"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, J.

Prosopagnosia. Contribution to disorders of higher visual functions. Sborn. lek. 64 no.8/9:240-247 Ag '62.

1. II. ocni klinika fakulty vseobecneho lekarstvi University Karlovy Praze, prednosta akademik J. Kurz.
(AGNOSIA etiol) (OCCIPITAL LOBE wds & inj.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, Jiri; JANOVSKY, Milos

On cryptophthalmos. Cesk. oftal. 18 no.2:128-138 Mr '62.

1. II. ocni klinika fakulty vseobecneho lekarstvi Karlovy university v Praze, prednosta akademik prof. dr. J. Kurz, Ustav pece o matku a dite v Praze - Podoli, reditel.
(EYELIDS abnorm)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, Jiri

Contribution to eye symptomatology in sudden and extensive intracranial hemorrhages. Cesk. neurol. 25 no.3:187-191 My '62.

1. II ocni klinika fakulty vseobecneho lekarstvi KU v Praze, prednosta akademik Jaromir Kurz Neurologicka klinika fakulty vseobecneho lekarstvi KU v Praze, prednosta akademik Kamil Henner.

(CEREBRAL ANEURYSM pathol)
(CEREBRAL HEMORRHAGE pathol)
(EYE pathol)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, Jiri; VLADYKOVA, Jaroslava

Retinopathy in acute disseminated erythematodes. J. Hyg. Epidem., Praha 3 no.2:228-233 1959

1. II. ocni klinika fakulty vseobecneho lekarstvi University Karlovy v Praze, prednosta akademik J. Kurz.
(LUPUS ERYTHEMATOSUS, in inf. & child)
(RETINA, dis.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, Jiri

Scleral ruptures. J. Hyg. Epidem., Praha 3 no.2:234-238 1959

1. II. ocni klinika fakulty vseobecneho lekarstvi University Karlovy v Praze, prednosta akademik Jaromir Kurz.
(SCLERA, wds. & inj.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

VOTOCKOVA, Jaroslava; OTRADOVEC, Jiri

Neuritis optica segmentaris. Cesk. ofth. 15 no.6:305-315 D '59

1. II. ocni klinika Karlovy university v Praze, prednosta prof. dr. Jaromir Kurz.

(NEURITIS)
(OPTIC NERVE dis.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, Jiri

Massive intra-ocular hemorrhage following rupture of intracranial arterial ansurysm. Contribution to the study of hematoma of the optic nerve sheath. Cesk. ofth. 15 no.6:416-427 D '59

1. II. ocni klinika University Karlovy v Praze; prednosta akademik J. Kurz.

(CEREBRAL ANEURYSM compl.)
(EYE DISEASE, etiol.)
(OPTIC NERVE, dis.)
(HEMATOMA, etiol.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, Jiri, ZICHA, Josef

Corneal complications after the extraction of senile cataract. Cesk. ofth. 16 no.6:452-362 S '60.

1. II. ocni klinika fakulty vsecbecneho lekarstvi Karlovy univerity v Praze, prednosta akademik prof. dr. Jaromir Kurz.
(CATARACT EXTRACTION compl.)
(CORNEA dis.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRADOVEC, Jiri; ZICHA, Josef

Invasion of the epithelium into the anterior chamber after cataract extraction. Cesk. ofth. 16 no.2:131-139 Mr '60

1. II. ocni klinika fakulty vseobecneho lekarstvi University Karlovy v Praze, prednosta akademik prof. dr. Jaromir Kurz.
(CATARACT EXTRACTION compl.)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

LOMICKOVA, Helena, Dr.; OTRADOVEC, Jiri, Dr.

Retinal hemorrhage in newborn. Cesk. ofth. 12 no.3:190-197 June 56.

1. Z II ocni kliniky Karlovy univ. v Praze (predn. akademik Jaromir Kurz) a z Ustavu pro peci o matku a dite v Praze-Podoli reditel prof. Dr. Jiri Trapl., vedoucí pediatrickeho useku doc. Dr. Kamil Kubat).

(RETINA, hemorrhage,
in newborn, statist. (Cz))
(HEMORRHAGE,
retina, in newborn, statist. (Cz))
(INFANT, NEWBORN, diseases,
retinal hemorrh., statist. (Cz))

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRASHEEVICH, A.

Radio - Receivers and Reception

Radio installation on collective farms. Sov. aviaz. no. 11, 1951.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ////.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

DOBRZECKI, Wladyslaw; OTRESA, Lucjan

Statistical observation on cases of prostatic cancer.
Urol. polska 9:95-101 1956.

1. Z Kliniki Urologicznej A.M. we Wroclawiu, Kierownik:
prof. dr. Florian Nowacki.
(PROSTATE, neoplasms,
statist. analysis (Pol))

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

DOBRZECKI, Wladyslaw; OTRUBA, Lucjan

Use of Szczeklik's cibazole test as aid in detecting cancer of the kidney; preliminary report. Urol. polska no.11:103-107 1957.

1. Z Kliniki Urologicznej A. M. we Wroclawiu Kierownik: prof. dr F. Nowacki.

(KIDNEYS, neoplasms
diag., Szczeklik's sulfathiazole method (Pol))
(SULFATHIAZOLE
diag. of cancer of kidneys, Szczeklik's method (Pol))

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRKBA, Lucjan

Complete duplication of the male urethra. Polski przegl.chir. 31 no.11:1231-1235 N '59.

1. Z Kliniki Urologicznej A. M. we Wroclawiu Kierownik: prof. dr T. Lorenz.

(URETHRA abnorm)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

STOLARCZYK, Jarowit; OTREBA, Lucjan

Arterial hypertension in unilateral kidney diseases. Polski tygod. lek. 16 no.46:1786-1789 13 N '61.

1. Z Kliniki Urologicznej A.M. we Wroclawiu; kierownik: prof. dr med. Tadeusz Lorenz.
(HYPERTENSION RENAL)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

LORENZ, Jerzy; OTREBA, Lucjan

Perineal testicular ectopy. Polski przegl. chir. 34 no.6a:620-63. '62.

1. Z Kliniki Urologicznej AM we Wroclawiu i Oddzialu Urologicznego Szpitala Wojewodzkiego we Wroclawiu Kierownik Kliniki i Oddzialu: prof. T.Lorenz.

(TESTES abnorm)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTREBA, Lucjan; STOLARCZYK, Jarowit

Acute renal failure in the course of acute pancreatitis. Pol. Przegl. chir. 37 no.4:Suppl.:398-401 Ap'65.

1. Z Kliniki Urologicznej Akademii Medycznej we Wroclawiu (Kierownik: prof. dr. T. Lorenz).

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

CTRFBSKI, Jan, prof., dr.

One of the problems of Poland's thousandth anniversary; the names of Mieszko and his house. Problemy 18 no. 2:11[illegible]-119. '62

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

CTREBSKI, Jan, prof. dr

The Latin-polish dictionary from Trent. Problemy 19 no.1:47-49 '63.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTREBSKI, Jan, prof.dr.

On the 150th anniversary of the first publication of Linde's dictionary of the Polish language. Problemy 18 no.8:585-58[illegible] '62.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTREMBSKIY, V. [Otremba'kyi, V.], inzh.; ZHILENKO, V. [Zhylenko, V.], inzh.

Radio control. Znan. ta pratsia no. 11:12 N '60. (MIRA 14:4)
(Automobiles--Models--Radio control)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRENIN N. A.

Otrenin N. A., "An Automatic Cyclic Regulator, " in the book Novyye teplo-energeticheskiye proizvodstvennyye pribory i regulyatory, Moscow/Leningrad, Mashgiz, 1953, Pages 137-143, 2 figures.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

Apparatus for pressing graduated containers. S. I. Kobolev and S. S. Otsa-
pulov. Russ 26,778, May 27, 1929. Construction details

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

TANIYEVSKI, M. [Taniewski, M.]; OTREMBA, G.

Production of butenes and divinyl by pyrolysis of light gasoline fraction of Romashkino crudes. Neftekhimiia 5 no.6:825-831 N-D '65. (MIRA 19:2)

1. Silezskiy politekhnicheskiy institut, Glivitse, Pol'skaya Narodnaya Respublika. Submitted Feb. 1, 1965.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTREPIN, N.A.

Automatic cyclic controllers. [Izd.] Sekts. prib. tepl. kontr. LENITOPRIBOR no.1:139-143 '53. (MLRA 8:2)
(Automatic control)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

CT[illegible], C.S.; [illegible]DYRKOV, [illegible]; [illegible], A.[illegible].

Syntheses b[illegible]ed on [illegible]in. [illegible]rt IX: Sulfonation of γ,γ'-di[illegible]ridyl b[illegible] sulfuric [illegible]. Zhur. ob. khim. 31 no. 2: [illegible] F '61. (I[illegible] 14:2)

1. Sredneaziatskiy [illegible]rstvennyy [illegible]iversitet. [illegible]

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

BURKEYEV, Sergey Ivanovich, inzh. [deceased]; KAZHDAN, Boris Khaymovich, inzh.; OTRESHKO, A.I., prof., doktor tekhn. nauk, retsenzent; IVYANSKIY, A.M., dots., kand. tekhn. nauk, retsenzent; TUMARKIN, D.M., inzh., nauchnyy red.; GLOTOVA, L.V., red. izd-va; SHERSTNEVA, N.V., tekhn. red.

[Examples and exercises in the design of structural elements] Primery i uprazhneniie po raschetu stroitel'nykh konstruktsii. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 181 p. (MIRA 14:10)

(Structures, Theory of)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRESHKO, A.I., doktor tekhn.nauk

Standards for allowable deformations of bearing elements must be reviewed. Prom.stroi. 39 no.7:13-15 '61. (MIRA 14:7)
(Reinforced concrete construction)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRESHKO, A.T.

[illegible] karst of the Kama-Volga part of Kuybyshev Province. Izv. Vses. geog. obshva SSSR no.3:283-287 My-Je '55. (MIRA 12:8)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTREBSHKO, Anatoliy Ivanovich, doktor tekhn.nauk, prof.; KOVAL'CHUK, M.F., inzh., nauchnyy red.; BORODINA, I.S., red.izd-va; PERSON, M.M., tekhn.red.

[Designer's manual; wooden structures] Spravochnik proektirovshchika; dereviannye konstruktsii. Moskva, Gos. izd-vo lit-ry po stroit. i arkhit., 1957. 262 p. (MIRA 11:2)
(Building, Wooden)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

[illegible].

Karst features in the interfluve of the Volga affluents, [illegible] and Samara. Izv. Vses. geog. ob-va 94 no.4:329-330 [illegible]-Ag [illegible]. (MIRA [illegible])

(Volga Valley—Karst)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRESHKO, Anatoliy Ivanovich, doktor tekhnicheskikh nauk, professor, redaktor; IVYANSKIY, A.M., kandidat tekhnicheskikh nauk, dotsent; SHMURNOV, K.V., kandidat tekhnicheskikh nauk, dotsent; ALEKSEYEV, V.M., redaktor; KOBYLYAKOV, L.M., redaktor; PERESYPKINA, Z.D., tekhnicheskiy redaktor; BALLOD, A.I., tekhnicheskiy redaktor.

[Hydraulic engineering structures] Inzhenernye konstruktsii v gidromeliorativnom stroitel'stve. Pod obshchei red. A.I. Otreshko. Moskva, Gos.izd-vo sekhoz. lit-ry, 1955. 551 p. (MLRA 9:1)
(Hydraulic engineering)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRESHKO, A.I.

Problems of the recent tectonics and ore formation in the Volga Valley, western trans-Ural region, and Caspian Sea region. Lit. i pol. iskop. no.1:113-117 Ja-F '65. (MIRA 18:4)

1. Geologicheskiy institut, Kazan'.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTRESHKO, A.I., doktor tekhn. nauk

Optimal form of crane beams for cranes in a heavy [illegible]. Prom. stroi. 43 no. 11:11-13 [illegible].

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

AUTHOR: [illegible]

TITLE: [illegible]

PERIODICAL: [illegible]

ABSTRACT: Two [illegible] determinations are described [illegible] a colorimetric method [illegible] n [illegible] nidine dissolved in [illegible] ric acid using a [illegible] recently [illegible] frame [illegible] der to determine the effect of admixtures [illegible] nical products were carried out [illegible] errors of ±1.12% [illegible]

Card 1/3

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

The Determination of Small Amounts of Diphenyl-
Guanidine in the Air of Industrial [illegible]

[illegible]

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

The Determination of Small Quantities of Diphenyl-
Guanidine in the Air of Industrial Working Areas

tions of diphenyl aniline.
There are 1 figure, 2 tables and 4 references, [illegible]
are Soviet.

ASSOCIATION: Dorogomilovskiy khimicheskiy zavod imeni M. V. Frunze i Vsesoyuznyy nauchno-issledovatel'skiy institut okhrany truda VTsSPS (Dorogomilovsk Chemical Plant imeni M. V. Frunze and All-Union Scientific Research Institute for Accident Prevention VTsSPS)

AVAILABLE: Library of Congress

1. Diphenyl guanidines--Determination 2. Air--Impurities
3. Air--Colorimetric analysis

Card 2/3

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROKOV, G. M.

Matt's

Recovery of wool fat from waste waters. A. S. Salin, S. N. Shcherbak, G. M. Otrokov, and A. K. Salina. U.S.S.R. 104,212, Dec. 25, 1956. Spent waters are first subjected to flotation, and the collected fatty concentrate is heated and passed through a vibrating filter and separator. M. Hosch

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROKOV, L. S

USSR/General and Special Zoology. Insects. Injurious Insects and Ticks. Pests of Fruit and Berry Crops

Abs Jour : Ref Zhur - Biol., No 11, 1958, No 49623

Author : Korobitsin V.G., Otrokov L.S.
Inst : State Nikita Botanical Garden
Title : An Experiment in the Control of Fruit Garden Pests in the Kolkhoz "Zavety Stalina".

Orig Pub : Byul. nauchno-tekhn. inform. Gos. Nikitsk. botan. sad, 1957, No 2, 32-35

Abstract : In 1956, the spraying of 35 ha. of a garden durin March 9-19 with an 8% carbolineum emulsion and durin April 22-30 with a 0.05% dinitro-o-cresol solution considerably decreased the number of wintering eggs of the brown mite (Bryobia redikorzevi Rock). However, on May 21 there were already 1.09 mites per leaf. A second sprayin with dinitro-o-cresol on May 21-27 decreased the number of the mites to 0.24 by the third

Card : 1/3

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

USSR/Mathematics - Limit Cycles

Card 1/1

Author : Otrokov, N. F. (Gor'kiy)

Title : Number of limit cycles of a differential equation in the neighborhood of a singular point

Periodical: Mat. sbor., 34 (76), 127-144, Jan/Feb 1954

Abstract : Treats the problem of the maximum number of limit cycles appearing in the neighborhood of a singular point of the differential equation by $dx = \sum B_{ik} x^i y^k / \sum A_{ik} x^i y^k$ $(N = 2, 3, \ldots)$ for small variations in the coefficients $A_{ik}$, $B_{ik}$. The case $N = 2$ was completely solved by N. N. Bautin in 1954.

Submited : March 24, 1952

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROKOV, N.F.

Generation of limit cycles in algebraic differential systems. Dokl. AN SSSR 105 no.1:26-28 N '55. (MLRA 9:3)

1. Gor'kovskiy gosudarstvennyy universitet. Predstavlono akademikom I.G. Petrovskim.
(Differential equations) (Topology)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROKOV, N.F. (Gor'kiy).

Multiple limit-cycles. Mat.sbor. 41(83) no.4:417-430 Ap '57. (MLRA 10:7)

(Differential equations)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

29023
S/043/61/000/004/001/008
D274/D302

AUTHOR: Otrokov, N.F.

TITLE: On a case of limit-cycle formation

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 4, 1961, 23 - 44

TEXT: The number of cycles is estimated which arise in the neighborhood of the periodic solution

$$x = \varphi(t), \quad y = \psi(t), \quad z = \chi(t) \qquad (1)$$

of system

$$\dot{x} = P(x, y, z), \ \dot{y} = Q(x, y, z), \ \dot{z} = (x, y, z) \qquad (2)$$

on passage to the neighboring system of type

$$\dot{x} = P(x, y, z) + p(x, y, z), \ \dot{y} = Q(x, y, z) + q(x, y, z), \qquad (3)$$
$$\dot{z} = R(x, y, z) + r(x, y, z).$$

It is shown that if the Lyapunov constants $L_k (k = 2, 3, \ldots)$ of the

Card 1/11

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periodic solution (1) satisfy the conditions $L_2 = 0$, $L_3 = 0$, ..., $L_{n-1} = 0$, $L_n \neq 0$, then (for sufficiently small $\epsilon_0$, $\delta_0$) system (1) cannot have more than n cycles in the region $S(\epsilon_0, \ )$; point [illegible] the-ing the region, in which the functions p, q, r a[illegible] single-valued, analytic and bounded by $\delta_0$. Lyapunov's asymptotic [illegible]thods permit determining the invariants of the closed trajectory which are required in the study of stability of periodic solutions of autonomous dynamic systems. The problem reduces to investigating a special class of differential equations with periodic coefficients. Let [illegible] be the (smallest) prinicpal period of (1). The regular periodic functions $a_i(\tau)$, $b_i(\tau)$, $(i = 1, 2, 3)$ with the same period as [illegible], are chosen in such a way that the plane

$$x = a_1(\tau)\eta + b_1(\tau)\zeta + \varphi(\tau), \quad y = a_2(\tau)\eta + b_2(\tau)\zeta + \psi(\tau), \qquad (4)$$
$$z = a_3(\tau)\eta + b_3(\tau)\zeta + \chi(\tau)$$



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On a case of limit-cycle formation

is the surface of intersection for the trajectories of (2) which are near to (1). Introducing new variables $\eta$, $\zeta$ and $\tau$ instead of x, y, z one obtains

$$\frac{d\eta}{d\tau} = \sum_{i,k=1}^{\infty} A_{ik}(\tau)\eta^i\zeta^k, \quad \frac{d\zeta}{d\tau} = \sum_{i,k=1}^{\infty} B_{ik}(\tau)\eta^i\zeta^k, \tag{5}$$

where $A_{ik}$, $B_{ik}$ are continuous periodic functions of $\tau$ and the series converge absolutely and uniformly for all $|\eta| < \eta_0$, $|\zeta| < \zeta_0$. The index of closure of an integral curve is defined, as well as orbital stability of a solution; curve (1) is called a limit cycle if there exists a solution to Eq. (5) which is asymptotic to the equilibrium state $M_0$ either for $\tau \to +\infty$, or $\tau \to -\infty$. In the following, it is assumed that $\nu \neq 0$, $\nu_1 = 0$, where $\nu = a + bi$ and $\nu_1 = a_1 - bi$ are the characteristic exponents (indices) of curve (1). In this case nonlinear terms have to be taken into account in the

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On a case of limit-cycle formation

transformed equations; one obtains

$$\frac{d\xi}{d\tau} = \nu\eta + \sum_{i+k=2}^{\infty} A_{ik}(\tau)\eta^i\xi^k, \quad \frac{d\eta}{d\tau} = \sum_{i+k=2}^{\infty} B_{ik}(\tau)\eta^i\xi^k \tag{6}$$

The general solution of (6) is

$$\eta = C_1 e^{i\tau} + \sum_{i+k=2}^{\infty} U_{ik}(\tau)(C_1 e^{i\tau})^i C_2^k, \quad \xi = C_2 + \sum_{i+k=2}^{\infty} V_{ik}(\tau)(C_1 e^{i\tau})^i C_2^k \tag{7}$$

U and V are found from

$$\frac{dU_{ik}}{d\tau} = i(1-i)U_{ik} + R_{ik}(\tau), \tag{8}$$

$$\frac{dV_{ik}}{d\tau} = iV_{ik} + S_{ik}(\tau), \quad (i+k=2, 3, \ldots),$$

where R and S are finite sums of products of periodic functions and integral non-negative powers of U and V. In determining U and V, two cases may arise: case a) leads to the conditions

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On a case of limit-cycle formation

$$L_2 = 0,\ L_3 = 0, \ldots,\ L_{n-1} = 0,\ L_n \neq 0, \qquad (9)$$

where $L_k$ ($k = 2, 3, \ldots, n$) are functionals of the coefficients A and B of Eq. (6). Case b) leads to

$$L_2 = 0,\ L_3 = 0,\ \ldots,\ L_n = 0, \ldots \qquad (11)$$

Hence follows: Theorem 1: A closed trajectory which has only one non-vanishing characteristic exponent is a limit cycle. This cycle is orbitally stable if, and only if, $L_k$ satisfy conditions (9) for some odd n and if $L_n \nu > 0$, or conditions (11). If conditions (9) are satisfied, curve (1) is called a limit cycle of multiplicity n. If (11) hold, then (1) belongs to a whole family of closed trajectories and it can be considered as a cycle of multiplicity $n = \infty$. Cyclic curves: Conditions (9) and (11) show that in the neighborhood of the invariant point of the corresponding point transformation, there are analytic curves which consist of "almost invariant points". These curves can be found by the ordinary method from system (6). A theorem is stated on the integral curves g and h of equation

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On a case of limit-cycle formation

$$P(x, y, z)\frac{\partial f}{\partial x} + Q(x, y, z)\frac{\partial f}{\partial y} + R(x, y, z)\frac{\partial f}{\partial z} = 0. \quad (14)$$

A further theorem states the necessary and sufficient conditions for k-closure ($k < n$) of the trajectories of system (2) which pass through the point $P_0 \subset S(\delta, M_0)$. The analytic curve C which passes through the invariant point $M_0$ is called p-cyclic with respect to $T_k$, or determining at $M_0$ a p-tuple cyclic direction, if, for the point $M \subset C$ and $M \to M_0$, the distance $MM_k (M_k = T_k(M))$ is a small quantity of order p with respect to $MM_0$. Theorem 4: Let $\nu \neq 0$ and $\nu_1 = 0$. Then there exists, in a sufficiently small neighborhood of the invariant point of the corresponding transformation, a single cyclic direction of maximum order (finite or infinite) which is common to all group transformations. Equations of closed trajectories, generated in the neighborhood of a complex limit cycle: The multiple directions of system (2) can change their order on passage to the neighboring systems of type (3); hence, the generation of new limit cycles in the neighborhood of the given periodic solution

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is possible. In the case under consideration, the maximum number of generated closed trajectories is equal to the order of the multiplicity of the limit cycle. A theorem is stated on the integral curves

$$G(x, y, z) = \alpha, \quad H(x, y, z) = \beta \tag{49}$$

of Eq. (1). From the equations

$$\begin{aligned} G_k(x, y, z) &= A_k(G_0, H_0) + A_k^{(1)}(\lambda, G_0, H_0), \\ H_k(x, y, z) &= B_k(G_0, H_0) + B_k^{(1)}(\lambda, G_0, H_0) \end{aligned} \tag{52}$$

one obtains the transformations

$$\begin{aligned} \alpha_k &= U_k(\alpha, \beta) + U_k^{(1)}(\lambda, \alpha, \beta), \quad U_k^{(1)}(0, \alpha, \beta) \equiv 0; \\ \beta_k &= V_k(\alpha, \beta) + V_k^{(1)}(\lambda, \alpha, \beta), \quad V_k^{(1)}(0, \alpha, \beta) \equiv 0, \\ & k = \pm 1, \pm 2, \ldots \end{aligned} \tag{53}$$



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The invariant points of (53) are found from

$$\beta = C(\alpha) + C_{(1)}(\lambda, \alpha), \quad \beta_k = C_k(\alpha) + C_k^{(1)}(\lambda, \alpha), \qquad (54)$$

$$\beta_k - \beta = \psi_k(\lambda, \alpha) = \sum_{k=0}^{\infty} \gamma_k(\lambda)\, \alpha^k = 0. \qquad (55)$$

The number of k-closed trajectories, generated by an n-tuple cycle [illegible] are to systems of type (3), can be determined from the number of real roots of Eq. (55) which appear as a result of splitting of the n-tuple point of intersection of the cyclic curves (54) into simpler ones (with the additional condition, that at the corresponding points, $\gamma_i \neq 0$). In order to construct the transformation group (53) with n invariant points, it is assumed that k = 1. In this case, the system equivalent to (54) and (55) is

$$\varphi_1(\alpha, \beta) = \int_{L(M)} dG = 0, \quad \varphi_2(\alpha, \beta) = \int_{L(M)} dH = 0 \qquad (56)$$



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where L(M) is a closed contour. Further, one obtains

$$\varphi_1(\alpha) = \sum_{k=0}^{\infty} (\gamma_k + \gamma_k^{(1)})\alpha^k, \quad \varphi_2(\alpha) = \sum_{k=0}^{\infty} (d_k + d_k^{(1)})\alpha^k, \tag{59}$$

where $\gamma_k$ and $d_k$ ($k = 0, 1, 2, \ldots$) are terms linear in $\lambda$,

$$\gamma_k = \frac{1}{k!}\left(\frac{d^k I(\alpha)}{d\alpha^k}\right)_{\alpha=0}, \quad d_k = \frac{1}{k!}\left(\frac{d^k D(\alpha)}{d\alpha^k}\right)_{\alpha=0} \quad (k = 0, 1, \ldots, n-1), \tag{60}$$

$$I(\alpha) = \int_{L(M)} (g_x^{(1)}\,dx + g_y^{(1)}\,dy + g_z^{(1)}\,dz), \quad D(\alpha) = \int_{L(M)} (h_x^{(1)}\,dx + h_y^{(1)}\,dy + h_z^{(1)}\,dz) \tag{61}$$

After transformations

$$\gamma_k = \frac{1}{k!}\int_0^{\infty} \bar{\varphi}_k\,dt, \quad \bar{\varphi}_k = (\dot{N}\,\mathrm{rot}\,\varphi_{k-1}\dot{s}), \quad \bar{\varphi}_0 = \lambda(g_x p + g_y q + g_z r),$$

$$d_k = \frac{1}{k!}\int_0^{\infty} \bar{\psi}_k\,dt, \quad \bar{\psi}_k = (\dot{N}\,\mathrm{rot}\,\psi_{k-1}\dot{s}), \quad \bar{\psi}_0 = \lambda(h_x p + h_y q + h_z r) \tag{71}$$

$$(k = 0, 1, \ldots, n-1).$$



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where $\vec{N}$ is the vector normal to the surface formed by the curves L(M), and $\vec{\delta}$ the unit-vector tangent to L(M). The structure of integrals (71) is important for the splitting of the complex cycle. System (3) which has n cycles in the neighborhood of a given periodic solution, can be constructed if (by a preceding theorem) the functions p, q, r are chosen in such a way that the coefficients of the series (59) be independent, (this independence being defined by a lemma). Two more lemmas are proved. In conclusion, Theorem 7 is formulated: Let the closed trajectory (1) of (2) have only one non-vanishing characteristic exponent and $n \geqslant 2$ be the maximum order of cyclic directions at the invariant point of the corresponding group of point transformations. Then for any natural number k, system (3) cannot have more than n cycles in the domain D; systems (3) exist which have, in the domain S, n cycles with closure index $j = 1$. Theorem 7 holds also if both $\nu$ and $\nu_1$ are different from zero. If $n = \infty$, system (2) is conservative on an analytical surface which contains the considered closed curve. There are 1 figure and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc (including 1



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On a case of limit-cycle formation

translation). The reference to English-language publication reads as follows: D.D. Birkhoff, Surface transformations and their dynamical appl., Acta math., 43, 1-119, 1922.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROSH-CHENKO, G. A.

USSR/ Physics - Electrostatic generators

Card 1/1 Pub. 22 - 12/59

Authors : Gorlov, G. V.; Gokhberg, B. M.; Morozov, V. M; and Otrosh-chenko, G. A.

Title : A small electrostatic generator in a condensed gas

Periodical : Dok. AN SSSR 102/2, 237-239, May 11, 1955

Abstract : A description of a small electrostatic generator is presented. One USSR reference (1955).

Institution : Acad. of Sc., USSR, Institute of Physical Problems imeni S. I. Vavilov

Presented by : Academician A. P. Aleksandrov, November 17, 1954

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OTROSHCHENKO - A

CARD 1 / 2 PA - 1741

SUBJECT USSR / PHYSICS

AUTHOR GORLOV, G.V., GOCHBERG, B.M., MOROZOV, V.M., OTROSCENKO, S.A.

TITLE The Total Cross Section of the Interaction between Neutrons and $Li^6$- and $Li^7$-Nuclei in the Energy Interval of from 10-410 KeV.

PERIODICAL Dokl.Akad.Nauk, 110, fasc.6, 963-965 (1956)
Issued: 1 / 1957

This work was carried out towards the end of 1952 on an electrostatic generator with a maximum voltage of 1,9 MeV. The reaction $T(p,n)He^3$ served as a source of monoenergetic neutrons. The tritium target took the shape of a thin titanium layer applied to a molybdenum base; the titanium was saturated with tritium. Measurements were carried out in a cabin of 3 x 3 x 2,5 m, the walls of which consisted of a mixture of paraffin and borax. The cross section mentioned in the title was determined by measuring the transparence of two samples. Sample No 1 consisted of metallic lithium with enriched $Li^6$ (in the atomic ratio 91,4 $Li^6$). Sample No 2 consisted of metallic lithium with enriched $Li^7$ (atomic ratio 99,5% $Li^7$). Both samples were cylindrical and of a length of 30 mm and a diamter of 25 mm. They were enclosed in aluminium containers with walls of 0,2 mm thickness. The "neutron flux" was measured by means of a long neutron counter. The transparence of the samples Nos 1 and 2 was measured in the following order: 1.) Measuring of neutron flux without sample. 2.) Measuring of neutron flux with sample No 1. 3.) Measuring of neutron flux with sample No 2. 4.) Measuring of the background of the scattered neutrons impinging on the detector. All quanti-

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ties measured were referred to a travel or reading of the monitor. Necessary corrections are mentioned.

This table and a diagram illustrate the cross sections of $Li^6$ and $Li^7$ in dependence on the energy of the neutrons. The total cross section for $Li^7$ attains its maximum value $\sigma_t^{max}$ = 7,0 ± 0,2 barn at the energy $E_{res}$ = 275 keV. These values agree well with the work by R.K.ADAIR, Phys.Rev. 72, 1018 (1950). The difference between the value of $\sigma_t^{max}$ obtained here for $Li^7$ and the corresponding value mentioned in the work by P.H.STELSON and W.M.PRESTON, Phys. Rev. 84, 162 (1951) may be explained by the fact that in the case of the present work measurements were carried out with a lower degree of resolving power with respect to energy. The total cross section for $Li^6$ obtained in the course of the present work attains its maximum value $\sigma_t^{max}$ = 9,1 ± 0,2 barn at $E_{res}$ = 265 keV. Besides, an increase of the total cross section within the domain of low neutron energies was observed, which is explained by the reaction $Li^6$ n,t $He^4$. A comparison of the here obtained total cross section for $Li^7$ with that obtained in 1954 by C.H. JOHNSON et al., Phys.Rev. 94, 905 (1954) shows good agreement between the values of $\sigma_t^{max}$, $E_{res}$, and the shape of the curve within the limits of measuring errors.

INSTITUTION:

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GOKHBERG, B.M.; KIKOIN, I.K.; KNYAZYATOV, A.S.; MAL'TSEV, V.V.; OTROSHCHENKO, G.A.

Use of a tritium ion beam in determining the density of a deuterium plasma. Zhur. eksp. i teor. fiz. 45 no.3:428-436 S '63. (MIRA 16:10)

(Ion beams) (Plasma (Ionized gases)

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OTROSHCHENKO, G.A.; SHIGIN, V.A.

[Effective fission cross sections and anisotropy of $Np^{237}$ and $Th^{230}$] Effektivnye sechenilia i anizotropiia deleniia $Np^{237}$ i $Th^{230}$. Moskva, Glav.upr. po ispol'zovaniiu atomnoi energii, 1960. 12 p. (MIRA 17:1)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

ACCESSION NR: AT4025309 S/0000/63/000/000/0193/0198

AUTHORS: Kikoin, I. K.; Gokhberg, B. M.; Mal'tsev, V. V.; Otroshchenko, G. A.; Knyazyatov, A. S.

TITLE: Probing a deuterium plasma with a tritium beam

SOURCE: Diagnostika plazmy* (Plasma diagnostics); sb. statey. Moscow, Gosatomizdat, 1963, 193-198

TOPIC TAGS: deuterium, tritium, plasma density, plasma electromagnetic property, neutron yield, discharge plasma

ABSTRACT: The method is based on the registration of the number of reactions between the incident tritium nuclei and the deuterium nuclei of the plasma, making it possible to investigate the variation of the deuterium density independently of the degree of ionization of the plasma and of the impurity contents. The investigation was made in the "Igla" toroidal chamber (large diameter 750 mm,



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small diameter 200 mm, maximum capacitor bank energy 35 kJ, maximum discharge current 100 kA). The ion current and the position of the beam were monitored with thermocouples distributed over the channel. The tritium beam source is described elsewhere (I. I. Afanas'yev et al. "Atomnaya energiya" v. 13, No. 8, 135, 1962). The investigation of the neutron yield from the ion collector located on the inside of the discharge chamber has made it possible to draw certain conclusions concerning the absorption of the working gas (deuterium) by the walls of the discharge chamber. However, in the case of high-frequency ionization of the gas (preliminary ionization) the walls are capable of absorbing a very large amount of gas. Investigations of the variation of the deuterium plasma density during the discharge time show that the plasma density increases by several times during the discharge, as a result of interaction between the plasma and the walls. When deuterium is used in the discharge chamber, the yield of neutrons decreases immediately after the discharge, compared with the yield in the absence of discharge. In the case of hydrogen, the op-

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ACCESSION NR: AT4025309

posite takes place. A control experiment has shown that the increase in the neutron yield is not due to a displacement of the ion beam during the discharge. Orig. art. has: 4 figures.

ASSOCIATION: None

SUBMITTED: 19Oct63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: ME NR REF SOV: 002 OTHER: 000

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

ACCESSION NR: AP4018392 S/0120/64/000/001/0196/0197

AUTHOR: Knyazyatov, A. S.; Mal'tsev, V. V.; Otroshchenko, G. A.

TITLE: Tritium-ion pulsed source

SOURCE: Pribory* i tekhnika eksperimenta, no. 1, 1964, 196-197

TOPIC TAGS: tritium, tritium ion , tritium ion source, tritium ion pulsed source, deuterium plasma, deuterium plasma probing, titanium type tritium source

ABSTRACT: The functioning of a titanium-type tritium pulsed source is described; the source itself was described by N. N. Afanas'yev, et al., earlier (Atomnaya energiya, 1962, 13, no. 8, 135). A 1-mm Ti disk was saturated with T up to an atomic ratio of about 1. Seven other disks were made from stainless steel. The discharge channel was 9 mm in diameter, the emission port 0.7 mm. The discharge-current duration was 500 and 2 microsec. With a discharge

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ACCESSION NR: AP4018392

current of 200 amp, drawing voltage 25 kv, and focusing-gap voltage 85 kv, the maximum current at 100 cm in the 10-mm aperture was as high as 25 ma. The amount of stored T is shown by this fact: after 10,000 pulsed discharges, the beam current had dropped by 30%. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 07Mar63 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 003 OTHER: 000

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROSHCHENKO, G. A

GORLOV, G. V., GOKHBERG, B. M., MOROZOV, V. M., and OTROSHCHENKO, G. A.

"Total Effective Cross Section of the Interaction of Neutrons with $Li^6$ and $Li^7$ Nuclei in the 10-450-Kev Energy Range," by G. V. Gorlov, B. M. Gokhberg, V. M. Morozov, and G. A. Otroshchenko, Doklady Akademii Nauk SSSR, Vol 110, No 6, 1956, pp 961-963

[illegible]

the cross [illegible] 0.5 [illegible]

neutron energy [illegible]

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GORLOV, G.V.; GOKHBERG, B.M.; MOROZOV, V.M.; OTROSHCHENKO, G.A.; SHIGIN, V.A.

Fission cross section o' $U^{233}$ and $U^{235}$ under the action of 3 to 800 kev. neutrons. Atom. energ. 6 no.4:453-457 Ap '59. (MIRA 12:5)

(Uranium--isotopes) (Nuclear fission) Neutrons)

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

~~21-(8)~~ 24.6600 66160

AUTHORS: Gokhberg, B. M., Otroshchenko, G. A., Shigin, V. A. SOV/20-128-5-12/67

TITLE: Cross Section of $Th^{229}$ Fission

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 5, pp 911-912 (USSR)

ABSTRACT: The authors investigated the dependence of the cross section of $Th^{229}$ fission by means of neutrons having an energy of 6-1200 kev. The neutrons were produced by the T(p,n) reaction by means of an electrostatic generator. A proton beam having an intensity of $\sim 40\mu a$ struck a tritium target 12 mm in diameter. The neutron fluxes emitted by the target were measured with a long boron counter of the Mac Kibben type. Neutron fluxes emitted by the target in the direction of the proton beam were used to measure $> 350$ kev neutrons. The neutron energies were varied by changing the energies of the neutrons bombarding the target. The background amounted to $\sim 3.5\%$ of the direct neutron flux. The background component was higher when weaker neutron fluxes were applied. The fission of $Th^{229}$ nuclei was measured in a plane parallel ionization chamber, the pulses of which were recorded by an

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Cross Section of $Th^{229}$ Fission SOV/20-128-5-12/67

electronic recorder. Nickel windows 0.5 mm thick were soldered to the front plates of the chamber. A thorium layer approximately 0.8 mg/cm$^2$ thick and having a diameter of 17 mm was attached to the high-voltage electrode of the chamber. The thorium had the following isotope composition: 60 mg of $Th^{229}$ and 1.5 mg of $Th^{232}$. The chamber was filled with 65% argon and 35% methane (2 atm pressure), and mounted on a turntable. The resolution with reference to the energy varied from 2 kev for measurements of 6 kev neutrons to 20 kev for measurements of ≥ 350 kev neutrons. The number of fissions on the scattered neutrons was determined from deviation of chamber counts from the $1/r^2$-function at different distances between chamber and target. Results of the experiment are illustrated in a figure. The course of the cross section curve differs greatly from the typical dependence of the fission cross section on the energy of the neutrons. This holds for nuclei split by thermal neutrons. The cross section decreases by 20% altogether in the interval 20-200 kev, thereafter diminishes greatl toward a minimum at 600 kev, and then increases again by 25%. Unfortunately, measurements at energies above 1200 kev were

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Cross Section of $Th^{229}$ Fission SOV/20-128-5-12/67

not possible owing to the large content of $Th^{232}$. There is 1 figure.

ASSOCIATION: Institut atomnoy energii Akademii nauk SSSR (Institute of Atomic Energy of the Academy of Sciences, USSR)

PRESENTED: June 2, 1959, by I. V. Kurchatov, Academician

SUBMITTED: April 9, 1959

Card 3/3

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

S/638/61/000/000/004/0[illegible]
B102/B138

2,200

AUTHORS: Gokhberg, B. M., Otroshchenko, G. A., Shigin, V. A.

TITLE: Fission cross section of $Th^{229}$, $Th^{230}$ and $Np^{237}$ and fission anisotropy of $Th^{230}$ and $Np^{237}$

SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy v. 1. Tashkent, 1961, 57-61

TEXT: Fission cross sections and anisotropy were measured around the fission threshold. The bombarding neutrons were produced in T(p,n) reactions. In bombardment with neutrons of $E_n$ < 350 kev $E_p$ was 1200 kev. In $E_n$ > 350 kev $E_p$ was varied and only the neutrons emitted in the direction of the proton beam were used. Fission was determined by a plane parallel ionization chamber connected with a recorder. The background due to fissions induced by scattered neutrons was determined by check measurements and did not exceed 10%. Anisotropy was also observed with an ionization chamber. The energy resolution was 30 kev. Results: $Th^{229}$. The

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Fission cross section of

specimen consisted of 65 μg $Th^{230}$ + [illegible] μg $Th^{232}$. $\sigma_f = F(E_n)$ decreases rapidly between 6 and 20 kev, it decreases 20% between 20 and [illegible] kev and reaches a minimum at 600 kev after which it increases slightly again. $Th^{230}$. The exact isotopic composition of the specimen was not known. Only relative measurements were made up to $E_n$ = 1200 kev. The fission threshold is at $E_n$ = 670 kev. The local maximum at $E_n$ = 770 kev suggests the existence of a $Th^{231}$ level far removed from the higher levels. The results are in good agreement with those of the collective model. [illegible] even nuclei $N^{237}$. The specimens contained practically no admixtures. Between [illegible] and 150 kev $\sigma_f$ is almost constant [illegible] 20 mb, then it rises almost linearly and tending to saturation a bit beyond 1000 kev. The anisotropy $\sigma_f(0°)/\sigma_f(90°)$ was also measured as a function of $E_n$. Between 700 and 1000 kev it decreases from [illegible] to [illegible] for $Th^{232}$, then rises again and at 1200 kev reaches 1.4. The existence of a maximum near the threshold is in accordance with the collective model. The [illegible] the range of this maximum is, however, in contradiction to the model [illegible] in Ref. [illegible]. In $Np^{237}$ the anisotropy was only measured from $E_n$ [illegible]

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B102/B138

Fission cross section of

It rises from 1.0 to 1 2 when $E_n$ is increased to 1500 kev This slight dependence is due to $Np^{237}$ being an odd-even nucleus with 7/2 spin There are 3 figures and 3 non-Soviet references. The three references to English-language publications read as follows: Ref. 1 Hjill D L and Wheeler J A Phys Rev , 89, 1102, 1953; Ref 2. Wilets L and Chase L M Phys Rev , 103, 1296, 1956; Ref 3. Henkel R L and Bralley G E Phys Rev , 103, 1292, 1956.

ASSOCIATION Institut atomnoy energii AN SSSR (Institute of Atomic Energy AS USSR)

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32285
S/641/61/000/000/[illegible]
B104/B102

24.6600

AUTHORS: Ctroshchenko, G. A., Shigin, V. A.

TITLE: Cross section and fission anisotropy of $Np^{237}$ and $Th^{232}$

SOURCE: Krupchitskiy, P. A., ed. Neytronnaya fizika; sbornik statey. Moscow, 1961, 211-216

TEXT: The angular distribution anisotropy of the $Np^{237}$ and $Th^{232}$ fission fragments was studied. The fission was induced by neutrons of up to 1.5 Mev produced in the reaction $T(p,n)He^3$. A 30-40 μa proton beam from an electrostatic generator was directed at a tritium target. This target consisted of titanium saturated with tritium to T/Ti atomic ratio of [illegible]. The neutron flux was determined by a boron counter. At neutron energies above 350 kev the measurements were made in the neutron fluxes leaving the target in the direction of the proton beam. Owing to its thickness the protons lost about 60 kev in the target. The neutron energy was varied by varying the proton energy. In measurements with protons of energies lower than 350 kev the proton energy was kept constant at about 1.50 kev and neutron fluxes were used that left the target at different angles

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32955

S/641/[illegible]/000/[illegible]/[illegible]/[illegible]
B104/B102

Cross section and fission

relative to the proton beam. The fission events were recorded by means of a plane-parallel ionization chamber. A thin layer ([illegible] mg/cm², [illegible] mm diameter) of the substance to be fissioned was applied to the high voltage electrode of the chamber. The chamber was filled with [illegible] atm argon with [illegible] methane. The energy resolution varied from [illegible] kev for [illegible] neutrons to [illegible] kev for [illegible] kev neutrons. The anisotropy of the fission fragments was determined by means of a double ionization chamber. The substance to be fissioned was placed at a distance of [illegible] mm from the target. The results are graphically represented. There are [illegible] figures and [illegible] tables. [illegible] The two references to English-language publications read as follows: [illegible] Bradley J. E. Phys. Rev., [illegible] [illegible] Rev., [illegible]

Fig. [illegible]. Cross section and fission anisotropy of $Np^{237}$ as a function of the neutron energy.
Legend: [illegible] $\sigma_f$ in barn, $E_n$ in kev

Fig. 3. Cross section and fission anisotropy of $Th^{232}$ as a function of the neutron energy.
Legend: [illegible] $\sigma_f$ in barn, $E_n$ in kev

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L 16795-63 EWT(1)/EWG(k)/EWP(q)/EWT(m)/BDS/ES(w)-2 AFFTC/ASD/ ESD-3/AFWL/IJP(C)/SSD Pz-4/Pab-4/Po-4/Pi-4 JD/AT

ACCESSION NR: AP3007057 S/0056/63/045/003/0428/0436

AUTHOR: Gokhberg, B. M.; Kikoin, I. K.; Knyazyatov, A. S.; Mal'tsev, V. [redacted] G. A.

TITLE: Use of tritium ion beam to determine deuteron plasma density

SOURCE: Zh. eksper. i teoret. fiziki, v. 45, no. 3, 1963, 428-436

TOPIC TAGS: deuteron plasma density, toroidal discharge chamber, plasma density measurement, plasma density, plasma

ABSTRACT: A method for investigation of a deuteron plasma by means of a beam of tritium ions introduced into the plasma is described. The method is based on recording the secondary particles resulting from reaction $D(t,n)He^4$, caused by the collision of accelerated tritium ions with the plasma particles. The energy of the injected tritons was approximately 160 Kev, and the energy of the neutrons and alpha particles produced, 14 and 3.5 Mev, respectively. The

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ACCESSION NR: AP3007037

investigating device was a toroidal discharge chamber in a weak longitudinal magnetic field. The principal diameter of the toroid was 750 mm, the inner diameter of the discharge chamber, about 210 mm, the intensity of the magnetic field, 200—700 oe, and the maximum discharge current, about 100 kamp. The discharge time in the chamber was approximately 600 μsec, the pulse duration of the ion source, approximately 2000 μsec, and the time delay between the start of the discharge in the chamber and the start of the pulse of the source current, 500—1000 μsec. Measurements were carried out with the discharge chamber filled with deuterium and, as a control, with hydrogen. The average plasma density over the whole path of a tritium beam was determined. Although the plasma density is greater after discharge, the increase cannot be regarded as a result of plasma compression but merely as result of the liberation of gas from the chamber walls during discharge. Orig. art. has: 3 figures.

ASSOCIATION: none
SUBMITTED: 07 Mar 63 DATE ACQ: 08Oct63 ENCL: 00
SUB CODE: PH NO REF SOV: 002 OTHER: 000
Card 2/2

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SOV/20-128-6-16/63

AUTHORS: Gokhberg, B. M., Otroshchenko, G. A., Shigin, V. A.

TITLE: Effective Cross Sections and Anisotropy of $Np^{237}$ and $Th^{230}$ Fissions

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1157-1159 (USSR)

ABSTRACT: It was a matter of interest to measure the effective cross sections and anisotropy of nuclear fission in the immediate proximity of the threshold value. Such measurements had hitherto been made only for $U^{238}$ and $Th^{232}$. The authors investigated nuclei $Np^{237}$ and $Th^{230}$. Experimental conditions and technique of measuring the fission cross sections had already been investigated earlier (Ref 3). The layers of fissioning substances had a thickness of ~0.5 mg/cm$^2$. Further experimental conditions are mentioned. 2 diagrams illustrate the dependence of the fission cross section and the ratio of differential fission cross sections $\sigma_f(0^\circ)/\sigma_f(90^\circ)$ on the energy of neutrons. Because of the small effective cross section of reaction, anisotropy of

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Effective Cross Sections and Anisotropy of $Np^{237}$ and $Th^{230}$ Fissions

$Np^{237}$ fission was only measured beginning with a neutron energy of 350 kev. Owing to the lack of sufficiently reliable data concerning the isotopic composition of the $Th^{230}$ sample, measurements could not be made on $Th^{230}$ above an energy of 1200 kev, where impurity $Th^{232}$ begins to make its action strongly felt. Owing to this reason it was also impossible to determine the absolute value of the fission cross section of $Th^{232}$ by this experiment. For $Np^{237}$, fission cross section remains almost constant in the range of energies of from 12 to 100 kev, i.e within a tenfold change of energy ($\sim$20 mb), and a threshold value of reaction is evidently lacking. This fact is a little surprising, as seen from the viewpoint of the fission model used today. On the other hand, the plane course of the cross section and the slight anisotropy of fission are evidently in good agreement with the fact that the original $Np^{237}$ nucleus is odd - even and that it exhibits a high spin. The $Np^{238}$ nucleus originating from the capture of the neutron is odd - odd, i.e.

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Effective Cross Sections and Anisotropy of $Np^{237}$ and $Th^{230}$ Fissions

it is highly excited, namely with a large moment. This leads to the mentioned character of dependence of fission characteristics on the neutron energy. Fission cross section of $Th^{230}$ versus energy of neutron function is likewise in good agreement with the conclusions derived from the "collective" model with respect to the even - even nucleus. Fission of $Th^{230}$ has its threshold value at 650 kev, with the cross section increasing strongly beyond that value. At the beginning of the general cross section rise a local maximum is clearly noticeable. This is the reason why the $Th^{231}$ nucleus may have a level at a great distance from the other higher levels. Anisotropy of fission in the range of this maximum, however, is the opposite to the one which is presupposed by the collective model for an even - even nucleus. Further investigations concerning the character of $Th^{230}$ anisotropy and especially, measurement of the total angular distribution of the fission fragments, are yet required to clarify this problem. There are 2 figures and 4 references, 1 of which is Soviet.

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Effective Cross Sections and Anisotropy of $Np^{237}$ and $Th^{230}$ Fissions

ASSOCIATION: Institut atomnoy energii Akademii nauk SSSR (Institute of Atomic Energy of the Academy of Sciences, USSR)

PRESENTED: June 2, 1959, by I. V. Kurchatov, Academician

SUBMITTED: April 9, 1959

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APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

TROSHCHENKO, G. A.

V Measurement of the $Li^6$ (n,t)$He^4$ cross section for neutron energies from 0 to 700 e.kv. [illegible] Lindev, [illegible] Gukhberg, V. M. Morozov, and G. A. Troshchenko. [illegible] *Phys.* [illegible] (Russian translation); *Doklady Akad. Nauk S.S.S.R.* 111, 791-4; cf. *U.S. Atomic Energy Comm.* AECU-2040(1952). — The resonance peak in the absorption cross section, $\sigma$, of $Li^6$ for the (n,t) reaction was investigated for monoenergetic neutrons provided by the angular selection of neutrons produced in the proton bombardment of T. Relative values of $\sigma$ vs. neutron energy, $E_n$, were measured by means of a small ionization chamber, contg. helical electrodes coated with LiF (Li enriched to 92% $Li^6$), placed on a rotatable optical bench that permitted ingress of neutrons at an angle between 0 and 170° to the proton beam. The measurements indicated that $\sigma$ reached a max. when $E_n$ = 203 e.kv. Abs. measurements of $\sigma$ were made at this $E_n$ and also at 100 e.kv. by means of a flat ionization chamber contg. parallel plates coated with the same LiF. Values for $\sigma$ of 3.4 ± 0.3 and 0.85 b. at 203 and at 100 e.kv., resp., were obtained. These show that the resonance is due primarily to a *p*-wave interaction of neutrons with the $Li^6$ nucleus. James H. Pantell

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

SUBJECT USSR / PHYSICS CARD PA -
AUTHOR GORLOV, G.V., GOCHBERG, B.M., MOROZOV, V.M., OTROSCENKO, J.A.
TITLE Measuring the Cross Section of the Reaction $Li^6(n,t)He^4$ in the Interval of Neutron Energies of from 9 to 700 keV.
PERIODICAL Dokl.Akad.Nauk 111, fasc.4, 791-794 (1956)
Issued: 1 / 1957

The authors carried out these measurements at the beginning of 1957 following measurements of the total cross section of the interaction between monoenergetic neutrons and $Li^6$- and $Li^7$-nuclei. The monoenergetic neutrons were obtained in the aforementioned energy interval from the reaction $T(p,n)He^3$. The tritium was contained in the titanium-cover of a molybdenum target. Measurements were carried out in a 3 x 3 x 2,5 m cabin the walls of which consisted of a mixture of paraffin and boron. At from 0 to 80° the background amounts to not more than some percents of the primary neutron flux. At large angles ( > 140° the background attained a noticeable part (up to 60%) of the primary neutron flux. For measuring the relative course taken by the cross section of the reaction $Li^6(n,t)He^4$ the authors constructed a spiral-shaped ionization chamber with small dimensions. For the measuring of the absolute value of the cross section of $Li^6(n,t)He^4$ three plane ionization chambers are produced; they contain technical argon with a pressure of ~ 4 at, and have an operation voltage of ~ 350 V. The pulse characteristics of these plane ionization chambers were fully satisfactory. Carrying out measurements is discussed in short.

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Dokl.Akad.Nauk 111,fasc.4,791-794 (1956) CARD 2/2 PA - 1434

Measuring results are illustrated in form of a diagram. The cross section attains its maximum value of 3,4 ± 0,3 barn at a neutron energy of [illegible] keV and decreases towards smaller neutron energies (at $E_n$ < 50 keV). The extrapolation in to the thermal energy domain of the neutrons according to the law 1/v is not in contradiction to the known value of the cross section of the reaction $Li^6(n,t)He^4$ in the case of thermal neutrons. These results agree well with corresponding American results (BLAIR and HOLLAND) with respect to the maximum amount of the cross section and with respect to the shape of the curves, but there is a difference of 15 keV as regards the position of the maximum.

At a neutron energy of 265 keV resonance is essentially caused by the p-interaction between the neutrons and the $Li^6$ nucleus, i.e. the interference effect between s-interaction and potential interaction is not strongly marked. Therefore, the total cross section $\sigma_t$ of the interaction between neutrons and $Li^6$ can in the vicinity of resonance, without any grave erros, be expressed by the sum of the cross section $\sigma_o$ of potential interaction and the cross section corresponding to resonance.

INSTITUTION:

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Otreshchenko, G. N.

Distr: 4E3d

Total effective cross section for the reaction of neutrons with lithium-6 and lithium-7 nuclei in the 10-450-e.kv. energy range. G. V. Grebov, B. M. Golubkov, V. M. Morozov, and G. A. Otreshchenko. *Doklady Akad. Nauk SSSR* 110, 161-2(1956). — The total cross section, σ, was [illegible] for the energy range 10-450 e.kv. by measuring the

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

VAYNER, M.I., TSIMBL[illegible], Yu.A.; [illegible]; Prinimal [illegible] chastiyet
MAKOVSKIY, V.A., student-diplomnik; [illegible], student-
diplomnik; [illegible]; [illegible].

Experimental investigation of the evaporation of gasoline from a deepened reinforced concrete tank. Transp. i khran. nefti i nefteprod. no. 3: [illegible] 1964. MIRA 17:5

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov, Spetsial'noye konstruktorskoye byuro "Transneftavtomatika" i Moskovskiy ordena Trudovogo Krasnogo Znameni institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina. [illegible] Moskovskiy ordena Trudovogo Krasnogo Znameni institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina (for Makovskiy, Zakharov). 3. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov (for Minsker, [illegible]).

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROKOV, N.G.

One case of the generation of limit cycles. Vest.LGU 16 no.19: 23-44 '61. (MIRA 14:1)

(Permutations)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

L 10719-65 EWT(m)/EPF(c)/EPF(n)-2/EPR Pr-4/Pe-4/Pu-4 AFWL/SSD DM

ACCESSION NR: AP4045330 S/0089/64/017/003/0189/0193

AUTHOR: Artamkin, V. N.; Vasenkova, G. V.; Otroshchenko, I. V.; Fedorenko, R. P.

TITLE: Optimum regime for reactor shutdown 19

SOURCE: Atomnaya energiya, v. 17, no. 3, 1964, 189-193

TOPIC TAGS: Fedorenko optimum control method, reactor optimum control, reactor, reactor poisoning, reactor shutdown

ABSTRACT: A procedure is described for calculating the optimum regime for reactor shutdown employing Fedorenko's approximation method for the numerical solution of a nonlinear optimum control problem. It is assumed that the concentration of fission product is a function of the mean (with respect to fuel volume) neutron flux. The basic parameters determining the optimum reactor control for a given shutdown time are calculated. Also obtained is the relationship between shutdown time and the xenon concentration under the optimum reactor control and scram conditions. Orig. art. has: 2 figures and 10 formulas.

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ACCESSION NR: AP4045330

ASSOCIATION: none

SUBMITTED: 02Mar64 ATD PRESS: 3115 ENCL: 00

SUB CODE: NP NO REF SOV: 001 OTHER: 003

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTROSHCHENKO, O.S. LEO[illegible] [illegible]B. SADYKOV, A.S.; MALGUTOVA, N.S.; KORNEYCHUK, A.A.

[illegible] Pa[illegible] Ren[illegible] [illegible] f [illegible]yridyls. Zh[illegible] [illegible] (MIRA [illegible])

[illegible]

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

OTPOSHCHENKO, O.

USSR/Chemistry - Alkaloids 1 May 52

"Investigation of Transformation Products of N-(beta-Hydroxyethyl)-Anabasine," A. Sadykov, Act Mem, Acad Sci Uzbek SSR, O. Otroshchenko, Cent Asian State U

"Dok Ak Nauk SSSR" Vol LXXXIV, No 1, pp 77-79

N-(beta-hydroxyethyl)-anabasine was prepd from ethylene oxide and anabasine at room temp in methyl and ethyl alc solvents. The elements of water were removed from this product with $P_2O_5$ to form 4,5-(alpha, beta-pyridylene)-norlupinane, which was in turn oxidized with $KMnO_4$ to the dibasic acid.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

SADYKOV, A.S.; OTROSHCHENKO, O.S.; YUSUPOV, M.K.

Synthesis based on anabasine. Part 5. Investigation of the transformation products of N- (β-hydroxyethyl)-anabasine. Zhur.ob.khim. 23 no.[illegible] 971 Je '53.

(Mica [illegible])

1. Kafedra khimii rasteniy Sredneaziatskogo Gosudarstvennogo universiteta, Tashkent.

(Anabasine)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8

SADYKOV, A.; OTROSHCHENKO, O.; YUSUPOV, M.

Synthesis based on anabasine. Part 6. Amination of anabasine, N-methylanabasine, and nicotine. Zhur.ob.khim. 23 no.6:980-982 Je '53. (MLRA [illegible])

1. Sredneaziatskiy Gosudarstvennyy universitet. Kafedra khimii rasteniy. (Anabasine)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001238520020-8"