"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, I.F., inzhener, redaktor; AZRILYANT, Ya.M., redaktor; TOKER, A.M., tekhnicheskiy redaktor.

[Directives on calculating the homgeneity index of concrete (U-131-54/Minstroi)] Ukazaniia po vychisleniiu pokazatelia odnorodnosti betona (U-131-54/Minstroi). Moskva, Gos. izd-vo lit-ry po stroitel'stvu i arkhitekture, 1954. 10 p. (MLRA 8:2)

1. Russia (1923- U.S.S.R.) Ministerstvo stroitel'stva. Tekhnicheskoye upravleniye.
(Concrete--Tables, calculations, etc.)

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PERFILOV, N.A.; SOLOV'YEVA, Z.I.

Angular distribution of long-range α-particles associated with the fission process. Zhur.eksp.i teor.fiz. 37 no.4: 1157-1159 O '59. (MIRA 13:5)
(Alpha rays) (Fission)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

S/053/60/071/03/03/008
B006/B063

AUTHORS: Perfilov, N. A., Romanov, Yu. F., Solov'yeva, Z. I.

TITLE: Fission of Heavy Nuclei With Emission of Long-range α-Particles

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol. 71, No. 3, pp. 471-483

TEXT: Long range particles are said to be formed in a nuclear fission such as is shown in Fig. 1, where three charged particles are emitted. The nature of the long-range component is discussed first. Then experiments are described by which Z^2/m and mZ^2 of these particles were determined leading to their identification as α-particles. The probability of such a complicated fission event, as well as the methods used to determine the relative probability of triple fissions are discussed next. Photoemulsions and U^{233} or Pu^{239} are most frequently used. The authors give a brief description of the method of the double ionization chamber (Ref. 6) and of the possibility of determining the relative probability by integrating the α-particle distribution function (Ref. 10). Then, the

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Fission of Heavy Nuclei With Emission of Long-range α-Particles

S/053/60/071/03/03/008
B006/B063

apparatus used in Ref. 9 is described (Fig. 2), and a comparison is made between the results obtained by various methods for U^{235} fission induced by thermal-neutrons (Table 1). Reference is made to numerous Western authors, whose results are compared with one another and discussed. The next part of the present paper deals with the energy distribution of long-range α-particles. The spectrum may be analyzed by means of photographic plates, absorption in thin aluminum foils, an ionization chamber with a grid, and the deviation in the magnetic field. Methods described in some Western articles are discussed in more detail, and distribution curves obtained by several authors are compared with one another in Fig. 3. Good agreement was found between the data obtained by various methods. In this connection the authors briefly refer to their own investigations (Refs. 15 and 16). The fourth section presents details on methods and results of the determination of angular distribution. Fig. 4 shows a typical distribution curve. The fifth section deals with the energy spectrum of the fragments of a triple fission. Two peaks were found for U^{235}, one at 10 Mev and another at 7 Mev. Investigations by V. N. Dmitrivev, L. V. Drapchinskiy,

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PERINA, Z

1

✓ β-Anils of α,β-unsaturated nitriles of α-arylated aliphatic monocarboxylic acids. Zdeněk Perina. Czech. 89,483, Apr. 15, 1959. When a mixt. of 14.5 g. α-formylbenzyl cyanide and 9.3 g. $PhNH_2$ was refluxed in 80 ml. xylene in an oil bath, 1.9 ml. H_2O sepd. in the course of 20 min. The mixt. cooled and the product sepd. gave 19.7 g. α-phenyl-β-anilinoacrylonitrile, m. 159°. Similarly, 80 g. α-butyrylbenzyl cyanide and 44 g. $PhNH_2$ gave 122.5 g. α-phenyl-β-anilino-β-propylacrylonitrile, m. 78-9°. L. J. [illegible]

2

4E3d

2Jaj(NB)

4E2c

bc

1/1

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

S/181/60/002/02/10/033
B006/B067

AUTHOR: Perlin, Yu. Ye.

TITLE: Consideration of the Polaron Effect in the Many-phonon Thermal Ionization Theory

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 2, pp. 242-254

TEXT: Many-phonon thermal ionization of electrons localized near lattice defects has already been studied in Refs. 1-3. These investigations were conducted with different mathematical techniques and different models of the impurity center, however, they had the following in common: a) The Schrödinger equation for the impurity crystal was solved in adiabatic approximation; b) the electron component of the wave function for the ionized state was set up as a plane wave: $\psi_{\vec{k}}(\vec{r}) = L^{-3/2}.\exp(i\vec{k}\vec{r})$ (L^3 - crystal volume). In the present paper, the thermal ionization of F-centers in an ionic crystal is investigated for the case of strong interaction between the electron and longitudinal optical lattice vibrations. In this case, the above wave function cannot be used, since the carrier state is

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realized by the polarons (and not by free electrons). The electron wave function must be written in the form $\psi_0(\vec{r} - \vec{\xi})$, where ψ_0 is the wave function of the localized type, and $\vec{\xi}$ the translational vector of the polaron. In contrast with Refs. 1-3, the author considers the polaron effect in the ionized state of the F-center. Thermal transitions between the discrete energy levels of the F-center and the polaron states of the continuous spectrum are investigated, which occur as a result of the weak interaction of the electron with longitudinal acoustic waves. It is pointed out that the technique developed here can be easily generalized to other forms of perturbations. In the last chapter of the paper, expressions for the thermal ionization probability and the effective activation energy are deduced and applied to NaCl and KCl. It was found that the probability of direct thermal ionization of an F-center, calculated from formula (4, 34) was relatively low even at high temperatures, which is, however, not in agreement with experimental results. This shows that also other possible mechanisms of the destruction of F-centers must be taken into account. In conclusion, the author thanks Professor S. I. Pekar for his interest and valuable remarks.

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Consideration of the Polaron Effect in the Many-phonon Thermal Ionization Theory S/181/60/002/02/10/033 B006/B067

M. M. Sharand and V. A. Kovarskiy are also mentioned. There are 12 references: 9 Soviet, 2 American, and 1 British.

ASSOCIATION: Kishinevskiy gosudarstvennyy universitet (Kishinev State University)

SUBMITTED: April 24, 1959

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✓B

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERL'SHTEYN, V.A.

Mechanical puppet feed during drilling. Mod.metallorezh.stan. no.10:27 '59. (MIRA 13:5)
(Screw-cutting machines--Technological innovations)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERL'SHTEYN, Ye.A.

Needle-roller chargind device for the "Multimat" centerless grinding machine. Mod.metallorezh.stan. no.2:10-13 '58. (MIRA 13:5)

(Grinding machines)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PETRI, V.M., doktor sel'skokhozyaystvennykh nauk; PERMIKHIN, I.P., inzh.

Using petrolatum in the manufacture of particle boards. Der. prom. 8 no.12:11-12 D '59. (MIRA 13:5)

1. Nauchno-issledovatel'skiy institut promyshlennykh zdaniy i sooruzheniy Akademii stroitel'stva i arkhitektury SSSR.
(Wood, Compressed) (Petrolatum)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, I.F.

PERFILOV, I.F., inzhener, redaktor; UDOD, V.Ya., redaktor; SKRYNNIKOV, Ye.S., tekhnicheskiy redaktor

[Instructions on the manufacture of reinforced slabs from autoclave foam concrete for industrial plant roofs] Instruktsiia po izgotovleniiu plit, armirovannykh iz avtoklavnogo penobetona dlia pokrytii promyshlennykh zdanii I-194-54 MSPMKhP. Moskva, Gos. izd-vo lit-ry po stroitel'stvu i arkhitekture, 1954. 39 p. (MIRA 8:4)

1. Russia (1923- U.S.S.R.) Ministerstvo stroitel'stva predpriyatiy metallurgicheskoy i khimicheskoy promyshlennosti.
(Roofs) (Precast concrete construction)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

GRISHKO, Vladimir Vi[illegible], st. inzh., PROKOPOV, Vasiliy Ivanovich; PERFILOV, I.F., inzh., red.

[Device for preparing reed slabs with the PKN-[illegible] vertical press; from practices of the Krasnodar Branch of the Rural Construction Research Institute] Ustanovka dlia izgotovleniia kamyshitovykh plit s vertikal'nym pressom PKN-[illegible], iz opyta Krasnodarskogo filiala NIISel'stroia. Moskva, Gosstroiizdat, 196[illegible]. [illegible] p. (MIRA [illegible])

1. Moskow. Nauchno-issledovatel'skoy instituta organizatsii, mekhanizatsii i [illegible] pomoshchi stroitel'stvu.
2. Konstrukt[illegible] Krasnodarskogo filiala Nauchno-issledovatel'[illegible] sel'skogo stroitel'[illegible] (for Grishko). [illegible] Nauchno-eksperimentalnoy bazy Krasnodarskogo filiala Nauchno-issledovatel'skogo instituta sel'skogo stroitel'stva (for Prokopov).

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

FINKINSHTEYN, B.A., inzh., nauchn. red.; KODABASHEVA, R.S., inzh., nauchn. red.; PERFILOV, I.F., inzh., nauchn. red.

[Concrete and reinforced concrete work; reports of efficiency experts' suggestions] Betonnye i zhelezobetonnye raboty. Moskva, Stroiizdat, 1964. 75 p. (MIRA 18:12)

1. Moscow. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. TSentral'noye byuro tekhnicheskoy informatsii.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

TSVETKOV, Vladimir Petrovich, dots.; KLESHOV, Boris Aleksandrovich; FOMKIN, Nikolay Yefimovich, kand. tekhn. nauk; ANOROV, Sergey Nikolayevich, st. nauchn. sotr.; PERFILOV, I.F., inzh., red.

[Pressure-water conduits of reinforced concrete pipes; practices of the "Kalininspetsstroi" Trust and the All-Union Research Institute for Water Supply, Sewer Systems, Hydraulic Engineering Structures, and Hydrogeological Engineering (VODGEO)] Napornyi vodovod iz zheleznodorozhnykh trub; opyt tresta "Kalininspetsstroi" i VNII vodosnabzheniia, kanalizatsii, gidrotekhnicheskikh sooruzhenii i inzhenernoi gidrogeologii (VODGEO). Moskva, Stroiizdat, 1964. 26 p. (MIRA 17:12)

1. Moscow. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. 2. Zaveduyushchiy kafedroy Kalininskogo torfyanogo instituta (for TSvetkov). 3. Glavnyy inzhener tresta "Kalininspetsstroy" (for Kleshov). 4. Vsesoyuznyy nauchno-issledovatel'skiy institut vodosnabzheniya, kanalizatsii, gidrotekhnicheskikh sooruzheniy i inzhenernoy gidrogeologii (for Anorov).

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

POPOV, A.N., kand. tekhn. nauk; KOROBOV, Ye.P.; TSIONKOVSKIY, A.L.; PERFILOV, I.F., inzh., red.

[Preparing reinforced concrete pressure pipes by the vibration-pressing method; practices of the Kuybyshev Pipe Plant No.7 of the "Zhelezobeton" Trust] Izgotovlenie zhelezobetonnykh napornykh trub metodom vibropressovaniia; opyt Kuibyshevskogo trubnogo zavoda No.7 tresta "Zhelezobeton." Moskva, Gosstroiizdat. 1963. 53 p. (MIRA 17:8)

1. Akademiya stroitel'stva i arkhitektury SSSR. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. 2. Rukovoditel' laboratorii zhelezobetonnykh trub Nauchno-issledovatel'skogo instituta betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR. (for Popov). 3. Glavnyy inzhener tresta "Zhelezobeton" (for Korobov). 4. Glavnyy inzhener laboratorii zhelezobetonnykh trub Nauchno-issledovatel'skogo instituta betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR (for Tsionkovskiy).

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

BONDAREV, Yakov Leont'yevich; GRAYFER, Arnol'd Grigor'yevich, PERFILOV, I.F., inzh., red.

[Preparing large reinforced concrete pipes and silo rings with immediate removal of forms; practices of the No.23 Plant for Reinforced Concrete Products of the Main Administration of the Building Materials Industry of Moscow] Izgotovlenie krupnorazmernykh zhelezobetonnykh trub i silosnykh kolets s nemedlennoi raspalubkoi; opyt zavoda zhelezobetonnykh izdelii No.23 Glavmospromstroimaterialov. Moskva, Gosstroiizdat, 1963. 44 p. (MIRA 17:12)

1. Moscow. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. 2. Direktor zavoda zhelezobetonnykh izdeliy No.23 Glavnogo upravleniya promyshlennosti stroitel'nykh materialov i stroitel'nykh detaley (for Bondarev). 3. Nachal'nik proizvodstvenno-tekhnicheskogo otdela zavoda zhelezobetonnykh izdeliy No.23 Glavnogo upravleniya promyshlennosti stroitel'nykh materialov i stroitel'nykh detaley (for Grayfer).

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

SKRANTAYEV, B.G., doktor tekhn. nauk, prof., red.; PERFILOV, I.F., inzh., red.

[Method of testing concrete models for compression] Metodika ispytaniia betonnykh obraztsov na szhatie. Moskva, Gosstroiizdat, 1963. 48 p. (MIRA 17:10)

1. Moscow. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

KOZAK, M.N., inzh.; POLOTSKAYA, G.M., inzh.; ROSLYAKOV, P.S.; PERFILOV, I.F., inzh., red.; KASITSYNA, K.N., inzh., red.

[Nondestructive test of concrete in structural elements; work practice of the Likhobory Combine of the Production Enterprises of the Construction and Assembly Trust of the Council of National Economy of the Moscow City Economic Region and the Magnitostroy Trust] Sposoby opredeleniia prochnosti betona v konstruktsiiakh bez ikh razrusheniia; opyt Likhoborskogo kombinata proizvodstvennykh predpriiatii tresta "Mosgorsovnarkhozstroi" i tresta "Magnitostroi." Moskva, Gosstroiizdat, 1962. 21 p. (MIRA 17:10)

1. Akademiya stroitel'stva i arkhitektury SSSR. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. 2. Likhoborskiy kombinat proizvodstvennykh predpriyatiy Stroitel'no-montazhnogo tresta Soveta narodnogo khozyaystva Moskovskogo gorodskogo ekonomicheskogo rayona (for Kozak, Polotskaya). 3. Tsentral'naya laboratoriya tresta "Magnitostroy" (for Roslyakov).

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MAKAROV, Rostislav Alekseyevich, kand. tekhn. nauk; SHTIPEL'MAN, Il'ya Moiseyevich, inzh.; BAGAYEV, Yuriy Petrovich, st. inzh.; PERFILOV, I.F., inzh., red.

[Electrotensiometer devices in construction] Elektrotenzometricheskie pribory v stroitel'stve. Moskva, Gosstroiizdat, 1962. 42 p. (MIRA 16:4)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. 2. Rukovoditel' laboratorii novykh fizicheskikh metodov issledovaniya Nauchno-issledovatel'skogo instituta stroitel'noy fiziki Akademii stroitel'stva i arkhitektury SSSR (for Makarov). 3. Nachal'nik otdela eksperimental'noy avtomatiki i sredstv izmereniy TSentral'nogo eksperimental'nogo konstruktorskogo byuro "Stroymekhavtomatika" Nauchno-issledovatel'skogo instituta organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu Akademii stroitel'stva i arkhitektury SSSR (for Shtipel'man). 4. Otdel eksperimental'noy avtomatiki i sredstv izmereniy TSentral'nogo eksperimental'nogo konstruktorskogo byuro "Stroymekhavtomatika" Nauchno-issledovatel'skogo instituta organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu Akademii stroitel'stva i arkhitektury SSSR (for Bagayev).

(Tensiometers)

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KHABLOV, Vladilen Stepanovich, inzh., nauchnyy sotr.; PERFILOV, I.F., inzh., red.

[Hydraulic classifiers developed by the All-Union Hydraulic and Sanitary Engineering Research Institute for separating Sand; experience of the "Gidromekhanizatsiia" Trust of the Ministry of Construction of the R.S.F.S.R.] Gidravlicheskie klasifikatory VNIIGS dlia fraktsionirovaniia peskov; iz opyta raboty tresta Gidromekhanizatsiia" Ministerstva stroitel'stva RSFSR. Moskva, Gosstroiizdat, 1960. 11 p. (MIRA 15:7)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stva.
(Sand) (Hydraulic machinery)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, I.F., inzh., red.

[Sectional, collapsible test stand for tests of beams, wall slabs, trusses; working drawings] Sborno-razbornyi stend dlia ispytanii balok, stenovykh panelei, ferm; rabochie chertezhi. Moskva, 1960. 59 p. (MIRA 15:7)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu.
(Precast concrete—Testing)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, I.F., inzh., red.

[Test stand and equipment for tests of structural elements with a span of up to 36 m.; working drawings] Stend i oborudovanie dlia ispytanii stroitel"nykh konstruktsii proletom do 36 m; rabochie chertezhi. Moskva, Biuro tekhn. informatsii, 1961. 59 p. (MIRA 15:7)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. (Precast concrete--Testing)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

DANILOV, N.N., kand. tekhn. nauk; SHREYBER, A.K., inzh.; PERFILOV, I.F., inzh., red.

[Structural elements made of lean concrete] Stroitel'nye konstruktsii iz ottoshchennogo betona. Moskva, 1959. 15 p. (MIRA 14:7)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii i tekhnicheskoy pomoshchi stroitel'stvu.
(Concrete products)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

SVETOV, A.A., kand. tekhn. nauk, starshiy nauchnyy sotr.; KRAMAR', V.G., mladshiy nauchnyy sotr.; VINNICHENKO, I.A.; PERFILOV, I.F., inzh., red.

[Manufacture of prestressed concrete 3 by 12 m. slabs for the roofs of industrial buildings] Izgotovlenie zhelezobetonnykh predvaritel'no napriazhennykh plit 3 12 m dlia pokrytii promyshlennykh zdanii; iz opyta tresta "Zaporozhstroidetal'." Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 48 p. (MIRA 14:12)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. Byuro tekhnicheskoy informatsii. 2. Nauchno-issledovatel'skiy institut betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR (for Svetov, Kramar). 3. Glavnyy tekhnolog zavoda Zhelezobetonnykh konstruktsiy No.2 tresta "Zaporozhstroy-detal'" (for Vinnichenko).

(Industrial buildings) (Roofing, Concrete)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

KOLENCHUK, D.N.; PERFILOV, I.F., inzh., red.;

[Manufacture of prestressed concrete ties; from practices of the Kaliningrad Reinforced Concrete Products Plant No.1 of the "Promstroimaterialy" Trust] Izgotovlenie predvaritel'no napriazhennykh zhelezobetonnykh shpal; iz opyta Kaliningradskogo zavoda zhelezobetonnykh izdelii No.1 tresta "Promstroimaterialy." Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 31 p. (MIRA 14:11)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. Byuro tekhnicheskoy informatsii. 2. Nachal'nik proizvodstvenno-tekhnicheskogo otdela zavoda zhelezobetonnykh izdeliy No.1 tresta "Promstroymaterialy" Kaliningradskogo sovnarkhoza (for Kolenchuk).

(Railroads—Ties, Concrete)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, I.F., inzh.

Using molding plastics in making forms for producing architectural details. Biul.stroi.tekh. 12 no.8:10-12 Ag '55.
(MIRA 12:1)

(Plastics) (Concrete construction--Formwork)

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KHRUSTALEV, Mikhail Ivanovich, kand.tekhn.nauk, starshiy nauchnyy sotrudnik; PERFILOV, I.F., inzh., red.

[Using hydraulic classifiers in fractionating sand and removing clayey particles] Fraktsionirovanie peskov i udalenie iz nikh glinistykh chastits pri pomoshchi gidravlicheskikh klassifikatorov. Moskva, Gosstroiizdat, 1960. 35 p. (MIRA 13:4)

1. Akademiya stroitel'stva i arkhitektury SSSR, Moscow. Institut organizatsii, mekhanizatsii i tekhnicheskoi pomoshchi stroitel'stvu. 2. Nauchno-issledovatel'skiy institut zhelezobetona Glavmosprom-stroymaterialov (for Khrustalev).

(Sand) (Hydraulic machinery)

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18

Dehydration of Glauber's salt by the dry process. B. Kemmer and J. Perfilov. *Mineral. Sur'e* 6, 190-204(1931); *Chimie & industrie* 28, 1111.—Tests on dehydration of $Na_2SO_4 \cdot 10H_2O$ showed that best results are obtained by crushing to 1-5 mm. diam. The time of drying can be reduced considerably by moderately heating the air and blowing it at a fairly high velocity. The min. temp. required to prevent wetting of the crystals by the water of crystn. is about 32° for the decahydrate; it increases progressively, but slowly, to the production of crystals with 10% H_2O, and then more rapidly to reach 62° at the end of the drying. Tests with a tunnel drier, perforated drum drier, unperforated drum drier, making the crystals fall through a rising current of air, and with a tower having superposed drying trays, showed that best results were obtained in the last-mentioned app. with air at 55° at the inlet and 37° at the outlet. Under these conditions, when the crystals were transferred from one tray to the next at 30-min. intervals, Glauber's salt can be dried satisfactorily in 5-6 hrs. with a fuel-utilization efficiency of 43%.

A. Papineau-Couture

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOVA, V.E.; SONIN, A.S.

Experimental detection of the Kerr effect in noncentrosymmetrical crystals. Kristallografiia 10 no.3:427-428 My-Je '65. (MIRA 18:7)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

L 4267-66 EWT(1)/T IJP(c) GG

ACC NR: AP5024554

UR/0070/65/010/005/0701/0707
548.0:537.228

57
45
B

AUTHOR: Perfilova, V. E.; Sonin, A. S.; Lomova, L. G. 44,55 44,55 44,55

TITLE: Change in the optical properties of crystals upon application of electric fields 21,44,55

SOURCE: Kristallografiya, v. 10, no. 5, 1965, 701-707

TOPIC TAGS: Kerr effect, crystal optic property, crystal structure

ABSTRACT: The paper gives an analytical treatment of changes in the optical indicatrixes of crystals, arising under the influence of an external electric field as a result of the Kerr effect. All the results are tabulated. The basic regularities in the change of the optical indicatrix are discussed. In crystals of the rhombic, hexagonal (classes 6/mmm, 6 mm, $\bar{6}2$, and 62) and cubic system when the field acts along the three principal directions, of the tetragonal and trigonal system in the <001> and <0001> directions, and of classes 4/mmm, 422, $\bar{4}2$ m, and 4 mm (field directed along <100> and <001>), the indicatrixes are only deformed, without changing positions. The action of the field along <001> and <0001> in crystals of the tetragonal, hexagonal, and trigonal system does not decrease the symmetry of the indicatrixes, and the crystal remains uniaxial. The symmetry of the indicatrix always decreases in crystals of the cubic system. In crystals of the tetragonal system (classes 4/mmm, 422, 4mm, and $\bar{4}2$ m), the symmetry decreases when the field is applied along <100>. The tables presented in the article should be useful for studies of the Kerr effect. "In conclusion, we thank I. S.

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L 4267-66

ACC NR: AP5024554

12

Zheludev, L. A. Shuvalov, A. P. Lyubimov, and I. S. Rez for a discussion of the results."
Orig. art. has: 4 tables.

ASSOCIATION: None

SUBMITTED: 14Oct64 ENCL: 00 SUB CODE: SS, OP

NO REF SOV: 002 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

SONIN, A.S.; PERFILOVA, V.E.; VASILEVSKAYA, A.S.

Electro-optical properties of triglycine sulfate. Part 1.
Izv. AN SSSR. Ser. fiz. 29 no.6:969-972 Je '65.
(MIRA 18:6)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

VIKIN, B.P.; PERFIL'YEV, L.P.

Application of a gamma-spectrometer of overall coincidences to the analysis of complex decay schemes. Prib. i tekh. eksp. 9 no.1:53-56 Ja-F '64. (MIRA 17:4)

1. Voronezhskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

IVANOV, P.; MEFOD'YEV, P. (g.Alma-Ata); PERFILOV, M. (g.Sverdlovsk); KIYKO, P., vneshtatnyy instruktor; RZHEVSKIY, Ye.; LIPOVA, K., inzh.-tekhnolog (g.Baku)

Letters to the editor. Obshchestv. pit. no. 3:50-51 Mr '61. (MIRA 14:4)

1. Gorodskoy komitet Kommunisticheskoy partii Sovetskogo Soyuza i Ministerstvo torgovli RSFSR po obshchestvennomu pitaniyu, g. Ul'yanovsk (for Kiyko). 2. Starshiy instruktor-kulinar Chelyabinskogo oblastnogo upravleniya torgovli (for Rzhevskiy).
(Restaurants, lunchrooms, etc.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M.A.; ALYAB'YEV, V.I.; NEKRASOV, R.M.; GRECHISHNIKOV, V.V.; MASHIN, G.K.; FEDOROV, N.S., otv. red.; KALININA, L.M., red. izd-va; SHIBKOVA, R.Ye., tekhn. red.

[Album of auxiliary skidding and loading equipment]Al'bum vspomogatel'nogo trelevochno-pogruzochnogo oborudovaniia. Moskva, Goslesbumizdat, 1962. 119 p. (MIRA 16:4)
(Lumber--Transportation)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M. A., Cand Tech Sci -- (diss) "Study of Lubrication of the Motor 1D-6 of the Movable Electric Power Station PES-60 for Lumbering Operations." Mos, 1956. 24 pp ill (Min of Higher Education USSR, Mos Forest Engineering Inst), 125 copies (KL, 48-57, 107)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M.A.

27175

Bystro Osvoit' Trelevochye Lebenki-Delochesti Lesoeagotoviteley. Les. Prom-st', 1949, No. 9, S. 5-7

SO: ETOPIS NO. 34

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M.A.; LAZAREV, M.M.; NOVOSIL'TSEV, N.V., red.; NIKITINA, L.V., red. izd-va; BACHURINA, A.M., tekhn. red.

[Experience in the use of winches with continuously moving cables in the skidding and removal of lumber; "Forestry and Lumber" pavilion] Opyt ispol'sovaniia lebedki s nepreryvnym dvizheniem trosa na trelevke i vyvozke drevesiny; Pavil'on lesnaia promyshlennost' lesnoe khoziaistvo. [Leningrad] TSentr. biuro tekhn. informatsii [1957] 10 p. (MIRA 11:10)

1. Moscow. Vsesoyuznaya promyshlennaya vystavka.
(Lumbering—Machinery) (Winches)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M. A. Eng.

LUMBERING

Standard plans for skidding timber with winches TL-3. Les. prom. 12 no. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV M.A.

GREBEN', I.I.; LARIN, V.T.; PERFILOV, M.A.; LIBOV, Ye.A.; VORONETSKAYA, L.V., tekhnicheskiy redaktor.

[The PES-50 mobile diesel electric power generator] Peredvizhnaia dizel'naia elektrostantsiia PES-50. Moskva, Goslesbumizdat, 1951. 150 p. [Microfilm] (MLRA 7:11)

(Dynamos) (Diesel engines)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

KOZHUL', V. G., [illegible]

Lumbering

Results of using skidding machinery at the Luzhskiy logging camp. Les. prom. 12 no. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, September 1953, Uncl.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M. A., Eng.

Lumber - Standards

Standard patterns for skidding timber with tractors KT-12. Les. prom 12 no. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 1952, Uncl.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

MOZHUL', V. G.; PERFILOV, M. A.

Lumbering

Results of using skidding machinery at the Luzhskiy logging camp. Les. prom. 12 no. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, September 1953, Uncl.

2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M. A.

27175. PERFILOV, M. A. - Bystro osvoit' trelevochnyye lebedki - delo chesti lesozagotovitelej. Les. Prom-st', 1949, No. 1, s. 5-7

SO: Letopis' Zhurnal'nykh Statey, Vol. 36, 1949

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M.A.; SHOSHIN, N.A.; NOVOSEL'TSEV, N.V., red.; MOROZOV, Yu.V., red. izd-va; BACHURINA, A.M., tekhn. red.

[LTA-TSNIIME felling and skidding machine] Valochno-trelevochnaia mashina LTA-TsNIIME. [Leningrad] M-vo lesnoi promyshl. SSSR [1957] 6 p. (MIRA 11:10)

1. Moscow. Vsesoyuznaya promyshlennaya vystavka.
(Lumbering—Machinery)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PEREFILOV, M.A.; SHOSHIN, N.A.

Tree-felling and trailing machines. Biul. tekh.-ekon. inform. no.1: 57-58 '57. (MIRA 11:4)

(Lumbering--Machinery)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, M.A.

PERFILOV, M.A., inzhener

Cableway skidders for skidding logs in mountainous regions. (MIRA 10:11)
Mekh.trud.rab. 11 no.9:29-32 S '57.
(Lumber--Transportation) (Conveying machinery)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, Mikhail Alekseyevich; LAZAREV, Mikhail Fedorovich; SHCHETININ, I.P., red.; GORYUNOVA, L.K., red. izd-va; BACHURINA, A.M., tekhn. red.

[VTU-3 aerial skidder in combination with the L-70 winch; construction features and operation] Vozdushno-trelevochnaia ustanovka VTU-3 v komplekte s lebedkoi L-70; ustroistvo i ekspluatatsiia. Moskva, Goslesbumizdat, 1960. 123 p. (MIRA 14:9)
(Lumbering--Machinery)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N., podpolkovnik

Actions in approach march formations and in formation as skirmishers. Voen. vest. 41 no.1:51-52 Ja '62. (MIRA 16:11)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOW, N.; LOZKIN, O.; SZAMOW, W.

Fragmentation processes in interactions of high energy particles and nuclei. Postepy fizyki 12 no.2:115-153 '61.

1. Instytut Radowy Akademii Nauk ZSRR.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N., podpolkovnik; VASILENOK, V., polkovnik

Individual basic infantry training. Voen. vest. 39 no.10:37-41 O '59. (MIRA 13:2)

(Drill and minor tactics)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A. and E. Fedorov

"Scattering of Beryllium Photoneutrons by Light Elements," Zhur. Eksper. i Teoret. Fiz. (Index), Vol. 7, page 691, 1937

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3

An accelerator for slow neutrons. N. A. Perfilov.

Trav. inst. état radium (U. S. S. R.) 4, 160-71(1938).
The app. contains a textolite disk, which rotates at 5000-6000 r. p. m. for the acceleration of slow neutrons. Textolite is strong enough to withstand high peripheral velocities and contains much H to slow down the neutron beam. Preliminary results with this app. agree with previous measurements on the absorption of neutrons by Ag.
H. M. Leicester

COMMON ELEMENTS

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A.

"On the Possible Formation of a Radio-Active Nuclei at the Decay of Radio-Active Chlorine," Zhur. Eksper. i. Teoret. Fiz., 9, No. 6, 1939. Radium Inst., Acad. Sci. SSSR, Moscow, 1939

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A.

Possible Formation of a Radioactive Nuclei in Decay of Radioactive Chlorine," Dok. AN, 23, No. 7, 1939

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

Bc

A-1

Disintegration of uranium by neutrons. N. Pavlov (Compt. rend. Acad. Sci. U.R.S.S., 1939, 23, No. 9, 896—898).—Cloud-chamber photographs show tracks of recoil nuclei with a max. range ~3 cm. when U_3O_8 is irradiated with neutrons from a Ra + Be source. The ionising power of the recoil particles is > that of α-particles and indicates a large and variable change.

L. J. J.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

Observation of tracks of recoiling nuclei arising in the course of uranium fission under neutron bombardment in the Wilson chamber working under lowered pressure No. 2,

N. A. Perfilov. *Bull. acad. sci. U. R. S. S., Ser. phys.* 4, 100 (in English, 300) (1940). The tracks of U fission products were observed in a cloud chamber and 10,000 stereoscopic photographs of the process were taken. The fission fragments do not show any subsequent division into still smaller parts and there is no delayed fission effect after the neutron beam has been removed. Roksalana Gamow

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PROCESSES AND PROPERTIES INDEX

9-1

No. 5

BC

mv/E relation for products of uranium fission. N. A. Perfilov (Compt. rend. Acad. Sci. U.R.S.S., 1940, [illegible]).—When U is bombarded with neutrons, comparatively highly charged particles are emitted. The magnitude of the charge can be determined by deflecting the particles in a magnetic field in vac. The trace of the deflected particles was obtained on a photographic plate with a thick emulsion, in which tracks of protons failed to give a clear picture, and α-particles may be easily detected. The val. of mv/E was found to be 6.8×10^{-6} e.m.u. Assuming the energy vals. for the two recoil nuclei to be 91 Mev. and 57 Mev., respectively, and the masses 90 and 144, respectively, the effective charge is [illegible]. A. J. M.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

No. 1

Spectrum of β-rays from ^{127}I. N. A. Prifilov. (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 485–487). Measurements by the cloud chamber method indicate that the β-rays from ^{127}I, produced by bombardment of $UO_2(NO_3)_2$ with neutrons from Rn + Be, have a max. energy of ~1·07 m.ev. J. W. S.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

H I - 1 Sub atomics

Bv. Ubd

Proton-recording sensitivity of emulsions treated for removal of background. N. A. Perfilov (*Compt. rend. Acad. Soc. U.R.S.S.*, 1943, 68, 14—15).—Removal of background due to α-particles and protons on a photographic plate by treatment with very dil. aq. H_2CrO_4, $K_3Fe(CN)_6$, or $KMnO_4$ does not diminish the sensitivity to further protons. J. O'M-B.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

Destruction of latent image of α-particle tracks in photographic layers. N. A. Perfilov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1944, 43, 259—261).—The action of H_2CrO_4, $K_3Fe(CN)_6$, and $KMnO_4$ on the latent image formation of Po α-particles at 8×10^9 tracks in 1 min. of developed plate removes the latent image if the concn of the oxidising agent is > a crit. val. The image-retaining properties of the plate are unaltered. J. O'M-B.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

5

Ca

No. 6

Destruction of the latent image of α particle tracks in photographic layer. N. A. Perfilov. *Doklady Akad. Nauk S.S.S.R.* 42, 268-72; *Compt. rend. acad. sci. U.R.S.S.* 42, 258-61(1944)(in English).—Destruction of latent images in photographic emulsion (cf. C.A. 31, 4580) due to α particles or cosmic rays was attained, without desensibilization of the emulsion to α-particles, by bathing the plates for 15 min. at 15° in aq. solns. contg. either 1.25×10^{-4} to 3.33×10^{-4} g./cc. of H_2CrO_4 (I), or 4×10^{-4} to 2.0×10^{-4} g./cc. $KMnO_4$ (II) and 2.5×10^{-4} to 2.0×10^{-4} g./cc. of $K_4Fe(CN)_6$ (III). The fading rate of the latent image of plates exposed to α-particles was not accelerated by preliminary treatment with aq. solns. contg. 2.0×10^{-4} g./cc. of I or 10^{-4} g./cc. of II or III prior to exposure. J. W. Perry

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APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A.

Photographic Emulsion Recording of Protons, DAN /Vol. 43, No. 1, p. 14, 1944. (with A. P. ZHDANOV). Presented by Khlopin. Work done at Radium Institute.

Photographic Emulsion Recording of Alpha-particles. DAN, Vol. 43, No. 6, p. 258 (With Zhdanov, A.P. and Deysenrot, M. Ya.)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

No. 7

Removal of the latent image of α-particle tracks from a photographic layer. II. Relation between the degree of excitation of a photographic emulsion grain and its development. N. A. Perfilov. *Compt. rend. acad. sci. U. R. S. S.* 45, 287 (1944). The action of $K_3Fe(CN)_6$ upon a latent image is described when the exposure to α-particles is sufficiently long to give repeated excitation of the emulsion grain. For this purpose 1 cc. of a fine-grained emulsion was diluted to 100 cc. with a 6% gelatin melt and poured in a thin layer onto 9 × 12 cm. glass plates and dried. The plate was divided into squares and the time of exposure to α-particles from a Po source (intensity about 10^5 α-tracks per mm. per sq. mm. of surface) was doubled from one square to the next. The irradiated plate was developed with $K_3Fe(CN)_6$ as described in a previous paper (C.A. 39, 1811[9]). Magnified positives were prepd. from the negatives and the grains were counted. An analysis of the results shows that when the latent image produced by the passage of α-particles through the photographic layer is acted upon by an oxidizer in the presence of a substance able to dissolve the oxidation product, it is possible to destroy the development centers due to a single excitation by α-particles, and these grains lose their ability of selective development. Grains excited 2 or more times, on the other hand, develop perfectly, as if they had suffered no influence between the exposure and the development. Expts. were carried out in which *U fission products* were recorded without the background of α-particles emitted by U (cf. following abstr.). F. Gonet

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PROCESSES AND PROPERTIES INDEX

CA

3

Anomalous rate of nuclear disintegration effected by cosmic rays. A. P. Zhdanov, N. A. Perfilov and M. Y. Deisenrod. *Phys. Rev.* 65, 202-3(1944).—With thickly coated photographic plates, a sudden increase was observed in the no. of nuclear disintegrations due to cosmic radiation, with a peak from Nov. 23 to Dec. 1, 1942. This was assocd. with an increase in the no. of forks per disintegration. It is desired to learn whether the situation is worldwide or local (Kazan, U. S. S. R.). G. M. P.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

BC

NO. 9

Registration of neutron fragments with removal of background due to α-particles emitted by uranium. N. A. Perfilov (*Compt. rend. Acad. Sci. U.R.S.S.*, [illegible]).—Investigations of radiations emitted of α-particles and particles of greater ionising power have been carried out by the photographic-plate method, and the photographic layer treated with the "oxide of $K_4Fe(CN)_6$" in presence of [illegible]. This treatment leads to the destruction of centres of development produced by single excitation of the grains by α-particles, and only tracks of the heavier particles develop. The tracks of U fission fragments produced by neutrons are separated from the tracks of α-particles spontaneously emitted by the U atoms. Details of the experimental method and a mathematical analysis are given. (Cf. A., 1948, [illegible].) G. S.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

No. 6 N.A. PERFILOV

3

Method of recording of particles of the type of uranium fragments by means of a photographic plate. N. A. Perfilov. *J. Phys.* (U.S.S.R.) 10, 412(1946). *J. C. P.* 40, 4948[1]. Photographic plates are used to record the tracks of protons, α-particles, and fission fragments. Quant. measurements are almost as accurate as with other methods and can record over a longer period of time. To eliminate the effect of background and of less energetic radiations, the emulsions were treated with the oxidizer CrO_3, $K_3Fe(CN)_6$, and $KMnO_4$ in aq. solns. of varying concns. The action of these solns. on the latent image was investigated. In suitable concns. these solns. remove the background, but do not alter sensitivity to further radiation. Definite concns. of oxidizer remove the latent images of tracks due to less-energetic particles while grains affected by more energetic particles remain developable. All expts. were performed with α-particles. The method was applied to recording fragments produced by the fission of U under the action of neutrons. S. F. Whitcomb.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N.

USSR/Nuclear Physics - Fission Fragments Apr 1946
Nuclear Physics - Uranium fission

PA 13T42

"A New Method of Recording Particles of the Type of Uranium Fragments by Means of Photographic Plates," N. Perfilov, 20 pp

"Zhur Eksp i Teor Fiz" Vol XVI, No 4

Experiments showing that bathing photographic plates in aqueous solutions of CrO_3, $K_3Fe(CN)_6$ and $KMnO_4$ before they are used to record alpha-particles makes it possible to remove the background formed by the tracks of the particles without altering the sensitivity of the emulsion with respect to the further recording of alpha-particles and protons. A method of selecting from a large number of alpha-particle

13T42

USSR/Nuclear Physics - Fission Fragments Apr 1946
Nuclear Physics - Uranium fission (Contd)

tracks separate tracks due to particles with larger specific energy losses than alpha-particles was also developed and applied to the recording of the fragments produced by the fission of uranium under the action of neutrons.

13T42

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

No. 3

3

The negative meson and its mass. P. I. Lukirskii and N. A. Perfilov. *Compt. rend. acad. sci. U.R.S.S.* 54, 219-22(1946)(in English).—When positive or negative mesons are slowed to less than 10^8 cm./sec. they cease to produce ionization but continue to collide with atoms. The probability of capture by atomic nuclei of slow neg. mesons is large. These captures produce splitting of the nuclei and in some cases the resulting particles have a total momentum of zero. A no. of such cases were observed in photographic emulsions. Letting μ^- represent a neg. meson, the reactions are of the type: (1) $\mu^- + N^{14} \rightarrow 3\ He^4 + 2\ H^1 + 4\ n$; (2) $\mu^- + O^{16} \rightarrow 3\ He^4 + H^1 + 3\ n$; (3) $\mu^- + N^{14} \rightarrow He^4 + 4\ H^1 + 6\ n$. (4) $\mu^- + O^{16} \rightarrow 2\ He^4 + 3\ H^1 + 5\ n$. The energies were estd. from the observed tracks. The energy of the particles was assumed to be due to the annihilation of the mass of the meson, and the mass was calcd. For 19 cases the masses are about 140 and 200 electron masses. S. E. Whitcomb

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N.A.

Half life for spontaneous fission of uranium and thorium. Zhur.eksp.i teor. fiz. 17 no.5:476-484 '47. (MLRA 6:7)

1. Radiyevyy institut Akademii Nauk SSSR.
(Fission (Nuclear physics) (Uranium) (Thorium)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Radium Inst., AS USS.?

1192. The Effect of an Electric Field on the Number of Nuclear Disintegrations Observed on Photographic Plates by P I Lukirskii and N A Perfilov Doklady Akad Nauk SSSR 61 257-258 (1948) July 11 (In Russian)

In a previous work (Doklady Akad Nauk SSSR 54 219 (1946)) the authors described a method for the determination of the mass of negative mesons from measurements on photographic emulsions, under the assumption that these particles, upon being captured by nuclei, determine disintergations with a maximum probability corresponding to very slow mesons. In the present paper an experiment, made a 3250 m altitude is described which proved that the observed disintegrations were caused by negatively charged particles. A flat electrode, placed in the center of a spherical condenser and charged to + 5000 volts, carried the photographic plate. The photographs taken under these conditions showed a considerably larger number of disintegrations than those taken in the absence of an electric field (119 against 59). Several of the radiating tracks obtained were used for the determination of the meson mass. In one instance the disintegration was interpreted as $M^- + {}_7N^{14} = {}_2He^4 + {}_4N^1 + {}_6N^1 + \Sigma E_{kin}$. Assuming that the energy of a neutron was equal to that of a proton, the calculation based on the lengths of the tracks gave for the mass of the negative meson the value 196.3 m_e.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

Mesotron-induced fission. P. I. Lukirskii and N. A. Perfilov. *Doklady Akad. Nauk S.S.S.R.* 61, 253-61 (1948); cf. *C.A.* 41, 5786g. Fission of C^{12}, giving $2He^4 + H^1 + 3n^1 + 23.6 \times 10^{-19}$ cm. g. sec. units of momentum, apparently was caused by capture and annihilation of a neg. mass >292 m_e. Fission of a Ag or Br nucl. giving >10 charged fragments, was due to capture and annihilation of a meson with mass >400 m_e. C. F.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

IOFFE, A.F.; LEBEDEV, A.A.; FOK, V.A.; STARIK, I.Ye.; KONSTANTINOV, B.P.; DZHELEPOV, B.S.; PERFILOV, N.A.; DOBRETSOV, L.N.; STARODUBTSEV, A.V; NEMILOV, Yu.A.; ZHDANOV, A.P.; MURIN, A.N.; AGLINTSEV, K.K.; TSARE-VA, T.V.; SHUL'MAN, A.R.; YEREMEYEV, M.A.

P.I.Lukirskii; obituary. Vest.AN SSSR 24 no.12:62 D '54.(MLRA 8:1)
(Lukirskii, Petr Ivanovich, 1894-1954)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERIFILOV, N.A.

800-6
RML

24102 AEC-tr-2435 (Pt. 2) (p. 55-84))
NUCLEAR FISSION REACTIONS DUE TO NEGATIVE PIONS AND FAST PROTONS. N. A. Perifilov, N. S. Ivanova, O. V. Lozhkin, V. I. Ostroumov, and V. P. Shamov. p. 55-84 of CONFERENCE OF THE ACADEMY OF SCIENCES OF THE USSR ON THE PEACEFUL USES OF ATOMIC ENERGY, JULY 1-5, 1955. SESSION OF THE DIVISION OF CHEMICAL SCIENCE. (Translation). 10p.
This paper was originally abstracted from the Russian and appeared in Nuclear Science Abstracts as NSA 9-7935.

5

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PERFILOV M.A.

IRML

Nuclear fission reactions with π mesons and fast protons. N. A. Perfilov, N. S. Ivanova, O. V. Lozhkin, V. I. Ostroumov, and Y. P. Shamov. *Sessiya Akad. Nauk S.S.S.R. po Mirnomu Ispol'zovaniyu Atomnoi Energii 1955, Zasedaniya Otdel. Khim. Nauk*, 79-90.—The interaction of slow pions and fast (400-980-m.e.v.) protons with U, Bi, and W was studied by the thick-emulsion photographic-plate method. The results show that the capture of slow pions by U, Bi, and W causes their fission, the probability being ~0.3-0.4, ~0.02, and ~0.002, resp. The U-fission yields plotted vs. free paths showed a sharp max. indicating that the fission reaction is like that with fast particles. The reaction of U, Bi, and W with fast protons made it possible to det. the excitation energy and to find the distribution of the fission products with respect to the initial excitation energies. The actual fission process at high excitation energies is preceded by the evapn. of neutrons and charged particles.

J. Roxtar Leach

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FD-2339

USSR/Nuclear Physics - Fission by negative pi-mesons

~~Card 1/2~~ Pub. 146 - 4/34

Author : Perfilov, N. A.; Lozhkin, O. V.; and Shamov, V. P.

Title : Yield of the processes of fission and star formation during capture of negative pi-mesons by uranium, bismuth, and wolfram nuclei

Periodical : Zhur. eksp. i teor. fiz. 28, 655-663, Jun 1955

Abstract : By the method of thick-layer photoplates with the substance introduced into the middle layer in the form of compounds insoluble during development and fixing, the authors investigated the interaction of slow negative pi-mesons with U, Bi and W nuclei. For the indicated elements they obtain the ratios of yield by fission and star formation as a result of capture by the nuclei of negative pi-mesons. The probability of fission of nuclei during capture of negative pi-mesons decreases sharply with decrease of Z of the nucleus: for U the fission probability is about 0.3; for Bi, 0.02; for W, less than 0.002 possibly. The remaining cases of interaction of negative pi-mesons with heavy nuclei lead to formation of mainly so-called rayless and single-ray stars. They consider the mechanism of nuclear fission to be possible in the case of capture of negative pi-mesons. Eleven references.

Radium Inst AS USSR

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FD-2350

USSR/Nuclear Physics - Fission by slow negative pi-mesons

~~Card 1/2~~ Pub. 146 - 15/34

Author : Perfilov, N. A., and Ivanova, N. S.

Title : Fission of heavy nuclei by slow negative pi-mesons

Periodical : Zhur. eksp. i teor. fiz. 28, 732-734, Jun 1955

Abstract : In the present note the writers briefly describe the results of works on the fission of heavy nuclei during the interaction with slow negative pi-mesons, which works were carried out in the course of 1950-1952; the results have been presented in Otchet RIAN* (March 1950, Oct 1950, Jun 1951, Jan 1952, Jun 1952), occasional co-author being D. V. Viktorov. They discuss the distribution of number of fragments according to flight path (0 to 18 microns) and according to the energies of protons emitted during fission of uranium nuclei by slow negative pi-mesons. They remark that the fission of uranium by capture of negative pi-mesons was first reported in March 1950, but almost simultaneously and independently of the writers it was also observed by I. M. Frank and G. Ye. Belovitskiy and reported in Otchet FIAN (Report of Physical Institute, Acad. Sci. USSR); they acknowledge, however, that the first communications in print on fission of U by slow negative pi-mesons appeared Oct 1951 in S. Al-Salam's article. (Phys Rev 84 195...

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A.

FD-2964

USSR/Nuclear Physics - Fission fragments distribution

Card 1/1 Pub. 146 - 5/28

Author : Lozhkin, O. V.; Perfilov, N. A.; Shamov, V. P.

Title : Problem of the angular distribution of fragments in the fission of uranium for large energies of excitation

Periodical : Zhur. eksp. i teor. fiz., 29, September 1955, 292-295

Abstract : The authors investigated the cases of the fission of uranium nuclei in the nuclear fine-grain emulsion P-9 saturated with an aqueous solution of a uranium salt and irradiated by protons with energies of 660 Mev. They studi d the angular distribution of the fission products (fragments) relative to the direction of the proton beam for energies of excitation of the uranium nucleus equal to approximately 75 Mev, 150 Mev, and 300 Mev. The angular distribution of the fragments can be approximately described by the following function: $a + b \cdot \sin^4\phi$. The anisotropy increases somewhat with increase of the energy of excitation. Six references: e.g. V. P. Shamov, O V. Lozhkin, Otchet RIAN, 1955.

Institution : Radium Institute, Academy of Sciences USSR

Submitted : May 12, 1955

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

FD-3330

PERFILOV, N.A.

USSR/Nuclear Physics - Fission of Nuclei

Card 1/1 Pub. 146 - 2/28

Author : Perfilov, N. A. and Ivanova, N. S.

Title : Fission of heavy nuclei by slow π^- mesons

Periodical : Zhur. Eksp. i Teor. Fiz., 29, No 5, 551-558, 1955

Abstract : Experimental data are presented, proving that at capture of π^- mesons by U, Pb, or W nuclei, fission of these nuclei occurs. The highest fission cross section belongs to U nuclei, of which 300 fission cases could be evidenced. The study of fragment distribution and of the emissions of fast charged particles led to conclusion that the final result of capture of a slow π^- meson is equivalent to the action of a high energy (-100 MeV) particle. Indebted to M. G. Meshcheryakov and the personnel of his laboratory. Twelve references, including 6 foreign.

Institution : Radio Institute, Acad. Sci. USSR

Submitted : March 19, 1955

Translation D 419421, p.51

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N.A.

USSR/ Physics - Ions

Card 1/1 : Pub. 22 - 15/60

Authors : Kuznetsov, M. I.; Kukirskiy, P. I., Academician; and Perfilov, N. A.

Title : Dependence of a lithium ion charge on ion speed

Periodical : Dok. AN SSSR 100/4, 665-667, Feb 1, 1955

Abstract : Experiments were conducted to establish a law of dependence of a lithium ion charge on the velocity of the ion. The results show that the experimental equation introduced by N. Bohr, for such calculations, $\gamma v_i = v_e$ is correct only to a certain degree of approximation. Five references: 4 French and 1 USA (1950-1953). Graphs; table.

Institution : Acad. of Sos., USSR, The V. G. Khlopin Radiation Institute

Submitted : .....

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N.A.

USSR/Physics

Card 1/1 Pub. 22 - 14/45

Authors : Perfilov, N. A. and Ostroumov, V. I.

Title : On the process of Star formation and fission during the 460 Mev energy action of protons on the nuclei of tungsten and bismuth

Periodical : Dok. AN SSSR 103/2, 227-228, Jul 11, 1955

Abstract : Experiments are described which were conducted for the purpose of observing and studying the process of star formation and fission during bombardment of tungsten and bismuth nuclei by fast protons of 460 Mev. The method of 3-layer photoplates was used in the experiments. Four references: 2 USA and 2 USSR (1950-1955). Graphs.

Institution : The Acad. of Sc., USSR, Radium Institute imeni V. G. Khopin

Presented by : Academician A. F. Ioffe, March 18, 1955

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

Perfilov, N. A.

449 AEC-tr-2295

THE PROBLEM OF THE ANGULAR DISTRIBUTION OF FISSION FRAGMENTS OF URANIUM AT HIGH ENERGY EXCITATIONS. O. V. Lozhkin, N. A. Perfilov, and V. P. Shamov. Translated by V. N. Rimsky-Korsakoff from Doklady Akad. Nauk S.S.S.R. 103, 407(1955). 3p.

62

The angular distribution of fission fragments of uranium was studied by using thick-layered photographic plates. Nuclear fine-grained emulsions of the type r-9 were saturated in a uranium salt solution and bombarded with 660-Mev protons. In all the observed cases of fission of uranium nuclei the direction of scattering of fragments with respect to the direction of the falling proton and the angle between the fragments were measured (the initial excitation energy of fission nuclei was measured by the angle between the fragments). All the fissions were divided into three groups according to the energy of excitation of the fission nuclei: 80, 150, and 320 Mev. The angular distribution of the fragments of uranium fission as a function of the initial energy of excitation is given. In the case of all the observed fissions the angular distribution can be approximately described by the function $I(\phi) = a + b \sin^2 \phi$, where ϕ is the projected angle between the direction of the divergence of the fragments and the direction of the falling proton. (auth)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

Perfilov, N.A.

275 AEC-tr-2304

ON THE YIELD OF FISSION AND STAR FORMATION AFTER CAPTURE OF π^- MESONS BY THE NUCLEI U, Bi, AND W. N. A. Perfilov, O. V. Lozhkin, and V. P. Shamov. Translated by Morton Hamermesh from Doklady Akad. Nauk S.S.S.R. 103, 417-19(1955). 7p.

62

The ratio of fission and star formation probabilities after π^--meson capture by U, Bi, and W was studied by placing these elements, in the form of fine-grained oxides, in the central layer of a three-layer nuclear emulsion. The results of the experiment are tabulated and show the number of stars per fission for U_3O_8, Bi_2O_3, and WO_3 to be 9/2.4, 57, and 133, respectively. (B.J.H.)

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Perfilov, N. A.

643. THE FISSION OF URANIUM NUCLEI BY PROTONS OF ENERGY 460 MeV. N.S.Ivanova, N.A.Perfilov and V.P.Shamov. 539.172.13

Dokl. Akad. Nauk SSSR, Vol. 103, No. 4, 573-5 (1955). In Russian.

Photographic emulsion plates loaded with uranium were irradiated by protons of energy 460 MeV. In an electron-sensitive emulsion, 46 fissions were found, of which 33% were accompanied by the emission of light charged particles (up to six in number, with an average of 1.65). In another emulsion with a proton-sensitivity limit of about 80 MeV, 102 fissions were found with an average of 1 particle emitted. Thus 40% of the particles have energies greater than 80 MeV. The angular distribution of these particles was predominantly forward. It is concluded that the majority of the particles originate in a nuclear cascade process in the uranium nucleus. Upper and lower limits to the mean excitation energy are roughly estimated to be 198 and 128 MeV respectively. The fission cross-section was found to be 1.2 ± 0.3 barn, so that about 70 ± 18% of uranium nuclei undergo fission on interacting with 460 MeV protons. The mean total path of the fission fragments is found to be the same as for fission by π-mesons and by slow neutrons. The kinetic energy of the fragments is therefore derived only from their Coulomb repulsion. J.B.Sykes

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A. and LOZHKIN, O. V.

"Multiple Charge Particles in Fast Proton Induced Fissions in Nuclear Emulsions" a paper presented at the International Confernce on Nuclear Reactions, Amsterdam, 2-7 July 1956.

D551274

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A., IVANOVA, N. S. and SHAMOV, V. P.

"Exposition of the Results of Investigations of Fission by the Method of Photoemulsions in Perfilov's Laboratory in the Leningrad Radium Institute", a report presented at the Conference on the Physics of Nuclear Fission, 19-21 January 1956, Atom Energ., No. 1, 1956.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N. A.

Angular distribution of fragments from the fission of uranium for high excitation energies. O. V. Lozhkin, N. A. Perfilov, and V. P. Shamov. *Soviet Phys., JETP* 2, 116-18, (1956) (Engl. translation).—See *C.A.* 50, 3110b.

R. M. R.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N.A.

Fission of heavy nuclei by slow γ^{-} mesons. N. A. Perfilov and N. S. Ivanova. *Soviet Phys., JETP* 2, 433-40 (1956)(Engl. translation).—See *C.A.* 50, 105574.

B. M. R.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PEREFILOV, N.A.

CARD 1 / 2 PA - 1896

SUBJECT USSR / PHYSICS
AUTHOR OSTROUMOV, V.I., PEREFILOV, N.A.
TITLE On the Angular Distribution of Fragments on the Occasion of the Fission of Uranium by Neutrons of High Energy.
PERIODICAL Žurn.eksp.i teor.fis, 31, fasc.4, 716-717 (1956)
Issued: 1 / 1957

Some years ago the authors showed that, on the occasion of the fission of heavy nuclei by charged as well as by neutral particles of medium energies (up to 20 MeV) a parallel anisotropy of fragments with respect to the direction of the bombarding particle occurs. The present report deals with the results obtained by similar experiments concerning the fissioning of uranium by neutrons with high energy. Plates with a finely grained emulsion were saturated with uranium salt and then irradiated with a collimated neutron bundle (which was produced by re-charging 680-MeV protons on a beryllium target). The emulsion surface was parallel to the direction of the neutrons. The plates were exposed behind a concrete wall with an additional protective layer of cadmium and boron. The angles enclosed by the fission fragments and the direction of the bundle in the plane of vision were measured. The table of measuring results shows the angular distribution for "individual cases" and "stars" separately. This table also contains the anisotropy coefficient, i.e. the ratio (number of cases with angles of from 45 to 90° / number of cases with angles of from 0 to 45°). This coefficient is greater than one in all groups of "starlike" fissions. From the angular distribution observed in the

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planes, one now by employing OSTROUMOV'S method, passes over to spatial distribution. A diagram illustrates the obtained angular distribution of the fragments of the individual and "starlike" fissions. For reasons of comparison also the angular distributions found on the occasion of the fission of uranium by 460- and 660 MeV protons are mentioned. Although an approximately equal number of fragments is emitted on the occasion of fission by fast neutrons in 0° and 90°, there exists a certain anisotropy with respect to their distribution (?). The lower vertical directivity on the occasion of fission by neutrons can in this case be fully explained by the complicated energetic composition of the bombarding bundle. The distribution of individual fissions agrees well with the previously determined dependence of the fission of uranium by 14 MeV neutrons. With an increase of the energy of the inciding neutrons also the number of those cases which correspond to a greater excitation of the fissioning nucleus increases. Besides, parallel anisotropy is then replaced by vertical anisotropy. The authors also determined anisotropy in the angular distribution of the particles created on the occasion of the fission of uranium nuclei and compared them with the data obtained by corresponding experiments with protons. The ratio (forward/backward direction) is 2,0 $\pm$ 0,2; in the case of one-ray fission, 1,7 $\pm$ 0,2 in the case of two-ray fissions, and 1,3 $\pm$ 0,2 in the case of multiple ray fissions.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001240020020-0

PERFILOV, N.A.

CARD 1 / 2 PA - 1877

SUBJECT USSR / PHYSICS

AUTHOR LOŽKIN, O.V., PERFILOV, N.A.

TITLE The Heavy Nuclear Fragments on the Occasion of Spallations which are Caused by Fast Protons in a Nuclear Emulsion.

PERIODICAL Žurn.eksp.i teor.fis, 31, fasc.6, 913-922 (1956)
Issued: 1 / 1957

Since 1955 nuclear spallations have been investigated in the laboratory mentioned below, on the occasion of which particles with $Z \geqslant 4$ are emitted. The present work describes the more important results obtained by these investigations, which were carried out on finely grained nuclear emulsions of the type P-9 which were irradiated with protons (350, 460, 560 and 660 MeV) of the synchrocyclotron of the Institute for Nuclear Problems of the Academy of Science in the USSR.

Summarizing discussion of results: On the occasion of interaction between energy-rich protons and the nuclei of the emulsion fragments with $Z \geqslant 3$ are produced in a process with the following peculiarities: The energy-rich multiple-charged particles (kinetic energy per nucleon $> 3 - 4$ MeV) are produced in the emulsion on the occasion of interaction between fast protons and heavy as well as light nuclei in the emulsion. The probability of the emission of such fragments grows considerably with an increase of the energy transferred to the nucleus on the occasion of the collision. The principal part of the fragments observed on the occasion of the spallation of fast nuclei corresponds to particles of $Z \leq 8$. The remaining fragments belong

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PERFILOV, N.A. , NOVIKOVA, N.R., PROKOF'YEVA, L. I.

"Very fine grain emulsions for nuclear research," a paper submitted at the International Conference on Radioisotopes in Scientific Research, Paris, 9-20 Sep 57.

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PERFILOV, N.A.

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Certain characteristics of nuclear fission at low- and high-energy excitation. Atom.energ.supplement no.1:98-114 '57. (MIRA 10:10)
(Nuclear fission)

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PERFILOV, N.A.

ANGULAR DISTRIBUTION OF THE URANIUM FISSION FRAGMENTS PRODUCED BY HIGH-ENERGY NEUTRONS.

V. I. Ostroumov and N. A. Perfilov. Soviet Phys. JETP 5, 603-4(1957) May

It has been shown previously that fragments of heavy nuclei fissioned by either charged or neutral medium energy (up to 20 Mev) particles display a parallel anisotropy relative to the direction of the bombarding beam and this orientation becomes perpendicular for U at incident-proton energies of 460 Mev and higher. Results indicate that the anisotropy in the escape of fragments, the distribution as obtained from the number of particles accompanying the fragments, and the directivity of these particles are approximately the same whether the U nuclei are fissioned by high-energy neutrons or protons of the same energy. (M.H.R.)

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N.A. Perfilov

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HEAVY NUCLEAR FRAGMENTS FROM DISINTEGRATION PRODUCED BY FAST PROTONS IN NUCLEAR EMULSIONS. O. V. Lozhkin and N. A. Perfilov (Radium Inst. of the Academy of Science, USSR). Soviet Phys. JETP 4, 780-8(1957) July.

Fine-grain type P-9 nuclear emulsions have been used for the study of that interaction process of 250 to 660 Mev protons with the nuclei of the emulsion which leads to the formation of multiple-charge particles with Z ≥ 4. It has been observed that the production of multiple-charge particles of high energy (F_{hip} per nucleon > 3 to 4 Mev) takes place on the light nuclei of the emulsion (C, N, O) as well as on the heavy ones (Ag, Br). The main characteristics of the nuclear fragment disintegration have been investigated. The analysis shows that—to explain the formation of fragments—one has to assume a series of specific properties of primary interactions of fast protons with nuclei. (auth)

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PERFILOV, N.A

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AUTHOR PERFILOV N.A., SHAMOV V.P., LOZHKIN ...

TITLE The triple fission of uranium by fast particles. (Troynoye deleniye urana na bystrykh chastitsakh. - Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 1, pp 75 - 77 (USSR).

Received: 5/1957 Reviewed: 6/1957

ABSTRACT Experimental Data:

Plates saturated with uranium were irradiated by 660 -protons. On examination of the plates several fissions of the uranium were registered where multiple-charge particles were radiated with $Z > 4$. Among these particles a plane threefold fork was found. The traces of all three particles of this fork belong to multiple-charge particles: two belong to fission fragments of a heavy nucleus and the third possesses a much stronger darkening density than the traces of α-particles. The authors used a specially fine-grained emulsion with the limit of sensitivity of $\sim$ 35 MeV for protons. The blackening density along these three traces was measured photometrically. The results found for total blackening are shown in form of a diagram and compared with the blackening of the traces of nitrogen ions. The nuclear charge number can be determined from the angle of inclination of the blackening curve. For one of the particles the value of $Z_{III} = 9,8 \pm 1$. was

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PERFILOV, N.A.
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" Preparation of a Fine Grain Emulsion to Record Rapid Particles,"

Paper submitted to 2nd Intl. Colloquim on Corpuscular Photograp;hs, Montreal, 31 Aug - 7 Sept 58.

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