

NEMIROVSKIY, I.A., starshiy prepodavatel'

Calculating static characteristics of a single-coordinate hydrocopying system in case of a variable inlet pressure. Izv.vys.ucheb.zav.; mashinostr. no.8:67-72 '62. (MIRA 15:12)

1. Tomskiy politekhnicheskii institut.
(Hydraulic control)

NEMIROVSKIY, I.A.; NEYSHTADT, D.M.; SEDOKOV, L.M., kand. tekhn.
nauk; IL'IN, Yu.M.; ZHDANOVICH, I.F., inzh., retsenzent;
KUZNETSOV, Yu.I., inzh., retsenzent; KOSILOVA, A.G.,
kand. tekhn. nauk, red.

[Increasing the productivity of heavy-duty machine tools]
Povyshenie proizvoditel'nosti krupnykh metallorazhushchikh
stankov. [By] I.A. Nemirovskii i dr. Moskva, Mashino-
stroenie, 1965. 201 p. (MIRA 18:5)

NEMIROVSKIY, I.A.; VASENKOV, O.I.; KOMISARENKO, Yu.Ya.

Graphicoanalytical investigation of nonlinear processes in hydraulic systems of machine tools. Stan. i instr. 36 no.9:13-15 S '65.
(MIRA 18:10)

ZAVERTAYLO, V.P., inzh.; NEMIROVSKIY, I.Ya., inzh.

Stationary double unit for welding in a carbon dioxide atmosphere. Stroi. truboprov. 7 no.5:27 My '62. (MIRA 16:6)

1. Kiyevskiy filial spetsial'nogo konstruktorskogo byuro "Gastroymashina".

(Pipe—Welding)

NEMIROVSKIY, L.

You did not work in vain. Izobr. i rats. no. 5:42-44 My '61.

(MIRA 14:5)

(Technological innovations)

NEMIROVSKIY, L. A.

BARSUK, V.A.; NEMIROVSKIY, L.A.

Using containers in hauling mail by truck. Vest.sviazi 17
no.8:22-25 Ag '57. (MIRA 10:10)

1.Starshiy inzhenerpochtovoy laboratorii Tsentral'nogo nauchno
issledovatel'skogo instituta svyazi (for Barsuk). 2.Starshiy
inzhener tekhniko-ekonomicheskoy laboratorii Moskovskogo pochtamta
(for Nemirovskiy).

(Postal service)

BRUKER, V.A.; NEMIROVSKIY, L.A.; URUMYAN, N.V., inzh.

Method for determining the economic effect resulting from the mechanization of postal operations, Vest. svyazi 23 no.12:14-15 D '63. (MIRA 17:2)

1. Nachal'nik proizvodstvenno-tekhnicheskoy laboratorii Moskovskogo pochtamta (for Bruker). 2. Starshiy inzh. proizvodstvenno-tekhnicheskoy laboratorii Moskovskogo pochtamta (for Nemirovskiy).

L 23831-66 EWT(q)/EWT(m)/EWP(v)/EWP(t)/EWE(k)/EWP(h)/EWP(1) TJP(c) JD
ACC NR: AP6007721 SOURCE CODE: UR/0413/66/000/003/0120/0121

AUTHORS: Makarov, L. O.; Moskatov, B. Kh.; Kuznetsov, L. R. / Yakhinovich, B.F.

ORG: none 33

TITLE: Device for ultrasonic machining. Class 49, No. 17865 6 5

SOURCE: Izobreteniya, progressivnyye obrabotki, tovarnyye znaki, no. 3, 1966, 120-121 14

TOPIC TAGS: ultrasonic machine tool, magnetostriction oscillator, ultrasonic machining

ABSTRACT: This Author Certificate presents a device for ultrasonic machining. 16
The apparatus contains an acoustic head with a concentrator and a magnetostriction transducer. To increase the productivity of the process, the mounting of the concentrator and magnetostriction transducer in the housing of the acoustic head is in the form of supporting resonance flanges of variable thickness, e.g., with uniformly increasing wall thickness from the center to the periphery (see Fig. 1).

Card 1/2

REF: 621.9.016.4.06 2

25831-66

ACC NR: AR600721

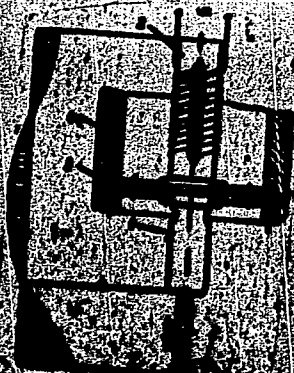


Fig. 1. 1 - concentrator;
2 - magnetostrictive
transducer; 3 - resonance
flange; 4 - housing.

USSR / Human and Animal Physiology. Metabolism.

T

Abs Jour : Ref Zhur - Biol., No 15, 1958, No. 69782

Author : Botchal, B. Ye.; Ksandrova, S. Ye.; Nemerovskiy, L. I.;
Perel'mutr, A. S.

Inst : Not given

Title : Apparatuses for Determining Gas Exchange

Orig Pub : Materials on Metabolic Experiments and Scientific
Achievements in the Medical Industry, 1957, No 4 (23),
56-73

Abstract : A description and comparative characterization of the
existing types of Soviet and foreign apparatuses for
studying human gas exchange.

Card 1/1

14

NEMEROVSKIY, L.I.; KOSHELEVA, A.A.; Primali uchast'ye; TERLETSKIY, V.A.;
SHEYNIN, T.B.

Spirometabolograph. Nov. med. tekhn. no. 1:11-24. '60.

(MIRA 14:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut meditsinskikh
instrumentov i oborudovaniya.
(BASAL METABOLISM) (PHYSIOLOGICAL APPARATUS)

NEMEROVSKIY, L. I.

Instruments for the study of gas exchange. Nov. msd. tekhn. no.2:3-7
'61. (MIRA 14:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut meditsinskikh
instrumentov i oborudovaniya.

(RESPIRATION)

NEMEROVSKIY, L.I.

Current status of the problem of instruments for the study of
gas exchange. Med. prom. 15 no. 4:39-43 Ap '61.

(MIRA 14:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut meditsinskikh
instrumentov i oborudovaniya.

(RESPIRATION) (PHYSIOLOGICAL APPARATUS)

BERNSHTEYN, D.G., inzh.; NEMIROVSKIY, L.R., inzh.

Using a chromatic pyrometer to measure the temperature of the
clinkering zone. TSement 31 no.1:11-13 Ja-F '65.

(MIRA 18:4)

1. Institut Giprostromavtomatizatsiya.

BERNSHTEYN, L.G., inzh.; KEMFORSKIY, I.P., inzh.

Thermocouple for measuring the temperature of return air in
a kiln with grate cooler. Tsent 31 no.4:1-12 31-49 '65.
(11-12:8)

.. Institut Khimostroavleneniya.

NEMIROVSKIY, L.S.

MALAMUD, M.I.; NEMIROVSKIY, L.S. (Kiyev)

Some prospects for the development of health resorts and rest homes.
Vrach.delo no.5:519-521 My '57. (MIRA 10:8)
(HEALTH RESORTS, WATERING PLACES, ETC.)

VEKKER, M.N.; NEMIROVSKIY, I. Y.

Device for the displacement of machine tools. Mashinostroitel.
no.4:25 Ap'64 (MIRA 17:7)

NEMIROVSKIY, M., (Engr-Col)

"Increase the Emission of Jet / Aircraft / Materiel Textbooks" - Engr-Col M. Nemirovskiy, Engr-Lt Col T. Timofeyev, Engr-Capt V. Dolgorukov, and Engr-Sr Lt V. Starostin complain of the shortage of textbooks and manuals on jet aircraft materiel. Those textbooks which are available, in the estimation of these officers, are not satisfactory, and the good textbooks are too few in number. They state that in 1953 a group of officers from the Air Force Engineering Academy ineni Zhukovskiy prepared a textbook, but so few copies of the first part were printed that it has now become a rarity. They call on the Military Publishing House (Voyenizdat) and the State Publishing House of the Ministry of Defense USSR (Oborongiz) to rectify these shortages. (Krasnaya Zvezda, Moscow, 13 Apr 54).

SO: SUM 182, 13 August 1954

MEMIROVSKIY, Moisey Il'ich, inzhener; VAGIN, A.A., redaktor izdatel'stva;
EVRESON, I.M., tekhnicheskii redaktor

[Electric equipment of electric stations and substations of metallurgical plants; a collection of problems and exercises] Elektrooborudovanie elektrostantsii i podstantsii metallurgicheskikh zavodov; sbornik zadach i uprazhnenii. Moskva, Gos. nauchno-tekhn. izd-vo litery po chernoi i tevetnoi metallurgii, 1956. 288 p. (MLRA 10:2)
(Electric substations) (Electric power plants)

DUNAYEV, Ye.S., inzh.; NEMIROVSKIY, M.I.

Special problems and improved methods for estimating construction costs of hydroelectric power stations. Trudy MIEI no.14:483-508 '59. (MIRA 13:1)

1. Gidroenergoprojekt.
(Hydroelectric power stations) (Building--Estimates)

NEMIROVSKIY, M.I., insh.

Methods for setting up norms for reusable materials. Gidr.
stroil. 30 no.1:37-39 Ja '60. (MIRA 13:5)
(Construction industry--Costs)

KULIKOV, Aleksandr Aleksandrovich; NEMIROVSKIY, Moisey Il'ich; VASIL'YEVA, G.B., inzh., retsenzent; LUTSYK, V.I., inzh., retsenzent; KORNYTNIKOV, V.P., inzh., red.; CHISTYAKOVA, L.G., inzh., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Collection of problems on electric machinery] Sbornik zadach po elektricheskim mashinam. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1961. 198 p. (MIRA 14:12)
(Electric machinery)

SOV/106-58-11-2/12

AUTHOR: Nemirovskiy, M.S.

TITLE: ~~The Simultaneous Detection of a Signal, Continuous Interference and Fluctuation Noise by an Exponential Detector.~~ (Ob odnoveremennom detektirovani signala, nezatukhayushchey pomekhi i fluktuatsionnogo shuma eksponentsial'nym detektorom).

PERIODICAL: Elektrosvyaz', 1958, Nr.11, pp.9-17 (USSR)

ABSTRACT: The typical practical situation to which this analysis refers is that of Fig.1 in which a non-linear element used as a detector is preceded by a broad-band high-frequency amplifier and followed by a narrow-band low-frequency filter. Two cases are of interest. In the first, the difference frequency between the signal and the interference is such that beats between them fall in the pass-band of the output filter. In the second, the difference is such that the beat frequencies lie outside the output pass-band; this does not mean however that the interference has no effect on the reception of the signal. The action in this case is usually to degrade the level of the signal towards

Card 1/4

SOV/106-58-11-2/12

The Simultaneous Detection of a Signal, Continuous Interference and Fluctuation Noise by an Exponential Detector.

that of the fluctuation noise on account, on the one hand, of the suppression of the signal, and on the other, of the increase in level of fluctuation noise because of beats between interference and noise. The properties of the exponential detector have previously been considered by Folk (Ref.1) and by Momot and Bakanov (Ref.2). Simultaneous detection of signal and interference from a neighbouring station has been studied by A.D. Knyazev (Ref.3). It was shown in this paper that with such a detector there is a form of negative suppression observed in which the signal level at the output increases with the level of interference. The effect of fluctuation noise was not considered however. The present article remedies this defect, and shows that the exponential detector is superior to both the linear and square-law types. A broad class of detectors can be described in terms of two successive processes. According to the first of these, the envelope of the applied voltage is first separated out

Card 2/4

SOV/106-58-11-2/12

The Simultaneous Detection of a Signal, Continuous Interference and Fluctuation Noise by an Exponential Detector.

and then, in the second, transformed in a fashion which depends on the type of detector. The three components of the total input are given by (2), (3) and (4) respectively, while (6) is an expression for the effective envelope. Examination of (6) shows that (a) with an increase in noise, the term giving the direct component of the signal falls off rapidly and (b) the second term represents a signal effectively translated to the intermediate frequency given by the difference between signal and interference, (c) the last two terms give the noise component; the first of these is the result of beats between interference and noise, the second is the result of direct detection of noise. The statistical mean value of the output current is given by (13) and the correlation function by (15). Separating out the low-frequency and steady components, these are given by (24). Subject to the inequalities (25), (24) becomes (28). If the constant component is now eliminated, the expression for the low-frequency component of the correlation function is (29). If the filter

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SOV/106-58-11-2/12

The Simultaneous Detection of a Signal, Continuous Interference and Fluctuation Noise by an Exponential Detector.

response has a simple rectangular shape as in (30), then its effect on the passage of (29) is (34). The final expression for signal/noise ratio is (38). For comparison (39) is the analogous equation for a square-law detector and (40) that for a linear detector. The way in which signal/noise ratio varies with the level of interference is shown in Fig.2. The performance of a linear detector is given by curve 3 and the square law detector by curve 4. Curves 1 and 2 represent the exponential detector and its superiority is evident. There are 2 figures and 7 Soviet references.

SUBMITTED: February 1, 1957.

Card 4/4

NEMIROVSKIY, M. S., Cand Tech Sci -- (diss) "Methods of increasing the static resistance of commercial radiotelephone communication lines." Moscow, 1959. 14 pp; (Ministry of Communications USSR, Moscow Electrical Engineering Inst of Communications); 100 copies; price not given; (KL, 17-60, 157)

6.9400 (also 2502)

20405

S/109/60/005/012/003/035
E192/E482

AUTHOR: Nemirovskiy, M.S.

TITLE: The Effects of Noise on an Automatic Frequency Control System. Part II

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.12, pp.1889-1894

TEXT: The article is a continuation of earlier work (Ref.1) constituting Pt.I (q.v. for notation and terminology). Pt.I considered a system containing an ideal limiter preceding the discriminator. The present article considers the same system without limiter. As in Pt.I, two variants of the system are considered, one in which the bandwidth of the system before the mixer is much narrower than that after the mixer and vice versa. The dynamics of establishment of the centre frequency in the first system with harmonic standardized signal and fluctuation noise are first established. The analysis shows that under these conditions the system without limit is less noise immune than with an ideal limiter. The same system is then considered for interference in the form of an harmonic signal. It is found that passage from control by the standard signal to the interfering

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Card 1/2

The Effects of Noise on ...

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signal is a smooth curve (Fig.3) in place of a discontinuous transition in the presence of an ideal limiter. The second variant is then analysed. It is found that the system without limiter corresponds to an improvement of signal/noise ratio of approximately 20%. Experimental verification is claimed. There are 4 figures and 4 references: 3 Soviet and 1 non-Soviet.

SUBMITTED: February 3, 1960

Card 2/2

KAPLANOV, Murad Rashidovich; LEVIN, Viktor Aronovich: Prinsipali uchastiye:
KAGANOV, V.I.; NEMIROVSKIY, M.S.; MOZH'HEVELOV, B.N., red.;
LARIONOV, G.Ye.G., tekhn. red.

[Automatic frequency control] Avtomaticheskaya podstroika cha-
stoty. Izd. 3., dop. Moskva, Gosenergoizdat, 1962. 319 p.
(MIRA 15:9)

(Frequency regulation)

(Radio)

ACC NR: AM6026784

Monograph

UR/

Nemirovskiy, Mikhail Semenovich

Interference immunity in radio communication (Pomekhoustoychivost' radiosvyazi) Moscow, Izd-vo "Energiya", 1966. 0295 p. illus., biblio. 7000 copies printed.

TOPIC TAGS: noise immunity, synchronous signal detection, amplitude phase detector, frequency discriminator, clock synchronization

PURPOSE AND COVERAGE: This book is intended for engineers concerned with the design of radio equipment and for students in advanced courses in this field. The noise immunity of basic radio communication systems (telephone and telegraph) without signal fading at the receiver input is discussed. Recommendations for the design of receiving systems and units including automatic gain control are given.

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ACC NR: AM6026784

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SUB CODE: 09/ SUBM DATE: 28Feb66/ ORIG REF: 024/ OTH REF: 002/

Card 4/4

AFONIN, K.B.; BURTSSEV, K.I.; BYSTROV, S.N.; VINETS, G.B.; VODNEV, G.G.; VORONIN,
A.S.; GEVLICH, A.S.; GRYAZNOV, N.S.; GUDIM, A.F.; GUSYATINSKIY, M.A.;
DVORIN, S.S.; DIDENKO, V.Ye.; DMITRIYEV, M.M.; DONDE, M.M.; DOROGOBD,
G.M.; ZHDANOV, G.I.; ZAGORUL'KO, A.I.; ZELENETSKIY, A.G.; IVASHCHENKO,
Ya.N.; KAPTAN, S.I.; KVASHA, A.S.; KIREYEV, A.D.; KLISHEVSKIY, G.S.;
KOZYREV, V.P.; KOLOBOV, V.E.; LGALOV, K.I.; LEYTES, V.A.; LERNER, B.Z.;
LOBODA, N.S.; LUBINETS, I.A.; MANDRYKIN, I.I.; MUSTAFIN, F.A.; ~~NEMIROVSKIY,~~
~~N.K.~~; NEFEDOV, V.A.; OBUKHOVSKIY, Ya.M.; PERTSEV, M.A.; PETROW, I.D.;
PODOROZHANSKIY, M.O.; POPOV, A.P.; RAK, A.I.; REVIYAKIN, A.A.; ROZHKOV,
A.P.; ROZENGAUZ, D.A.; SAZONOV, S.A.; SIGALOV, M.B.; STOMAKHIN, Ya.B.;
TARASOV, S.A.; FILIPPOV, B.S.; FRIDMAN, N.K.; FRISHBERG, V.D.; KHAR'KOV-
SKIY, K.V.; KHOLOFTSEV, V.P.; TSAREV, M.N.; TSOGLIN, M.B.; CHERNYI, I.I.
CHERTOK, V.T.; SHILKOV, A.K.

Samuil Borisovich Banne. Keka 1 khim. no. 6:64 '56.
(Banne, Samuil Borisovich, 1910-1956)

(MLRA 9:10)

KAGASOV, V.M.; KHOLOPSEV, V.P.; HEMIROVSKIY, N.Kh.; LOPAREV, V.G.;
KHARLAMPOVICH, G.D., kand.tekhn.nauk

Separate recovery of ammonia and pyridine bases from coke-oven
gas. Koks i khim. no.6:32-35 '60. (MIRA 13:7)

1. Chelyabinskiy metallurgicheskiy zavod (for all except Khar-
lampovich). 2. Ural'skiy politekhnicheskiy institut (for Khar-
lampovich).
- (Coke-oven gas) (Ammonia) (Pyridine bases)

DOBROVOL'SKIY, I.P.; DONDE, M.V.; NEMIROVSKIY, N.Kh.

Certain problems involved in the planning and operating of pitch
coke units. Koks i khim. no.1:33-37 '61. (MIRA 14:1)

1. Chelyabinskiy metallurgicheskiy zavod.
(Chelyabinsk--Coke)

MEYEROVSKIY, N.L.; MEYEROVICH, G.I.

Colorimetric method for the quantitative determination of metacrylic acid methyl ester in the air in industrial premises. Gig. i san. 23 no.2:83-85 P '58. (MIRA 11:4)

1. Iz laboratorii organicheskoy khimii Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

(ACRYLATES, determination,

metacrylic acid methyl ester in air, colorimetric determ. in indust. (Rus))

(AIR POLLUTION, determination,

metacrylic acid methyl ester, colorimetric determ. in indust. (Rus))

22(1)

SOV. 3-00-4-17-47

AUTHOR: Nemirovskiy, N.L., Docent

TITLE: To Raise the Students' Interest for the Subject

PERIODICAL: Vestnik vysshey shkoly, 1959, Nr 4, p 36 (USSR)

ABSTRACT: The author points out the educational influence which an interesting and well expounded lecture has on the student. Attending lectures should be obligatory and there is no reason why a lecture course should be cut leaving it to the students to learn individual sections of the prescribed textbooks. He agrees with Professor I.V. Kuznetsov that a lecture must be properly planned and expounded by the lecturer in accordance with the approved program, but not all lecturers are able to cope with this task. Closely connected with this problem is that of textbooks. The author points out the difficulties a student is facing when he has to learn from a textbook containing 800 to 1,000 pages. There is 1 Soviet reference.

ASSOCIATION: Leningradskiy sanitarno-gigiyenicheskiy meditsinskiy institut (Leningrad Sanitary-hygenic Medical Institute).

Card 1/1

NEMIROVSKIY, N.L., dotsent; MEYEROVICH, G.I., assistant

Method for determining the organic phosphorus insecticide L-11-6
in the air of workrooms. Gig. i san. 24 no.7:80-81 J1 '59.

(MIRA 12:9)

1. Iz kafedry gigiyeny truda i laboratorii organicheskoy khimii
Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

(PHOSPHATES, determ.

organic phosphorus insecticide determ. in air
of working places, method (Rus))

(AIR POLLUTION, determ.

same)

83258

S/109/60/005/009/003/026
E140/E455

6.9400

AUTHORS: Kaganov, V.I. and Nemirovskiy, N.S.
TITLE: Effects of Interference²⁵ on an Automatic Frequency Control System. Pt. I

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5 No.9, pp.1380-1386

TEXT: Two types of noise are considered in the AFC circuit²⁵: external noise, acting from the side of the calibrated oscillator, internal noise, varying the natural frequency of the stabilized oscillator. In the circuit discussed, it is assumed that the centre frequency of the discriminator is great in comparison with the width of signal spectrum at the mixer output. Two AFC systems are examined. In one the passband of the IF filter is substantially broader than the signal spectrum at the mixer output; in the other the reverse is true. The discriminator is considered to have an ideal limiter and to give an output-voltage proportional to the instantaneous frequency at the input while the control element is a linear inertialess device. For the system with broad IF filter, three cases are considered: 1) external interference harmonic, and calibrated signal harmonic.
Card 1/2

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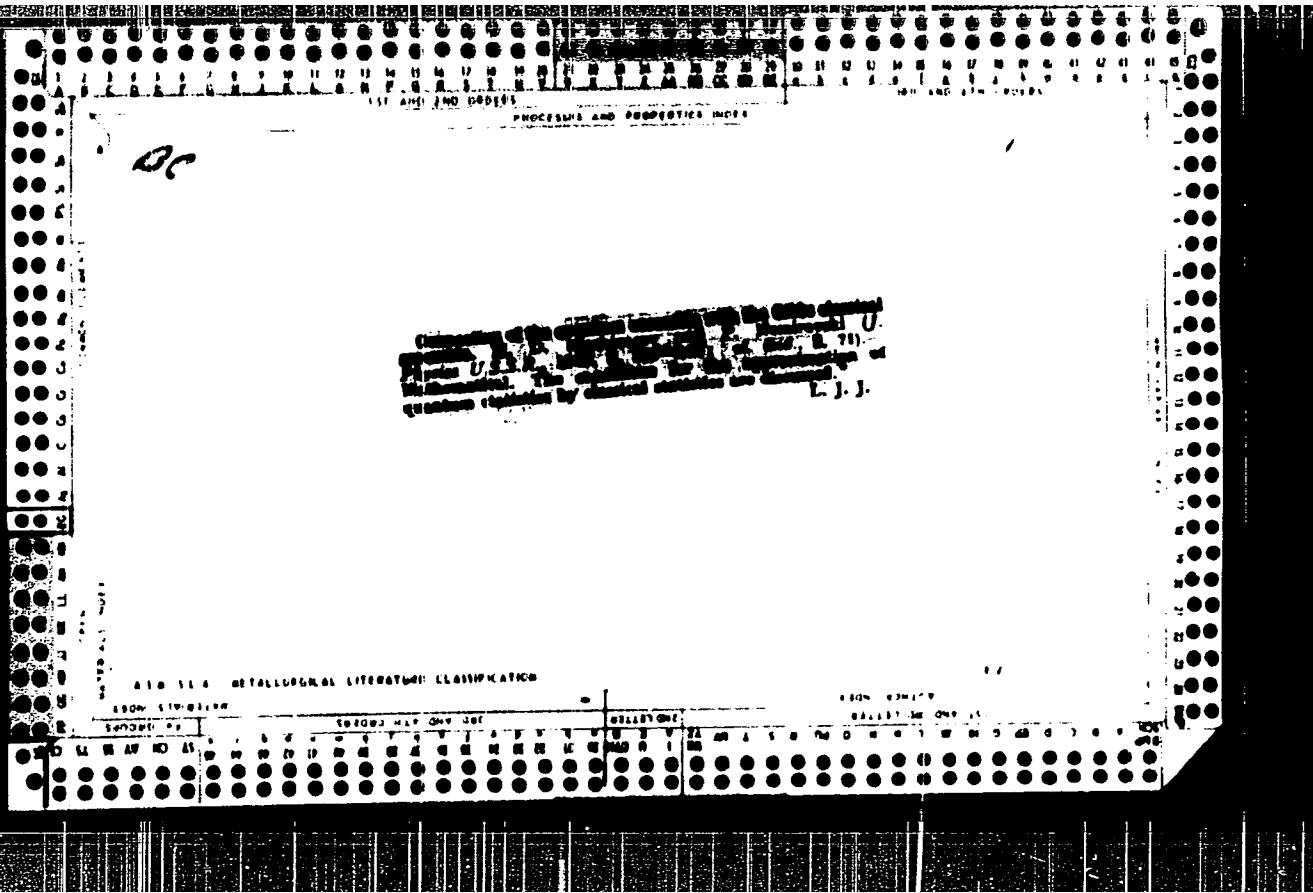
S/109/60/005/009/003/026
E140/E455

Effects of Interference on an Automatic-Frequency-Control System.
Pt. I

2) external fluctuation noise, and harmonic calibrated signal;
3) internal fluctuation noise. For the narrow IF filter the process of stabilizing the frequency in the AFC system is assumed slow, so that the dynamic and static characteristics of the IF filter may be taken as identical. The case of fluctuation noise in both the external and internal circuits is considered. There are 2 figures and 6 references: 5 Soviet and 1 English. DX

SUBMITTED: December 12, 1959

Card 2/2



NEMIROVSKIY, P. ~~fr~~.

"Radiation Forces in Compton Effect," Zhur. Phys., No 4, 6, pp 555-562, 1941

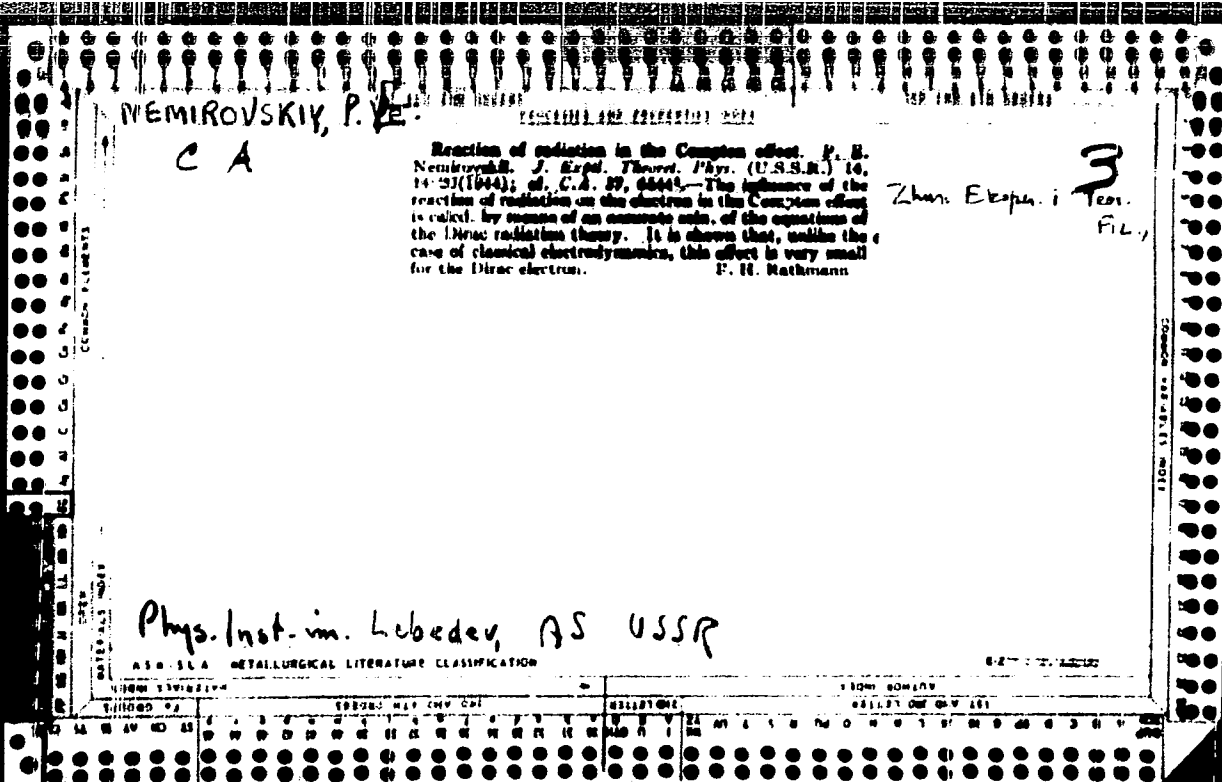
NEMIROVSKIY, P. E.
CA

3

Wave equation for the particle having spin $1/2$, and two values of the rest mass. V. L. Ginsburg and P. E. Nemi-
rovskiy. *J. Phys. (U. S. S. R.)* 7, No. 5, 227-21963
(in English).--Math.-theoretical. The relativistic theory
for the particle having spin $1/2$, and capable of being in
states with 2 different values of the rest mass is developed.
The transitions between the states of different masses are
possible, these transitions leading to emission or absorption
of a photon. The possibility of utilizing the wave equation

in the theory of elementary particles knows thus far is
discussed. F. H. Rathmann

Phys. Inst. im. Lebedev, AS USSR



SHMIROVSKIY, P. E.

"Pair Formation in the Field of an Electron." Sub 23 Apr 47. Physics
Inst imeni P. N. Lebedev. Acad Sci USSR

Dissertations presented for degrees in science and engineering in
Moscow in 1947

SO: Sun No. 457. 18 Apr 55

NEMIROVSKIY, P.

PA 26T63

USSR/Physics
Electrons
Electron Theory

Jan 1947

"Pair Production in the Field of an Electron," P.
Nemirovskiy, Institute of Physics imeni P. N.
Lebedev, Academy of Sciences of the USSR, 1 p

"Journal of Physics" Vol II, No 1

A discussion of the calculation of the cross section
in the case of the electron fields, in which the
production of pairs arises with the passage of hard
electromagnetic radiation. The calculation is according
to Dirac's perturbation theory.

26T63

NEMIROVSKI, P. E.

8/2

827. Pair Formation by a Photon and the Decelerating Radiation in an Electron Field (Obrazovanie Par Fotonom i Tormoznee Izlucheniye v Pole Elektrona) by P E Nemirovskii. Zhur Eksptl i Teoret Fiz 18: 839-902 (1948) Oct (In Russian)

A computation is made of the effective cross section of pair formation by a photon in the field of an electron; exchange effects, lags, and spin interactions are taken into account. A detailed examination is made of the extreme relativistic case and of the case in which all of the particles have low energies after the collision. Decelerating radiation due to a collision of two electrons is discussed.

NEMIROVSKIY, P.E.

[Theory of a semitransparent nucleus with a blurred edge]
Teoriia poluprozrachnogo iadra s razmytym kraem. Moskva, 1955.
18 p. (MIRA 14:7)
(Neutrons—Scattering) (Nuclei, Atomic)

NEMIROVSKIY, P.E., (Moskva)

The 50-th anniversary of the special theory of relativity. *Fiz. v*
shkole 15 no.5:10-19 S-0 '55. (MLRA 9:1)
(Relativity (Physics))

MEMIROVSKIY, P. E.

Physic : Nuclear physics
Code : 1/1 Pub. 22 - 19/51
Authors : Memirovskiy, P. E.
Title : ~~_____~~
Computation of neutron width according to a model of a semitransparent nucleus
Periodical : Dok. AN SSSR 101/2, 257-258, Mar 11, 1955
Abstract : The conditions at which the neutron width can be determined are discussed. It was found that the neutron width varies with variations of atomic weight, however, it does not vary monotonously. The complex potential $V(r)$ is introduced to explain the interaction between a neutron and the nucleus. The real part of the potential describes a certain summary effect of nucleus matter on a flying-in neutron and the imaginary
Institution :
Presented by : Academician N. A. Leontovich, December 1, 1954

Periodical : Dok. AN SSSR, 101/1, 257-258, Mar 11, 1955

Card 2/2 : Pub 22 - 16/51

Abstract : part corresponds to this absorption of neutrons by a nucleus. Formation of the so-called intermediate nucleus is understood under the absorption of neutron process. Schrodinger's equation is used for determining the neutron width.

NEMIROVSKIY, P.

"Crystal Ball Model with a Diffuse Boundary" a paper presented at the International Conference on Nuclear Reactions, Amsterdam, 2-7 July 1956.

D551274

NEMIROVSKIY P. V.

215

2024
 CONCERNING THE DIFFRACTION CROSS SECTIONS OF
 NEUTRONS WITH NUCLEI. P. E. Nemirovskii, *Soviet
 Phys. JETP* 3, 484-9 (1956) Nov. (In English). *Zhur.
 Eksp. i Teoret. Fiz.* 29, 881-9 (1956) Mar. (In Russian)
 A new quasi-classical solution of the Schrödinger equa-
 tion for $E > |V|$ is proposed. This approximation is applied
 to the solution of the problem of the motion of a neutron in
 a potential with a complex component. An explanation is
 obtained for the behavior of total cross sections in the im-
 agery region 30 to 100 Mev. For energies of 2 to 10 Mev
 the Schrödinger equation is solved for a complex potential
 which goes to zero exponentially at infinity. It is shown
 that the absorption cross section for a well with fuzzy
 edges does not have sharp maxima as a function of kR and
 E . This is in contrast to the results for the absorption
 cross sections for a rectangular potential well. The agree-
 ment of the calculated absorption cross sections at 2.5 and
 4.3 Mev with experimental values is satisfactory. (auth)

NEMIROVSKIY, P. ~~S~~. (Acad. Sci. USSR)

"Optical Model of the Nucleus" (review lecture)

paper included in the program of the All-Union Conf. on Nuclear Reactions
in Medium and Low Energy Physics, Moscow, 19-27 Nov 1957.

NEMIROVSKIY, P. E. Doc ^{Phys-Math} ~~Math-Phys~~ Sci -- (diss) "The Theory
of the Scattering of ~~DIFFERENTIALLY~~ Neutrons by Nuclei."
Mos, 1957. 1⁴ PF 22 cm. (Academy of Sciences USSR), 125 copies
(KL, 25- 57, 108)

- 2 -

NEMIROVSKIY, P.E.

AUTHOR

NEMIROVSKIY, P.E.,

56-5-25/55

TITLE

The Model of a Semic-transparent Nucleus With Blurred Boundary, Part II
(Model poluprozrachnogo jadra s razmytym krayem II - Russian)

PERIODICAL

Zhurnal Eksperim. i teoret. Fiziki, 1957, Vol. 32, Nr 3, pp 1143-1149
(U.S.S.R.)

ABSTRACT

The paper under review discusses a new method for the computation of the total cross sections of the interaction of neutrons of low energy with nuclei. This method utilizes a model with blurred boundary.

Computation of the phase: At $r \leq r_0$ let there exist a potential $V = V(r_0)$, and at $r = r_0$ a boundary condition must be satisfied. First of all the inner wave function is given for $r = r_0$. Then the expression for the boundary condition is derived. The simplest case is the one where the potential $V(r)$ is real at $r > r_0$.

Comparison with the Experiment: The concrete computations of the cross sections were conducted for an exponential form of the boundary. The computations with the pot $V(0) = 45$ MeV and with the boundary $e^{-a(r-r_0)}$ with $1/a = 1.10^{-13}$ showed the following: At an energy of 1 MeV the total cross sections are much larger than the experimental cross sections, and they have, moreover, sharp maxima with respect to r_0 . The paper under review contains relevant diagrams. For this reason, the following considerations were based on the value $a = k_0 = 1.43 \cdot 10^{13}$ cm. For this value of a the surfaces of the total cross sections were then constructed in dependence upon the energy and upon

Card 1/2

The Model of a Spherically Transparent Nucleus with a Sharp Boundary, Part II

56-5-25/55

the atomic weight. In the previous part of the potential in the domain of the boundary equals zero. Then this circumstance has no substantial effect in the course of the cross sections. A satisfactory coincidence with the experimental data was obtained for $V(0)=44$ MeV and for $r_0=1.25 \cdot 10^{-13} A^{1/3}$ cm. The minimum for the total cross sections of the elements with $A \sim 200$ at 1 MeV and the maximum for the nuclei with $A \sim 90$ to 120 are clearly visible. The cross sections for $A=150-180$ are larger than the theoretical values, and their dependence on the energy is only weak. The paper under review also computes the absorption cross sections for different elements. Unfortunately, the experimental data at 1 MeV are not very informative. Finally the author of the present paper discusses, with the aid of sketchy drafts some characteristic angular distributions; all of them are anisotropic.

(S. reproduction)

Not given

ASSOCIATION
PRESENTED BY
SUBMITTED
AVAILABLE
Card 2/2

12.6.1956
Library of Congress

9-10-48, 56

AUTHOR
TITLE

NEMIROVSKIY, P.E., YELAGEN, YU.S.

The Computation of the Polarization of Neutrons by
Means of a Nuclear Model with Smeared-out Boundary.
(Raschet polarizatsii neytronov po modeli yadra s
raznytm krayem. - Russian)

PERIODICAL

Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 32, Nr 6,
pp 1583-1583 (U.S.S.R.)

ABSTRACT

Experiments on the polarization of 400 MeV neutrons have been investigated by R.K. ADAIR et al., Phys. Rev. 96, 503 (1954) on the basis of the optical nuclear model with rectangular potential. Such a method of investigation does however, not take into account the basic properties of the spin-orbit-interaction which in reality has to exist only on the surface of the nucleus. Therefore the spin-orbit interaction can be investigated as proportional to $(1/r) (dV/dr) (1/r)$, where V denotes the depth of the potential well within the nucleus.

The amount of the spin-orbit-interaction here depends upon the dimensions of the nucleus. This circumstance could not be taken into account in the computations carried out by ADAIR et al. Here the following potential was selected:

CARD 1/3

6-6-48-6

The Computation of the Polarization of Particles by Means of a Nuclear Model with Smeared-out Boundary.

$$V = V_0 (1 + \beta) = \text{const} = V_0$$

$$V = V_0 e^{-\alpha(r-r_0)} (1 + \beta) \text{ at } r \gg r_0$$

Here a slight potential jump exists at $r=r_0$, which fact, however, is not essential. For the purpose of simplifying computations, the factor $1/r$ was replaced by the constant $1/r_0$, which represents a satisfactory approximation for heavy nuclei. The constant c of the spin-orbit coupling was assumed to be equal to $3.3 \cdot 10^{-27}$. The polarization was computed by means of the known formulae, viz. by the assumption that only the s- and p-phases are different from zero. The d-phase was nearly equal to zero in the domain investigated here. Polarization was investigated on the occasion of the scattering at an angle of 90° in the direction of the impinging bundle. The results are shown in form of a diagram. The experimental points are located within the domain of the maximum between the computed curves which confirms the

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56-6-48/56

The Computation of the Polarization of Neutrons by
Means of a Nuclear Model with Smearod-out Boundary.

best agreement with the experiment at $0,05 < \xi < 0,1$.
Thus, the following was shown: With one and the same
constant of the spin-orbit interaction, scattering
on light and also on heavy nuclei can be described.
(With 1 Illustration)

ASSOCIATION: Academy of Science of the U.S.S.R.
(Akademiya nauk S.S.S.R.- Russian)
PRESENTED BY: -
SUBMITTED: 16.3.1957
AVAILABLE: Library of Congress.

CARD 3/3

NEMIROVSKIY, P. E.

AUTHOR: Nemirovskiy, P.E. 56-3-28/59

TITLE: The Optical Nuclear - and Shell Model. (Opticheskaya model' yadra i model' obolochek)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 3, pp. 746-749 (USSR)

ABSTRACT: The "fixed" states of the neutron are treated theoretically in a potential field. The parameters of the potential field are obtained from the optical nuclear model with spin-orbit-interaction. For nuclei with closed shell plus one superfluous particle a conformity between experiment and theory could be obtained for the energetic order of magnitude of a single-particle level. Generally must be said that the optical potential reflects the right order of magnitude of a single-particle level of light nuclei, the computation of the precise position of the other levels is, however, not possible. This might partly be due to the not precise satisfying of the law $R_0 = r_0 A^{1/2}$.

A deviation of the radius by 1% causes already a shift of the level by 0,5 MeV. There are 1 figure and 5 Slavic refernces.

SUBMITTED: March 16, 1957.

AVAILABLE: Library of Congress

Card 1/1

AUTHOR
TITLENEMIROVSKIY, P.E.

PA 2111

On the Problem of the Interaction between Antiprotons and Nuclei
(K voprosu o vzaimodeystvii antiprotonov s yadrami).~~PERIODICAL~~

Doklady Akademii Nauk SSSR 1957, Vol 112, Nr 3, pp 411-413 (U.S.S.R.)

Received 3/1957

Reviewed 4/1957

ABSTRACT

In the course of the present paper it is shown how the antiproton cross sections can be determined in a sensible manner by proceeding from the following course taken by density. The density of protons decreases from 0,9 to 0,1 at a distance of the order $2,4 + 0,3 \cdot 10^{-13}$ cm. According to various experimental data (scattering of electrons of high energy meso-atoms etc.), the density of the nuclear matter does not cease suddenly on the boundary of the nucleus, but it decreases gradually. The author assumes here that the interaction of an antinucleon with a nucleon is described by a δ -function and that the density of the neutrons and protons takes a similar course. Three possibilities for the course taken by density are explicitly given. All parameter values mentioned here are not in contradiction to the data concerning electrons.

The absorption coefficient of nuclear matter must be found which corresponds to experimental data: $K = \rho \cdot \bar{\sigma}$. Here $\bar{\sigma}$ denotes the cross section of the interaction of a nucleon and an antinucleon averaged over the protons and neutrons in the nucleus. The Pauli principle can be neglected above all in the case of energies of from $E = 300$ to 500 MeV, and therefore $\bar{\sigma}$ need not differ very much from the cross section of the interaction of free particles. For the weakening of the antiproton bundle and

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PA - 2111

On the Problem of the Interaction between Antiprotons and Nuclei

for the cross section formulae are explicitly given, and these expressions are then used for the computation of nucleon collisions (Reviewer's note this probably means antinucleons). Next the determination of absorption coefficients is discussed in short. The results obtained on this occasion on the basis of the different potentials are shown together in a table. The results are in good agreement among one another as well as with the experiment. The cross section of the collision between free antiprotons and nucleons amounts in the energy range assumed here (apparently from $E \sim 300 - 500$ MeV) about $0,15 \dots 0,20$ barn. The existence of such large cross sections does not necessitate any great enlargement of the radius of the interaction between nucleons and antinucleons as against the radius of usual nuclear forces.

Finally the influence exercised by the effective radius of the nuclear forces on the potential of absorption on the boundary of the nucleus is investigated. A formula for the introduction of a finite effective radius of the forces into the absorption coefficient is given. The influence exercised by the finite effective radius of nuclear forces is small in the case of a smeared-out boundary. In the case of lower energies there are other causes for the intensification of interaction between antinucleons and nuclei. (No illustrations)

Card 2/3

PA - 2111

On the Problem of the Interaction between Antiprotons and Nuclei

ASSOCIATION Not given
PRESENTED BY I.V.KURCHATOV, member of the Academy of Science.
SUBMITTED 3. 11. 1956
AVAILABLE Library of Congress

Card 3/3

NEMIROVSKIY, P. E.

"Nuclear Shells and the Origin of Elements,"

presented at the 10th Gen. Assembly of The Intl. Astronomical Union, ^{in Moscow} Aug 1956.

13-25

comments, B-3,122,178

NEMIROVS IY. P E.

30-58-4-20/44

AUTHORS: Baz', A. I., Candidate of Physical and Mathematical Science
Samoilov, L.N.

TITLE: The Physics of Nuclear Reactions With Small and Medium Energies
(Fizika yadernykh reaktsiy pri malykh i srednikh energiyakh)
Conference in Moscow (Konferentsiya v Moskve)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 4, pp.97-102 (USSR)

ABSTRACT: This All Union conference took place in Moscow in November 1957. The program included all fundamental problems of nuclear physics. A short survey on the transactions makes it possible to understand the problems facing nuclear physics at present. One of the most interesting and most important problems is that of nuclear models, i.e. which is the best way of model representation of nuclear properties. At present these models develop into three main directions:
1) According to the shell model the nucleus can be represented as a self-coordinating potential in the field of which nucleons move.
2) The optical model is usually applied for the quantitative description of the neutron-proton dispersion on the nuclei.

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30-58-4-20/44

The Physics of Nuclear Reactions With Small and Medium Energies . Conference in Moscow

3) A great number of phenomena connected with the non-spheroidal form of equilibrium of the nuclei can be understood from the viewpoint of the collective model.
The following reports were delivered:

- 1) P. E. Nemirovskiy: On results of the theoretical analysis of the interaction of neutrons of small and medium energies with nuclei.
- 2) V. V. Vladimirovskiy, Ye. V. Inopin, S. I. Drozdov: On problems of the optical model.
- 3) V. M. Agranovich, A. S. Davydov: On theoretical foundations of the nuclear models.
- 4) B. L. Bir'orair, L. A. Sliva: On the form of equilibrium of the nucleus.
- 5) N. A. Vlasov: On excited states of the α -particle.
- 6) F. L. Shapiro: On the problem of the state 0^+ .
- 7) I. I. Levintov: On the radius determination of the α -particle.
- 8) Ye. K. Zavoytskiy: On the construction of accelerators.

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The Physics of Nuclear Reactions With Small and Medium Energies. Conference
in Moscow 30-58-4-20/44

- 9) G. Barshall(USA): On the investigation of polarization phenomena.
- 10) Yu. A. Aleksandrov: On the electromagnetic interaction of fast neutrons and nuclei.
- 11) G. N. Flerov: On works of his group concerning nuclear reactions.
- 12) A. I. Alikhanov: On measurements of the polarization of electrons forming during β -decay.

1. Nuclear physics—USSR

Card 3/3

24(5)

AUTHOR:

Nemirovskiy, P. E.

SOV/56-36-2-36/63

TITLE:

Calculation of the Polarization of Neutrons of Medium Energies
(Raschet polyarizatsii neytronov srednikh energiy)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 36, Nr 2, pp 588-593 (USSR)

ABSTRACT:

Experiments on neutron polarization are very important for the investigation of the interaction between nucleons and nuclei. Experiments carried out at comparatively low energies are the most interesting because in their case a simple connection with atomic weight is established and angular dependence can easily be interpreted. For spherical nuclei theory supplies good results which agree with those obtained by experiments. This agreement exists in the case of energies at which inelastic scattering is small or, on the contrary, so great that the contribution made by elastic scattering towards the reaction cross section is of no importance, i.e. for energies of $E < 0.5$ Mev and $E > 3$ Mev. In the intermediate domain there is not so much hope of agreement. The author uses the optical model for investigating the polarization in the experiments carried out by Darden et al. (Refs 1,2). He

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Calculation of the Polarization of Neutrons of
Medium Energies

SOV/56-36-2-36/63

investigates them on 0.1-1 Mev neutrons scattered on heavy nuclei. Some of the calculation results obtained have already been published in a previous paper (Ref 3) (total cross section, absorption cross section, angular distribution). It was found that polarization can be described satisfactorily by the introduction of an additional term to the optical potential of the form $-\frac{\kappa}{r} \frac{dV}{dr}$ (6) with the spin-orbital constant $\kappa \approx 3 \cdot 10^{-27} \text{ cm}^2$ (Ref 4). Best agreement with the experiment is obtained if the imaginary part of the potential amounts to 2.5 Mev. Numerous diagrams show the calculated and measured neutron polarizations for various scattering angles. There are 9 figures and 4 references, 2 of which are Soviet.

SUBMITTED: August 23, 1958

Card 2/2

24(5), 21(1)

Author: Lemirovskiy, S. E.

Doc 58-30-3-500

Title: On the Problem of the Stability of Nuclei
(K voprosu ob ustoychivosti yader)

Journal: Zhurnal obshchey fiziki i teoreticheskoy fiziki,
1979, vol. 10, no. 3, pp. 869-895 (USSR)

Abstract: Already in a previous paper (Ref 1) the author investigated the single-particle levels of light nuclei by using the optical potential. Order and energy of the levels can be calculated also for heavier nuclei. For comparison calculated with experimental values it is necessary to make some additional assumption concerning the dependence of the nuclear radius on the mass depth of A and Z. From comparison made between theoretical calculations and experiments concerning total cross section, angular distribution, and polarization it follows that $r = (1.16 A^{1/3} + 0.33) \cdot 10^{-13}$ cm is the distance in which the potential was reduced to half its amount. In the present paper the author investigates the interaction between a nucleon and the nucleus in dependence on A and Z and the maximum value of the investigated interaction. This

PHASE I BOOK EXPLOITATION

SOV/5111

Nemirovskiy, Pavel ~~Emanuilovich~~

Sovremennyye modeli atomnogo yadra (Modern Models of an Atomic Nucleus)
Moscow, Atomsizdat, 1960. 301 p. Errata slip inserted. 7,000 copies printed.

Ed.: A.V. Matveyeva; Tech. Ed.: N.A. Vlasova.

PURPOSE: This book is intended for nuclear physicists.

COVERAGE: The book deals with the structure and properties of the nucleus, studied on the basis of the shell, optical, and generalized models. It reviews current theoretical data on nuclear processes at low energy obtained on the basis of the above models, investigates the basic rules, and points out the moments at which the limited nature of the models is apparent. Attempts of scientists to substantiate single-particle models and the concepts of a self-consistent field are treated briefly. Quadrupole moments for single-particle models, and adhesion coefficients are presented in tabular form in the appendixes. Chs. I, II, III, and VI are based on the works of Soviet and other scientists. Ch. IV and part

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Modern Models of an Atomic Nucleus

SOV/5.11

of Ch. V are based on original studies by the author. The author thanks D.P. Grechukhin, S.I. Drozdov, and D.F. Zaretskiy. There are 390 references: 257 English, 96 Soviet, 10 Danish, 10 German, 9 Italian, and 8 others.

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Card 2/5

NEMIROVSKIY, P.E. (USSR)

"Inelastic Scattering of Nucleons (survey)"

report submitted for the 2nd USSR Conference on Nuclear Reactions at Low and Intermediate Energies, Moscow, 21-28 July 1960.

83585

S/056/60/038/005/01E/050
B006/B070

24.6510

AUTHORS:

Nemirovskiy, P. E., Fivevskiy, Yu. D.

TITLE:

The Effect of Coulomb Attraction on the Cross Section of
Anti-proton Absorption by Nuclei

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 38, No. 5, pp. 1486-1488

TEXT: As is known, the anti-nucleon - nucleus interaction cross section is considerably larger than that of the interaction with protons or neutrons. A qualitative theoretical explanation of this effect can be given on the basis of the optical model. On account of focusing of the trajectories of the anti-protons by the Coulomb field of the nucleus, the cross section for absorption by the nucleus increases significantly for anti-protons whose energies are comparable with the Coulomb energy at the boundary of the nucleus. This focusing effect has been calculated here on the basis of the optical model. These calculations are applicable to all negatively charged, strongly absorbing particles, particularly when the wavelengths λ in the case of energies of the order of the Coulomb energy

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83585

The Effect of Coulomb Attraction on the Cross Section of Anti-proton Absorption by Nuclei S/056/60/038/005/018/050 B006/B070

V_c at the boundary of the nucleus are small compared to the nuclear radius R : $\lambda(R) = \hbar / \sqrt{2\mu V_c(R)} \ll R$ (μ is the reduced mass of the particle and the nucleus). A complex potential acts on the anti-proton inside the nucleus. In the present work, both the attractive potential of the nucleus (negative real part of the complex potential) and the repulsive potential (positive real part) are considered. Assuming the potential to be given by

$$W = \begin{cases} -U_0(1+i) & 0 \leq r \leq R \\ -Ze^2/r & R \leq r \end{cases}$$

, the anti-proton absorption cross sections are calculated for the nuclei of C, Cu, and Pb at 0.5 Mev (Table 1); the anti-neutron absorption cross sections are also given for comparison (Table 2). The results are:

Nucleus	U_0 [Mev]	1	σ_c^{max} [b]	U_0 [Mev]	1	σ_c [b]	$\sigma_c^{max}(p)/\sigma_c(\bar{n})$
C ¹²	33	≤ 1	3.2	30	≤ 1	0.82	4
Cu ⁶³	38	≤ 3	11.2	30	≤ 2	1.12	10
Pb ²⁰⁸	43	≤ 5	≈ 18	30	≤ 3	2	~ 10

u

Card 2/3

The Effect of Coulomb Attraction on the Cross
Section of Anti-proton Absorption by Nuclei

83585

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B006/B070

(1 gives the contribution to the cross section). Due to Coulomb attraction, the anti-proton absorption cross sections for energies lower than the Coulomb energy are 4 to 10 times as large as the anti-neutron cross sections for the same energy. There are 2 tables and 4 references:
2 Soviet and 2 US.

X

SUBMITTED: August 12, 1959

Card 3/3

88452

S/056/60/039/006/C44/C63
B006/B063

24.6600
AUTHOR:

Nemirovskiy, P. E.

TITLE:

Cross Sections for Radiative Capture of Neutrons by Heavy Nuclei

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 6(12), pp. 1737-1743

TEXT: The cross section for radiative neutron capture by nuclei has a resonance character at low neutron energies. The major part of radiative capture processes lead to the formation of a compound nucleus. Direct capture by heavy nuclei is also possible, especially if the final nucleus is formed in the ground state. Direct capture constitutes the main part of the entire radiative capture only in the case of magic nuclei. But the direct process may predominate even at high energies ($E \sim 10$ Mev). The authors studies the various contributions and their energy dependence. First, the averaged cross sections are calculated.

$$\sigma_r^{(1)} = \sum_s (2l + 1) 2\pi^2 \lambda^2 \epsilon_{lJs} \frac{n_r}{T} \cdot \frac{1}{D}$$
 is obtained, where

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Cross Sections for Radiative Capture
of Neutrons by Heavy Nuclei

S/056/60/039/006/044/063
B006/B063

g_{1J_s} is a statistical factor, $g_{1J_s} = (2J+1)/(2i+1)(2\sigma+1)(2l+1)$ (i - momen-
tum of the target nucleus, $\vec{\sigma}$ - neutron spin; $\vec{s} = \vec{i} + \vec{\sigma}$, $\vec{J} = \vec{l} + \vec{s}$). Γ_n^{1s} is the
neutron width which is non-vanishing if $|1-s| \leq J \leq 1+s$ $\Gamma = \sum_{1s} \Gamma_n^s + \Gamma^r$; ✓

D denotes the mean level spacing. The factor $\bar{\Gamma}_n/D = f$ can be determined
from the optical model. To determine the factor $[\bar{\Gamma}_n \Gamma_r / (\bar{\Gamma}_n + \bar{\Gamma}_r)] \cdot (1/\bar{\Gamma}_n)$
 $= F$, Γ_p , $D = \bar{\Gamma}_n/f$, and the distribution law of the neutron widths must be
known. $\bar{\Gamma}_r$ and D can be determined from experiments with thermal neutrons.
Data obtained by experiments with Al^{28} and W^{183} are used to calculate

the quantities $\alpha = \frac{\bar{\Gamma}_n}{\bar{\Gamma}_n + \bar{\Gamma}_r} / \frac{\bar{\Gamma}_n}{\bar{\Gamma}_n + \bar{\Gamma}_r}$ on the assumption that the distribution
function $f(x) = (2\pi \bar{\Gamma}_n x)^{-1/2} \exp(-x/2\bar{\Gamma}_n)$ holds. The resulting values for
different $\bar{\Gamma}_r/\bar{\Gamma}_n$ are compared with theoretical values. Calculations are

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Cross Sections for Radiative Capture
of Neutrons by Heavy Nuclei

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B006/B063

also made for the case where $l > 0$, taking account of spin - orbit interaction. The author briefly studies the effect of inelastic scattering on the radiative capture cross section, and finally compares and discusses numerical results obtained for Ag¹⁰⁹, In¹¹⁵ and Au¹⁹⁷. Summing up: Already at very low energies (≥ 1 kev) neutron capture with $l = 1$ plays an important part in radiative neutron capture by heavy nuclei. Capture of neutrons with $l = 1, 2, 3$ predominates at energies of 0.1 - 1 Mev. The experiments can be satisfactorily explained by the optical model. In the absence of elastic scattering, the radiative capture cross section becomes constant at energies of > 0.3 Mev, after which it slightly increases due to the increase in level density. In the presence of scattering of neutrons with small l , the energy dependence of the radiative capture cross section approximately obeys a $1/E$ law. The diagrams show $\sigma_r(E)$ for the three isotopes concerned; the solid lines give the energy dependence of the total cross section, and the dashed lines, that of the partial waves. The figures beside the lines give the value of $l+1$. The experimental data indicated by \circ are taken from a paper by F. L. Shapiro et al., and those indicated by $+$ and x from Ref. 8. There are 1 figure, 2 tables, and Card 3/4

88452

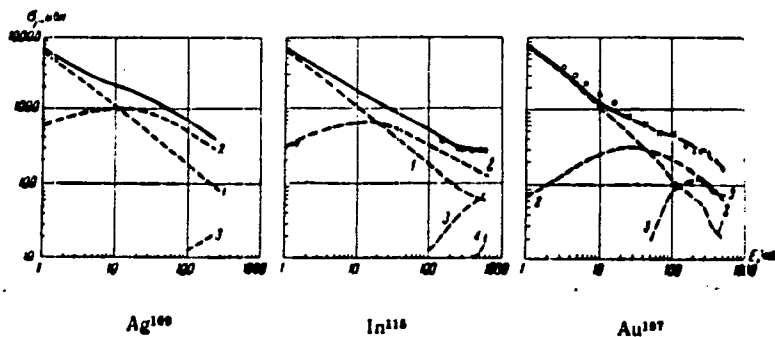
Cross Sections for Radiative Capture
of Neutrons by Heavy Nuclei

S/056/60/039/006/044/063
B006/B063

X

10 references: 6 Soviet, 3 US, and 1 Dutch.

SUBMITTED: July 9, 1960



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GUREVICH, I.I.; NEMIROVSKIY, P.E.

"Metallic" reflection of neutrons. Zhur.eksp.i teor.fiz. 41
no.4:1175-1177 0 '61. (MIRA 14:10)
(Neutrons--Capture)

YELAGIN, Yu.P.; LYUL'KA, V.A.; NEMIROVSKIY, P.E.

Neutron force function in an optical model. Zhur. eksp. i teor. fiz.
41 no.3:959-962 S '61. (MIRA 14:10)
(Neutrons) (Nuclear models)

28931

S/056/61/041/004/015/019

B111/B112

26.2245

AUTHORS: Gurevich, I. I., Nemirovskiy, P. E.

TITLE: "Metallic" reflection of neutrons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
no. 4, 1961, 1175 - 1177

TEXT: There are various types of neutron mirrors, all of which use metallic neutron reflection from strongly absorbing media. In general, it is assumed that the reflecting medium absorbs weakly and that the neutron wave number is real. The imaginary part cannot be neglected in strongly absorbing media ($k = k_1 + ik_2$). If the medium is hit by a neutron current having the wave number k_0 one obtains: $k^2 = k_0^2 + (\hbar/2m)U$, where U is the potential in the medium, i.e., $k^2 = k_0^2 + \alpha + ik_1 \varphi \bar{\sigma}_c$, where $\alpha = \varphi [4\pi \bar{\sigma}_s - (k_1 \bar{\sigma}_c)^2]^{1/2}$. $\bar{\sigma}_s$ is the total scattering cross section, $\bar{\sigma}_c$ is the total absorption cross section, and φ is the number of nuclei per cm^3 . For a very small energy one obtains $k_1 = k_2 = \varphi \bar{\sigma}_c / 2$; the

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S/056/61/041/004, 015, 019

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"Metallic" reflection of neutrons

Index of refraction, n , is given by $n = \frac{\varphi \bar{\sigma}_0}{k_0} (1 + i)$. For $|n| \gg 1$ the reflection coefficient R is given by: $R = 1 - \frac{4k_0}{\varphi \bar{\sigma}_c} \cos^2 \vartheta$, where ϑ is the angle with the normal. If the potential scattering cannot be neglected, R is given by: $R = 1 - 4k_1 k_0 \cos \vartheta / (k_1^2 + k_2^2)$. For $k_0 \rightarrow 0$ one obtains $k_1^2 = (\varphi a)^2 / 4k_1^2 + \alpha$. For neutrons whose energy is zero in a vacuum, the maximum absorption cross section is $\sigma_{c \max} = a \left[\frac{1}{2}(\varphi^2 a^2 + \alpha^2)^{1/2} - \frac{1}{2}\alpha \right]^{-1/2}$.

If $\alpha \ll \varphi a$, then the following expressions are valid: $\sigma_{c \max} = \sqrt{\frac{2a}{\varphi}}$ and $R = 1 - 4k_0 (\frac{2a}{\varphi})^{-1/2} \cos \vartheta$. From Gd¹⁵⁷ the authors conclude that metallic neutron reflection is less effective for the production of neutron mirrors than other methods. It is noted that natural vibrations of the atoms will not change the two last-mentioned formulas, since the Doppler effect does not influence cross sections satisfying the $1/v$ law. There are 4 references: 3 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: M. Goldberger, F. Seitz, Phys. Rev., 71.
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"Metallic" reflection of neutrons

294, 1947.

SUBMITTED: April 22, 1961

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8/056/61/041/004/015/019
B111/B112

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JK

S/903/62/000/C00/009/044
B102/B254

AUTHOR: Penirovskiy, P. E.

TITLE: Reactions of nucleon interactions with nuclei

SOURCE: Yadernyye reaktsii pri mal'kikh i srednikh energiakh; trudy Vtoroy Vsesoyuznoy Konferentsii, iyul' 1960 g. Ed. by A. S. Davydov and others. Moscow, Izd-vo AN SSSR, 1962, 140-147

TEXT: The author discusses the theoretical possibilities of describing nucleon-nucleus interactions in a more general manner than under the strict assumption of compound nucleus formation. In the case of any direct process the usual theory as built up in two stages (compound nucleus formation and decay) represents a mere approximation; some of its results, however, are applicable also in the case of direct interaction, so e.g. the cross section formula $\sigma_1 = \sum_l (2l+1) |1 - \eta_l|^2$; in the case of direct interaction $|1 - \eta_l|^2 = \sum_l |a_l|^2 + \tau_l$ where τ_l is the adhesion coefficient. Elastic scattering without compound nucleus formation and the neutron polarization

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S/903/62/000/000/009/044
B102/R234

Reactions of nucleon interactions with nuclei

may be described by the optical model. The representation of the potential is a more complex problem and the question whether it is necessary to work with nonlocalized potentials is still open. The Bjorklund-Fernbach potential $V(r) + iW(r)$ (Phys. Rev. 109, 1958) is a promising formulation. The most important papers dealing with potential problems (cf. e. g. Nucl. Phys. 12, 619, 1959; 15, 337, 1960; Phys. Rev. 116, 1226, 1959; 113, 911, 1959; 104, 1319, 1956) are discussed with respect to the proper choice of the nuclear parameters and the A, Z -dependence of V and W . In connection with the second stage of the common theory, the compound nucleus decay, the other possibilities of describing inelastic interactions are investigated, and the possibilities for an enlarged application of the optical model are discussed. The problems of a suitable description of radiative capture, inelastic scattering and polarization are dealt with on the basis of own (ZhETF 39, 1737, 1960; 36, 588, 1959) and foreign papers (Phys. Rev. 104, 483, 1956; 116, 937, 1959).

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S/056/88/013/000/015/055
3104/2100

AUTHOR: Nemirovskiy, P. S.

TITLE: Neutron-proton interaction energy in odd-odd nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 2(3), 1962, 530-535

TEXT: In analogy to a formula published by the author in a previous work
(Sovremennyye modeli atomnogo yadra - Modern atomic models, Atomizdat,
1960) for the pairing energy of two protons in an odd-odd nucleus, the
expression

$$\Delta_{np} = \frac{1}{2} (\epsilon_{pp}(Z+2, N+2) + \epsilon_{pp}(Z-2, N)) - \epsilon_{pp}(Z+2, N-1). \quad (4)$$

is derived for the pairing energy of a neutron and a proton in an odd-odd
nucleus. The values of Δ_{np} are given for 28 nuclei between ^{84}Rb and ^{200}C .

Δ_{np} is always positive, i.e., the proton and neutron attract each other.
 Δ_{np} has a great value if the neutron and proton are in one nuclear shell,
and when $Z = N$, its value is very high. Δ_{np} is small if one particle is
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Neutron-proton interaction ...

S/056/62/043/002/025/053
E104/B100

in a shell with small momentum and the other in a shell with large momentum. In the case of heavy nuclei (Cu^{62} , ..., Y^{90}) Δ_{np} is virtually independent of the atomic weight. The "center-of-mass" energy $E_{c.m.s.}$ of the ground-state multiplet of light nuclei depends on N and Z in the same way as Δ_{np} (in particular N^{14} , N^{16} , O^{16} , K^{40}). This is due to the fact that the jj -coupling assumed is fairly correct. The slight difference between $E_{c.m.s.}$ and Δ_{np} of some nuclei (Li^6 , B^{10}) indicates that the jj -coupling assumed for these nuclei is not perfectly correct. There are 1 figure and 2 tables.

SUBMITTED: February 16, 1962

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NEMIROVSKIY, P. Ye.

L 17019-63

EPF(a)-2/EWT(m)/BDS AFPC/ASD/SSD Pu-4 AR
S/185/63/008/004/001/015AUTHOR: Yelagin, Yu. P. and Nemyrova'kyi, P. E. 62TITLE: An optical model to represent cross-sections of radiative capture and inelastic neutron scattering. 19PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 8, no. 4, April 1963, 418-425

TEXT: A theory is proposed to describe resonance capture in the energy range from several kev up to 1 mev; lower energies are associated with separate resonances, and an optical model is not adaptable in these cases. The upper boundary of the range is largely determined by the inelastic scattering and depends upon the nucleus-target levels. The authors assume that inelastic scattering with excitation of separate levels for $E < 1$ mev can be regarded in the same way as elastic scattering. There are 14 equations, 6 figures, and 1 table.

ASSOCIATION: Institut atomnoy energii im. I. V. Kurchatova (Institute for Atomic Energy im. I. V. Kurchatov, Moscow)

SUBMITTED: August 31, 1962

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NEMIROVSKIY, P.E.; YELAGIN, Yu.P.

Cross sections for elementary processes with large absorption. Zhurnal eksp.
i teor. fiz. 44 no.3:1099-1105 Mr '63. (Collisions (Nuclear physics))

ACCESSION NR: AP4031160

S/0056/64/046/004/1379/1385

AUTHOR: Nemirovskiy, P. E.; Stokov, Yu. F.

TITLE: Optical model for antinucleon-nucleon collisions

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1379-1385

TOPIC TAGS: antinucleon, nucleon, optical model, potential spin, isospin, charge exchange

ABSTRACT: This is an elaboration of an earlier treatment (Yu. P. Yelagin and P. E. Nemirovskiy, ZhETF v. 44, 1099, 1963), in which account is taken of the influences of the tensor force, the spin orbit interaction, and the isotopic dependence of the potential on the total cross sections for the interaction between nonrelativistic antinucleons and nucleons. This interaction is effectively described by a complex potential which depends on the spin and on the isotopic spin, and also contains the tensor force. The angular distribution of the elastically scattered nucleons and the cross section for charge exchange in the $\bar{p}p \rightarrow \bar{n}n$ reaction is also calculated. The results for the total cross sections, angular distributions of elastic scattering, and the charge-exchange cross sections are in satisfactory agreement with experiment. "In conclusion, the authors are grateful to Yu. P. Yelagin for help with

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ACCESSION NR: AP4031160

the work." Orig. art. has: 10 figures and 14 formulas.

ASSOCIATION: None

SUBMITTED: 07Oct63

SUB CODE: NP

DATE ACQ: 07May64

NR REF SOV: 001

ENCL: 00

OTHER: 004

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L 09877-67 EWT(m)

ACC NR: AT6033187

SOURCE CODE: UR/3136/66/000/084/0001/0012

AUTHOR: Nemirovskiy, P. E. 50

ORG: none

TITLE: The difference in mirror nuclei masses

SOURCE: Moscow, Institut atomnoy energii. Doklady. IAE-1984, 1966. K voprosu o raznosti mass zerkal'nykh yader, 1-12

TOPIC TAGS: charge density, nuclear binding energy, mirror nucleus, mirror nucleus mass, nucleus mass difference, Hofstadter distribution

ABSTRACT: The author shows that in a shell model characterized by a Hofstadter distribution, the charge difference in the binding energy of mirror nuclei E_a can be determined within an accuracy of 1—5%. Nuclei deformations in the $A \sim 25$ region do not substantially affect E_q . The density of the charge, determined on the assumption that in the model considered the protons are arranged by shell level, produces a value for E_q which is in agreement with the Hofstadter distribution, which reconfirms the computation. The author thanks V. A. Chepurnov for computing the wave functions (on the M-20 computer). [Based on author's abstract] /

Card 1/1 SUB CODE: 20/SUBM DATE: none/ORIG REF: 002/OTH REF: 003/