 Canadian.

SUBMITTED: February 15, 1960

Card 2/2

OKUN', L.B.; RUDIK, A.P.

$K^{+} \to \pi^{\pm} e^{+} + e^{-}$ and $K^{+} \to \pi^{\pm} \mu^{+} + \mu^{-}$ decays. Zhur. eksp. i teor. fiz. 39 no.3:600-604 S '60. (MIRA 13:10)
(Mesons) (Nuclear reactions)

KOLKUNOV, V.A.; OKUN', L.B.; RUDIK, A.P.; SUDAKOV, V.V.

Position of the nearest singularities of the $\pi\pi$-scattering amplitude. Zhur. eksp. i teor. fiz. 39 no.2:340-344 Ag '60. (MIRA 13:9)

(Field theory) (Scattering (Physics))

OKUN', L.B.; RUDIK, A.P.

$\Sigma^{\circ} \rightarrow \Lambda^{\circ} + 2\gamma$-decay and magnetic moment of the Σ°-hyperon.
Zhur. eksp. i teor. fiz. 39 no.2:378-383 Ag '60. (MIRA 13:9)
(Mesons—Decay)

KOLKUNOV, V.A.; OKUN', L.B.; RUDIK, A.P.

Singularities of some Feynman diagrams. Zhur.eksp.i teor. fiz. 38 no.3:877-881 Mr '60. (MIRA 13:7)
(Collisions(Nuclear physics))

KOBZAREV, I.Yu.; OKUN', L.B.; RUDIK, A.P.

Remarks pertaining to the decay of the cascade hyperon.
Zhur.eksp.i teor.fiz. 38 no.3:1012-1013 Mr '60.
(MIRA 13:7)

(Mesons)

GESHKENBEYN, B.V.; RUDIK, A.P.

Connection between the polarization of β-electrons and the form of the β-spectrum. Zhur.eksp.i teor.fiz. 38 no.6:1894-1895 Je '60. (MIRA 13:7)

(Electrons)
(Beta rays)
(Decay, Radioactive)

84963

S/056/60/039/003/049/058/XX
B006/B070

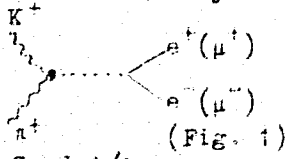
24.6900

AUTHORS: Okun', L. B., Rudik, A. P.

TITLE: The Decays $K^+ \to \pi^+ + e^+ + e^-$ and $K^+ \to \pi^+ + \mu^+ + \mu^-$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 3(9), pp. 600 - 604

TEXT: A theoretical study of the decay reactions[19] (2): $K^+ \to \pi^+ + e^+ + e^-$ and (3): $K^+ \to \pi^+ + \mu^+ + \mu^-$ is made in this paper. These reactions have not yet been observed; however, they are not absolutely forbidden in the realm of the present-day theories but cannot be due to weak interactions alone. The authors show that both these reactions may be due to the combined weak lepton interaction and electromagnetic interaction and can be illustrated by the Feynman graph of Fig. 1. The dotted line represents a virtual photon, and the full circle of the graph shows a K-decay into pion + gamma quantum. Such a graph is shown in Fig. 2.



(Fig. 1)

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The Decays $K^+ \to \pi^+ + e^+ + e^-$ and
$K^+ \to \pi^+ + \mu^+ + \mu^-$

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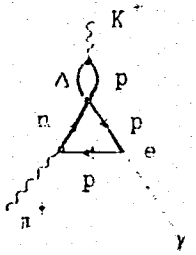

(Fig. 2)

The decays (2) and (3) are analogous to the known 0 - 0 conversion transitions in nuclei. The matrix element of the graph (Fig. 1) is formulated as

$M = efGk^2 p_\mu \frac{\varphi_K \varphi_\pi}{k^2} \sqrt{4\pi}\, e\bar{u}\, \gamma_\mu u = \sqrt{4\pi}\, aG\bar{u}\gamma_\mu u \varphi_K \varphi_\pi$, where

$\alpha = e^2 \approx 1/137$, $k = c = 1$; u are spinors of the lepton field (e or μ), φ_K and φ_π are the wave functions of K- and π-mesic fields, G is the weak interaction constant ($G \sim 10^{-5} m_p^{-2}$, m_p - proton mass); $\varphi_K \varphi_\pi efGk^2 p_\mu$ is the vertex part (full circle) of the graph (Fig. 1); f is a dimensionless function of k^2, $k^2 = m_K^2 + \pi^2 - 2E m_K$ and is considered to be constant. The total probabilities for the decays (2) and (3) are found to be $W_e = 0.56\, W_0$ and $W_\mu = 0.11\, W_0$; $W_0 = \frac{1}{48} \alpha^2 G^2 m_K^5 f^2 \approx 5.10^6 f^2 sec^{-1} \approx W_\tau f^2$, where W_τ is the

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The Decays $K^+ \rightarrow \pi^+ + e^+ + e^-$ and $K^+ \rightarrow \pi^+ + \mu^+ + \mu^-$

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probability of τ decay. From the number of the observed τ decays in which no single decay of the type (3) was found, it is concluded that $f^2 < 5.10^{-4}$. The relative probability, however, does not depend on f^2: $W_\mu/W_e = 0.2$. In the following, the authors discuss the calculation of the pion, electron, and muon spectra for the decays (2) and (3). The results are given by formulas (9) and (10), and (12) and (13), respectively, and are illustrated in Figs. 3 and 4, respectively. The authors thank L. D. Landau and I. Yu. Kobzarev for discussions, S. A. Nemirovskiy for numerical calculations, and Ye. D. Zhizhin for pointing out an error. There are 6 figures and 2 references: 1 Soviet and 1 US.

SUBMITTED: March 2, 1960

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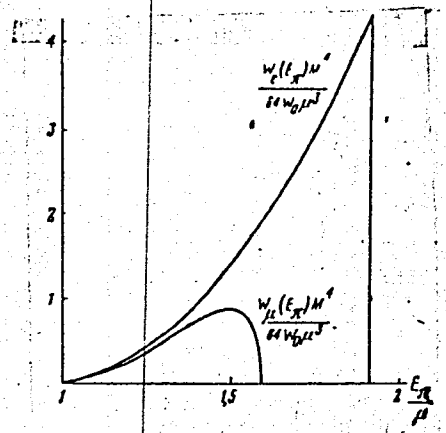

Рис. 3

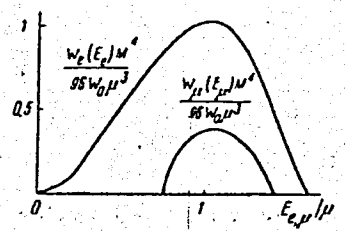

Рис. 4

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IRuDIK, A.P.

21(4) PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists: Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences; A.K. Krasin, Doctor of Physical and Mathematical Sciences; A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences; and V.S. Pursov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors; the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

R'DIK, Alexsey P.

"On the Possible Strong Interaction of the Intermediate Boson"

paper presented at the Intl Conference on High Energy Physics, Rochester, N.Y. and/or Berkly California, 25 Aug - 16 Sep 1960.

Joint Inst. for Nuclear Reserch, Dubna, USSR

RUDIK, Aleksey P.

"Investigation of Chew-Mandelstam Equations"

"Singular Points in Scattering Amplitude"

"Scattering of Particles of Super-High Energies"

"Asymptotic Behaviour of Effective Cross Sections at High Energies"

paper presented at the Intl Conference on High Energy Physics, Rochester, N.Y. and/or Berkly California, 25 Aug-16 Sep 1960.

Joint Inst. for Nuclear Reserch, Dubna, USSR

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B102/B212

24.4500

AUTHORS: Patashinskiy, A. Z., Rudik, A. P., Sudakov, V. V.

TITLE: Singularities of scattering amplitudes in the perturbation theory

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 1, 1961, 298-311

TEXT: A study has been made of the position of singularities of the scattering amplitude and its asymptotic behavior in the perturbation theory. Due to conservation of the four-momentum of scattered particles, the four-momenta of the scattering and virtual particles are located in a three-dimensional space for any perturbation-theoretical graph. The three linearly independent four-vectors are chosen for basis vectors: $W = p_1+p_2$, $Q = p_1+p_3$, $P = p_1+p_4$. For $p_i^2 = M_i^2$ $(i=1,..4)$

$$2QW = M_1^2 - M_2^2 - M_3^2 + M_4^2, \quad 2WP = M_1^2 - M_2^2 + M_3^2 - M_4^2,$$
$$2QP = M_1^2 + M_2^2 - M_3^2 - M_4^2, \quad Q^2 + W^2 + P^2 = M_1^2 + M_2^2 + M_3^2 + M_4^2. \quad (1.2)$$

holds.

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Singularities of scattering...

The scattering amplitude is characterized by six parameters; for convenience they are chosen to be: M_i^2 and the invariants W^2 and Q^2. Only the singularities with real invariants are considered. There is a certain relation between W^2, Q^2 and the masses of the virtual particles at the singularity; this relation is characterized for graphs of the type shown in Fig.1 by the ratios between M_i^2 and the squares of masses of virtual particles. Fig.2 shows some singular curves of this graph. The authors then wanted to find out under what conditions anomalous singularities do occur for more complicated (than Fig.1) graphs of perturbation theory. An analysis is made for an asymptotic case, where one invariant approaches infinity. The condition that $|W^2(Q^2)| < |W^2(\infty)|$ holds as a criterion for the anomalous type of singular curves. First of all the singularities of the "open envelope" type graph (Fig.3) are studied and the asymptotic behavior of the position of its singularities is studied for one of the invariants approaching infinity. It can be shown

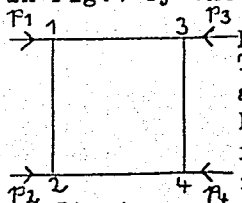

Fig.1

Singularities of scattering...

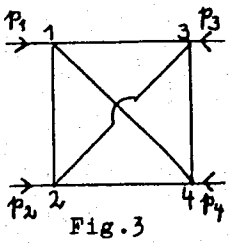

Fig.3

that the singular curve of the "open envelope" has several branches, two in the general case. The two possibilities $\varkappa < 1$ ($\varepsilon \neq 0$, $\varepsilon = 0$) and $\varkappa = 1$ are studied separately. In the following a method is developed to reduce the problem of determining the singularities of any perturbation-theoretical graph with four external lines to the problem of "open envelope" graphs with certain masses of virtual particles. Theorem 1 is formulated as: The singular curves of any p.-t. graph for the scattering amplitude coincide with the "open-envelope" graph for virtual-particle masses which are functions of invariants. In the following the two effective-mass minorants are determined. The normalized effective masses are used to determine the type of the singular curves. Here, theorem 2 is formulated: Any scattering diagram asymptotically has no anomalous singularities if the part which complicates it rests on the outer vertex of a simpler diagram (of the type shown in Fig.1, or 4, or 3), and if the asymptotically simpler diagram has no anomalous singularities either. The results are used to examine

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Singularities of scattering...

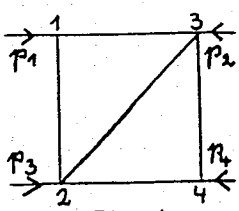

Fig.4

$\pi\pi'$, KK, and NN scattering. Here, theorem 3 is formulated: In the scattering of homogeneous very light elementary particles with a given quantum characteristics (ability for a strong interaction, strangeness, baryonic charge, etc.) no anomalous singularities will occur in any approximation of perturbation theory, if the transferred momentum approaches infinity. Finally the authors thank V. N. Gribov, B. L. Ioffe, L. D. Landau, L. B. Okun', and I. Ya. Pomeranchuk for discussions. V. A. Kolkunov and V. S. Vladimirov are mentioned. There are 5 figures and 9 references: 5 Soviet-bloc and 3 non-Soviet-bloc.

SUBMITTED: July 29, 1960

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Singularities of scattering...

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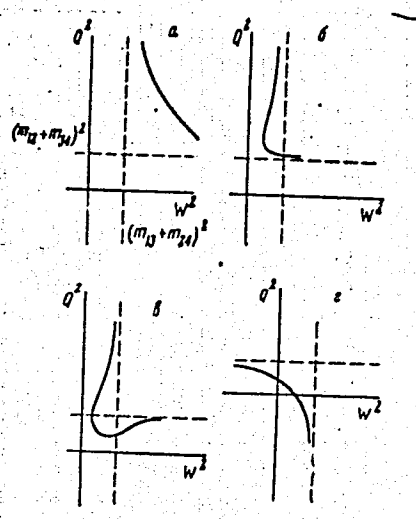

Fig. 2 Рис. 2

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RUDIK, A.P.

Nature of the singularities of amplitudes in quantum field theory. Zhur. eksp. i teor. fiz. 40 no.5:1473-1475 My '61. (MIRA 14:7)

(Quantum field theory)

RUDIK A.P.

GRIBOV, V. N., IOFFE, B. L., POMERANCHUK, I. Ya., AND RUDIK, A. P.

"Some consequences of the Moving Pole Hypothesis for High Energy Processes"

Report presented at the Intl. Conference on High Energy Physics, Geneva,
4-11 July 1962

A. F. Ioffe Physico-Technical Institute, Leningrad, USSR (Gribov)
Institute of Theoretical and Experimental Physics, Moscow, USSR (Ioffe, Pomeranchuk, Rudik)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001445920013-2"

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S/056/62/042/005/047/050
B108/B138

AUTHORS: Gribov, V. N., Ioffe, B. L., Pomeranchuk, I. Ya., Rudik, A.P.

TITLE: Some consequences of the pole shift hypothesis for high-energy processes

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 5, 1962, 1419-1421

TEXT: Some of the relations between the asymptotic values of the total cross sections of various processes are established using the theory of the reaction (R) matrices in the annihilation channel. It was found that in the spin-zero two-particle problem the ratio between any two partial amplitudes $T^l_{ik}(t)$ is uniform (t - square of total energy). Inelastic scattering of two particles yielding one unstable particle in the final state is considered. The behavior of the amplitude is determined by the last pole righthand in the l-plane. The system $\bar{N} + N^*$ may pass over into a "quasi-vacuum" state with isotopic spin T = 0, total momentum J = 0, 2, 4,..., and positive parity. The state where the pole shift

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Some consequences of the pole shift ...

$l_0(t)$ determines the total and elastic cross sections at high energies, lies between these states. At high energies the amplitude of the process considered is $f(s,t) = r(t)s^{l_0(t)}$, $l_0(0) = 1$. The cross section of this process is proportional to $\sim const/(c + \ln(s/4m^2))$; the constant c can be evaluated from experimental data. In accordance with this theory, NN-scattering shows $D_{3/2}$ and $F_{5/2}$ resonances in the energy range 10 - 27 Bev. No $P_{3/2}$ resonance with isotopic spin T = 3/2 was observed. Within the framework of this theory this must be due to the absence of "quasi-vacuum" states. The cross section of resonance state productions in processes passing a "quasi-vacuum" state does not decrease with increasing energy. This means that such resonances can also be detected at high energies. For nucleon-nucleus scattering processes the relation $\sigma_{tot}\sigma_{NA} = \sigma^2_{NA}$ is established. In general, $\sigma_{NA} \sim A^{2/3}$ (A - atomic number), but a dependence in proportion with A would not contradict the above relation either.

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Some consequences of the pole shift ...

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ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physicotechnical Institute of the Academy of Sciences USSR) (V. N. Gribov); Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics of the Academy of Sciences USSR)

SUBMITTED: March 21, 1962

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ACCESSION NR: AP5000350 S/0055/64/047/005/1905/1918

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AUTHORS: Ioffe, B. L.; Okun', L. B.; Rudik, A. P. [redacted]

21

TITLE: Weak interactions in colliding electron beams

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 5, 1964, 1905-1918

TOPIC TAGS: weak interaction, colliding beams, electron electron colliding beam, electron positron colliding beam

ABSTRACT: The authors calculate the cross sections for several inelastic processes involving weak interaction, and discuss the possible experimental observation of these processes using electron-electron and electron-positron colliding beams at energies 100--1000 BeV, when the weak interaction becomes strong. The derivation is based on the point-like four-fermion structure of weak interaction (assuming that there is no W meson), and that the standard scheme

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of the "square of the charged current" holds. The procedures used to calculate the matrix elements and the differential cross sections, and to integrate the differential cross sections, are described in detail. The values obtained for the cross sections of the processes $e^+e^- \to e^+\mu^-\nu_e\bar{\nu}_\mu$, $e^+e^- \to \mu^+\mu^-\nu_\mu\bar{\nu}_\mu$, $e^+e^- \to \mu^+\mu^-\nu_e\bar{\nu}_e$, and $e^-e^- \to \mu^-e^-\bar{\nu}_\mu\nu_e$ are 4.2×10^{-40}, 1.6×10^{-40}, 1.2×10^{-40}, and 5.5×10^{-40} cm^2, respectively, and are much smaller than the cross section for the process $e^+e^- \to \nu_e\bar{\nu}_e$ (1.1×10^{-34}). "The authors thank A. D. Dolgov, I. Yu. Kobzarev and I. Ya. Pomeranchuk for useful discussions." These cross sections are still below the capabilities of present day experimental means. Orig. art. has: 3 figures, 55 formulas, and 1 table.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki (Institute of Theoretical and Experimental Physics)

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