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L 31172-66 EWT(1)/EWT(m)/T/EWP(t)/EWA(h) IJP(c) JD/AT
ACC NR: AP6006824 SOURCE CODE: UR/0181/66/008/002/0424/0427

AUTHOR: Vakulenko, O. V.; Lisitsa, M. P.

ORG: Kiev State University im. T. G. Shevchenko (Kievskiy gosudarstvennyy uni-
versitet)

TITLE: Absorption of thermally excited carriers in germanium

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 424-427

TOPIC TAGS: semiconductor carrier, thermal excitation, germanium semiconductor,
absorption spectrum

ABSTRACT: The authors studied the absorption spectrum of natural germanium at 390, 403, 490 and 530°K and that of heavily doped p-Ge at room temperature in the 1-10 μ wavelength range. The doped specimen was a gallium-activated germanium plate 2.2 \cdot 10⁻³ cm thick. Relatively pure natural specimens were selected in which there was no absorption by free carriers at room temperature. A comparison of theoretical and experimental data shows satisfactory agreement for the absorption maximum in the K₁₃ band. The results indicate that the principal mechanism responsible for

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thermal excitation of carriers in *p*-germanium is interband absorption. The theory of structural absorption by holes in germanium agrees with the experimental data for both pure and doped specimens. This type of excitation is practically independent of indirect transitions and consequently of the type of carrier scattering. Orig. art. has: 3 figures, 1 table, 5 formulas.

SUB CODE: 20/

SUBM DATE: 12Jul65/

ORIG REF: 001/

OTH REF: 010

Card 2/2 *LC*

L 29919-66 EWT(1)/EWT(m)/I/EWP(t)/ETI IJP(c) GG/JD

ACC NR: AP6018038

SOURCE CODE: UR/0185/66/011/006/0653/0657 49

AUTHOR: Vakulenko, O. V.; Lysytsya, M. P.--Lisitsa, M. P.; Zayets', V. D.--Zayets, B. V. D.ORG: Kiev State University im. T. G. Shevchenko (Kyyivs'ky derzhuniversitytet); Institute of Semiconductors, AN URSR, Kiyev (Instytut napivprovidnykiv. AN URSR)TITLE: Infrared spectrum of neutron-irradiated silicon 19SOURCE: Ukrayins'ky fizychnyy zhurnal, v. 11, no. 6, 1966, 653-657

TOPIC TAGS: neutron irradiation, irradiation damage, irradiation effect, absorption spectrum

ABSTRACT: An investigation was made of the ²⁷Si absorption spectrum in the range of wavelengths from 1 to 25 μ before and after irradiation with neutrons. A polished p-type Si specimen 2.13 mm thick with a specific resistance of $\rho = 5$ ohm \cdot cm was irradiated with neutrons with an average energy of 2 Mev and an integral flux intensity of 10^{18} neutrons/cm². The temperature of the specimen in the reactor did not exceed 100C. The investigation showed that the absorption band at $\lambda = 1.8 \mu$ is apparently not linked to residual impurities whose concentration does not exceed 10^{15} cm⁻³. The concentration of centers responsible for this absorption, calculated using the Kravets integral, should be approximately 2×10^{17} cm⁻³. Numerous defects—Si vacancies caused by irradiation—play an important role in the creation of these centers. It is possible also that hydrogen or carbon, whose concentration in the

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ACC NR: AP6018038

specimen reaches 10^{19} cm^{-3} , plays a definite role in the creation of centers producing the band at $\lambda = 1.8 \mu$. It is assumed, however, that the band at $\lambda = 1.8 \mu$ arises as a result of the transition of an electron from the valence band to the level of $E_c - 0.40 \text{ ev}$. The absorption at $\lambda = 12 \mu$ is explained by the existence of Si-A-centers Si-vacancies, created by neutron irradiation, even at room temperature cannot produce stable centers because of high mobility. The Si-A-centers are created when the Si-vacancies are attached to oxygen atoms. Orig. art. has: 3 formulas and 4 figures. [JA]

SUB CODE: 18/ SUBM DATE: 13Jul65/ ORIG REF: 007/ OTH REF: 008/ ATD PRESS: 5011

Card 2/2 CC

L H1600-66 EWT(l)/EWT(m)/T/EWP(t)/ETI IJP(c) ID

ACC NR: AF6018528

SOURCE CODE: UR/0181/66/008/006/1698/1701

AUTHOR: Vakulenko, O. V.; Lisitsa, M. P.; Kononets, Ya. F. 85
BORG: Kiev State University im. T. G. Shevchenko (Kiyevskiy gosudarstvennyy univer-
sitet)TITLE: Infrared absorption by carriers in lead sulfide 17 27SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1698-1701TOPIC TAGS: lead compound, sulfide, ir absorption, electron density, Hall effect,
absorption edge, carrier scattering

ABSTRACT: The absorption spectrum of PbS was investigated in the range $\lambda = 3 - 15 \mu$ at temperatures 293 and 100K. The measurements were made on a small single crystal (0.22 mm thickness). The electron density necessary for comparison with theory was obtained from Hall-effect measurement and was found to be $2 \times 10^{17} \text{ cm}^{-3}$ at room temperature. The spectra exhibit a characteristic shift of the absorption edge towards longer wavelengths with decreasing temperature, and also a decrease in the absorption by the free carriers. The values of the absorption coefficient at the minimum of the absorption curve ($\approx 18 \text{ cm}^{-1}$) was found to be independent of the temperature. After illumination of this background, which is apparently connected with mechanical defects, the coefficient of absorption by the free carriers is found to be proportional to $\lambda^{2.8 \pm 0.2}$, accurate to within 20%. Arguments are presented to show that the absorption by the free carriers in PbS is not due to the impurity scattering mechanism,

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ACC NR: AF6018528

but to scattering by optical phonons. Orig. art. has: 3 figures and 4 formulas.

SUB CODE: 20/ SUBM DATE: 19Oct65/ ORIG REF: 004/ OTH REF: 013

ms
Card

2/2

VAKULENKO, S.M., insh.

Workers of railroad car repair shops in Taiga are producing
in excess of set norms. Zhel.dor.transp. 42 no.1:70-73
Ja '60. (MIRA 13:5)

1. Nachal'nik vagonnogo depa, stantsiya Tayga.
(Tayga--Railroads--Repair shops)

ZYUZIN, Ivan Ivanovich; VAKULENKO, Sergey Mikhaylovich; SARANTSEV,
Yu.S., red.

[Organization and technology of the repair of freight cars;
work practices of the Taiga Station depot of the Western
Siberia Railroad] Organizatsiia i tekhnologia remonta gru-
zovykh vagonov; opyt raboty vagonnogo depo st. Taiga Zapadno-
Sibirskoi dorogi. Moskva, Transport, 1964. 74 p.
(MIRA 17:9)

VAKULENKO, S.M.

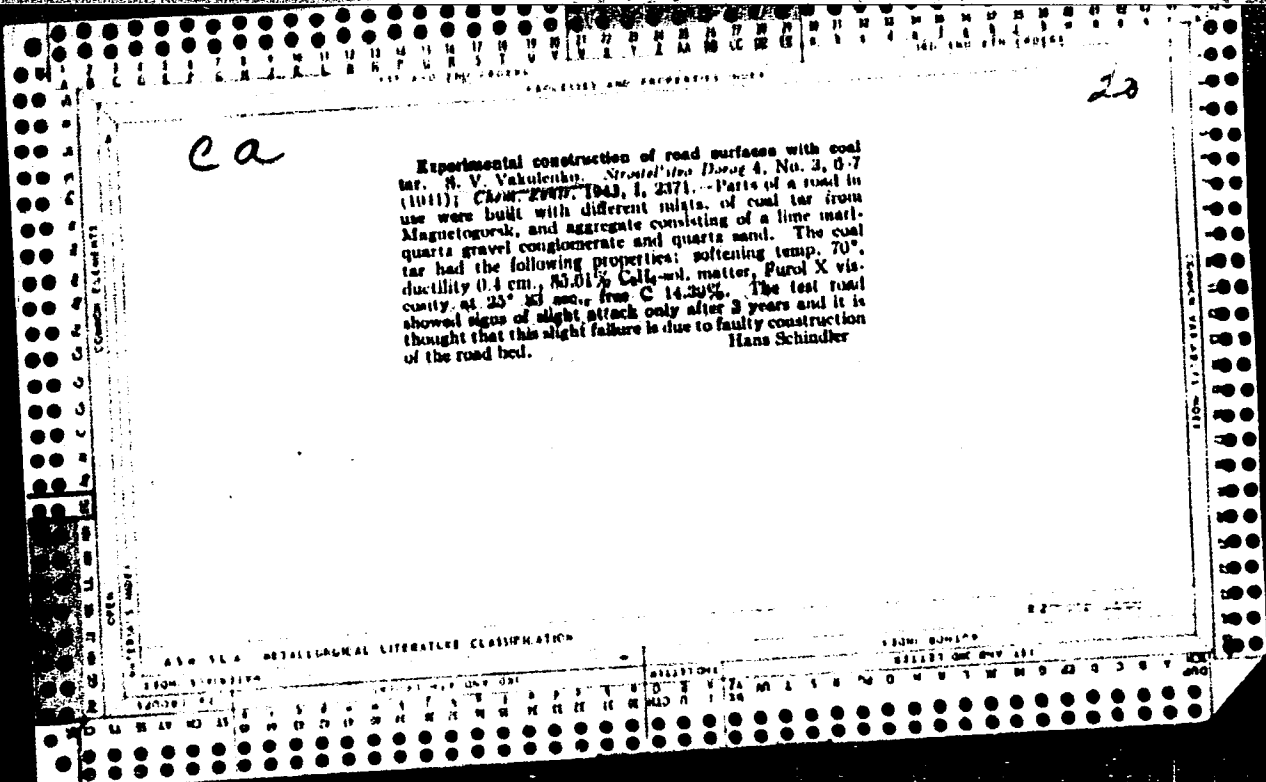
Overall mechanization as the base of advanced technological
processes. Zhel. dor. transp. 46 no.4:78-82 Ap '64. (MIRA 17:6)

1. Nachal'nik vagonnogo depo stantsii Tayga Zapadno-Sibirskoy
dorogi.

KOVALEV, M.M.; VAKULENKO, S.N.

State of the blood coagulation system in various forms of goiter.
Probl. endok. i gorm. 11 no.2:22-27 Mr-Apr '65. (MIRA 18:7)

1. Kafedra gosptal'noy khirurgii (zav. -- prof. M.M.Kovalev)
Kiyevskogo meditsinskogo instituta i 3-ye khirurgicheskoye ot-
deleniye klinicheskoy bol'nitsy im. Oktyabrskoy revolyutsii
(glavnyy vrach V.F.Alekseyev).



MINDLIN, N., inzh.; VAKULENKO, T., inzh.; YEREMEYEVA, G., inzh.

The 6F4P triode-pentode. Radio no.9:54-55 S '63. (MIRA 16:12)

~~VAKULENKO, V.~~

Manufacture of flat rubber sleeves for hydraulic propeller
removing devices. Mor.flot 19 no.6:32 Je '59.

(MIRA 12:9)

(Rubber goods) (Hydraulic machinery) (Propellers)

VAKULENKO, V.

Flat collar on hydraulic tools for the removal of propellers. Mor.
flot 18 no.3:23 Mr '58. (MIRA 11:4)

1. Vedushchiy inzhener Tsentral'nogo konstruktorskogo byuro
sudostroitel'noy promyshlennosti.
(Ships--Maintenance and repair)

ZHUKOV, A.I.; KAZAITSEV, Ye.I.; YREULIKHIN, V.A.

Separation of thorium and uranium (VI) on K-1 resin. Izv.
prikl. khim. 38 no.1:43-47 Ja '65. ISSN 18:5,

1. Ural'skiy politekhnicheskii institut imeni Kirova.

VAKULENKO, V.D.

Machine cuts the sand ballast. Put' i put.khoz. 7 no.9:21 '63.
(MIRA 16:10)

1. Glavnyy inzh. putevoy mashinnoy stantsii No.121, stantsiya
Novograd-Volynskiy, Yugo-Zapadnoy dorogi.

VAKULENKO, V.D.

Improving the technology for cutting out ballast sections in
track overhauling. Put' 1 put. khoz. 8 no.5:20-21 My '64.
(MIRA 17:6)

1. Glavnyy inzh. putevoy mashinnoy stantsii No.121, stantsiya
Novograd-Volynskiy 1, Yugo-Zapadnoy dorogi.

VAKULENKO, V.I., nauchnyy sotrudnik (Odesa)

Methods of physical therapy following uranoplasty. Probl. chel.-lit.
khir, no.1:80-82 '65. (MIRA 18:10)

VAKULENKO, V.I., nauchnyy sotrudnik

Treatment of congenital cleft palate. Trudy Nauch.-issl.inst.stom.
no.10:34-40 '62. (MIRA 15:10)

(PALATE, CLEFT)

VAKULENKO, V.I., nauchnyy sotrudnik

Preventing the formation of postoperative defects following
uranoplasty in partial nonpenetrating cleft palate. Trudy Nauch.-
issl.inst.stom. no.10:41-44 '62. (MIRA 15:10)
(PALATE--SURGERY) (PLATE, CLEFT)

VAKULENKO, V.I.

Treatment of congenital cleft palate. Vrach. delo no.10:145-147 0 '61.
(MIRA 14:10)

1. Otdel chelyustno-litsevoy khirurgii (zav. - doktor med.nauk G.I. Semenchenko) Odesskogo nauchno-issledovatel'skogo instituta stomatologii.
(PALATE, CLEFT)

KOVALENKO, Yevgeniy Ivanovich; VAKULENKO, V.P., redakter; MAKAROVA, A.N.,
tekhicheskiy redakter.

[Labor organization and discipline on collective farms] Organizatsiia
i distsiplina truda v kolkhose. Moskva, Gos.isd-ve iurid. lit-ry.
1955. 62 p. (Collective farms) (MLRA 9:5)

V. P. VAKULENKO
KAZANTSHEV, Nikolay Dmitriyevich; VAKULENKO, V.P., red.; SHCHEDRINA, N.L.,
tekhn.red.

[The charter of the agricultural artel] Ob ustave sel'skokhoziaist-
vennoi arteli. Izd.2-oe, ispr.1 dop. Moskva, Gos.isd-vo iurid.
lit-ry, 1957. 65 p. (MIRA 10:12)

(Collective farms)

PANKRATOV, Ivan Ferisovich; VAKULENKO, V.P., red.; KOSAROVA, Ye.N.,
tekhn.red.

[Legal forms of the responsibility of collective-farm officials]
Pravovye formy otvetstvennosti delzhnostnykh lits kolkhovov.
Moskva, Gos.izd-vo iurid.lit-ry, 1959. 198 p. (MIRA 13:6)
(Collective farms--Officials and employees)

RABINOVICH, G.I.; VAKULENKO, V.T.

Design of dies with grooved inserts. Kuz.-shtam. proizv. 3 no.8:
46-47 Ag '61. (MIRA 14:8)
(Dies (Metalworking))

TIMOFEYEVA, L.S., aspirantka; VAKULENKO, V.V., kand.sel'skokhoz.nauk,
nauchnyy red.

[Biology and cultivation of tulips] Biologiya i kul'tura tiul'panov.
[Moskva] 1959. 5 p. (Akademiya kommunal'nogo khoziaistva,
Informatsionnoe pis'mo, no.5). (MIRA 16:8)

1. Sektor ozeleneniya Akademii kommunal'nogo khozyaystva (for
Timofeyeva).

(Tulips)

VAKULENKO, V.V.

State of the production of flower seeds and measures for its
improvement in the R.S.F.S.R. Trudy Bot.inst.Ser.6 no.7:415-418
'59. (MIRA 13:4)

1. Akademiya kommunal'nogo khozyaystva RSFSR im. K.D.Pamfilova,
Moskva. (Floriculture) (Seed production)

VAKULENKO, V.V., kand.sel'skokhoz.nauk; ALEYNIKOVA, T.M.; BALAKIN, V.M.,
red.; SAYTANIDI, L.D., tekhn.red.

[Annual flowers] Odnoletnie tsvetochnye rasteniia. Sost.V.V.
Vakulenko i T.M.Aleynikova. Moskva, Izd-vo M-va sel'khoz.RSPSR,
1961. 259 p. (MIRA 14:4)

1. Akademiya kommunal'nogo khozyaystva. 2. Akademiya kommunal'nogo
khozyaystva (for Vakulenko, Aleynikova).
(Flowers)

VINOGRADOV, K.A.; ZEMLYANITSKIY, L.T.; NOVOZHILOVA, V.A.[deceased];
LUNEVA, Z.S.; VAKULENKO, V.V.; GALAKTIONOV, I.I.;
ALEKSEYENKO, L.V.; NERONOVA, M.D., red.; KHENOKH, F.M.,
tekhn. red.

[Care of urban plantings] Ukhod za gorodskimi nasazhdeni-
iami. Moskva, Izd-vo Kommun. khoz.RSFSR, 1963. 89 p.
(MIRA 16:7)

1. Akademiya kommunal'nogo khozyaystva.
(Landscape gardening)

NOPI: [Illegible text]

VAKULIN, A.N.; ZABRODIN, P.I.

Study of the solvent flooding process. Izv. AN Azerb. SSR.
Ser. geol.-geog. nauk no.2:104-111 '65. (MIRA 18:8)

EXCERPTA MEDICA Sec.18 Vol.1/1 Cardiovascular Jan 57

279. VAKULEV A. N. 2nd Med. Inst., Moscow *Indications and results of surgical treatment in mitral stenosis (Russian text)* Khirurgija 1956, 4 (6-9)

Data are given on 124 operations for enlargement of the left atrio-ventricular orifice, and on 4 cases of exploratory cardiomy (in patients with mitral insufficiency not recognized before surgical intervention). The diagnosis of the defect was carried out essentially by the usual clinical methods, the chief one being auscultation. Attention is drawn to the fact that the application of all possible methods of investigation (including phonocardiography) cannot exclude diagnostic mistakes in recognizing the character of the defect, the degree of stenosis and insufficiency of the mitral valve. Significance is attached to the method of cardiohaemodynamography, proposed by E. B. Babski in 1951. In an analysis of the cardiohaemodynamogram, it is possible to determine the duration of the phases of the cardiac cycle and judge the effectiveness of the work of the heart. It is stressed that the cardiohaemodynamographic investigation gives considerably more information than the ballistocardiograph, the ECG and so on. The patients with mitral stenosis were divided into 5 groups according to the stage of the disease. Forty-one patients (33.1%) were placed in the 2nd group, 19 (15.3%) in the 3rd group and 64 (51.6%) in the 4th group. No operation was performed on patients with the first stage of the disease. In the 2nd group mortality was 7.3% after operation, in the 3rd group 21%. The highest mortality was produced by operation in the 4th group (31.2%) and the operation rarely led to a significant improvement in the patients' condition. However, it was not considered possible to refuse these patients operation since

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ONT.

the prognosis of the disease was bad. The presence of flutter and the marked enlargement of the heart cavities and also active rheumatism were not absolute contraindications to operation. The operations were performed under intratracheal anaesthesia or a local anaesthetic. The latter was applied in severe forms of the defect. From the end of 1954 a mechanical suture has been used to close the incision of the valvotomy. Complications on the operating table are indicated by 5 cases of tearing of the valve and the wall of the atrium: 2 patients died from haemorrhage, in 3 the tear was quickly sewn up and recovery was uneventful. The other patients were followed up for a period of 1 to 3 yr. after the operation in 50 patients. In the 2nd and 3rd stages of the disease a good or excellent result was observed in 24 out of 28 patients; in the 4th stage a considerable improvement was noted in 12 out of the 22 operated upon.

Gadshiev - Leningrad

VAKULIK, P.Ye. [Vakulyk, P.IB.]

Investigating the strain of the support frame of the 5-4 self-propelled combine by static tests with the electric strain gauge.
Nauk. pratsi Inst. lyv. vyrob. AN URSR 7:54-80 '59. (MIRA 14:1)
(Combines (Agricultural machinery))
(Strains and stresses)

VAKULIK, P.Ye. [Vakulyk, P.IE.]

Investigating the dynamic strain of the support frame elements of
the S-4 self-propelled combine by electric strain gauging. Nauk.
pratsi Inst. lyv. vyrob. AN URSS 7:81-107 '59. (MIRA 14:1)
(Combines (Agricultural machinery))
(Strains and stresses)

VAKULIK, P. Ye.:

VAKULIK, P. Ye.: "Investigation of the forces and stresses in the bearing structure of the self-propelled S-4 grain-harvesting combine (using electrotensometry)." Min Higher Education USSR. Ukrainian Order of Labor Red Banner Agricultural Academy. Kiev, 1956.
(Dissertation for the Degree of Candidate in Technical Sciences)

So: Knizhnaya Istoria', No. 18, 1956

VAKULIN, A. A.

"Forest Growth Conditions on the Sands in the Lower Course of the Medvedista and Khoпр Rivers and the Pine Crops on Them." Cand Agr Sci, Saratov Agricultural Inst, Min Crops USSR, Saratov, 1954. (XL, No 7, Feb 55)

SO: Sum. No. 631, 26 Aug 55- Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

VAKULIN, A.A.; V'YUNOV, S.F.; GORIN, T.I.; IVASHCHENKO, P.S.; KOMOVA, A.G.; KORNEV, V.A.; KOROSTELEVA, M.Ya.; LOBACHEV, A.Ya.; LASHMANOV, I.Ya.; MALYCHENKO, V.V.; MOROZOVA, A.M.; PANSHIN, I.A.; PROSVIROV, A.S.; ROZHKOVA, M.V.; YUROVA, N.F.; FEDORENKO, V.P.; TSEKHMISTRENKO, P.Ye.; SHEVCHENKO, I.S.; FEDOROV, N.A., red.; IZHBOLDINA, S.I., tekhn.red.

[Brief manual on the cultivation of fruits, berries, and grapes and the management of nurseries in Stalingrad Province] Kratkii spravochnik po plodovo-iagodnym kul'turam, vinogradu i pitomnikam dlia Stalingradskoi oblasti. Stalingrad, Stalingradskoe knizhnoe izd-vo, 1960. 215 p. (MIRA 14:3)

1. Stalingrad (Province) Upravleniye sel'skogo khozyaystva. (Stalingrad Province--Fruit culture)

IVANOV, A.F.; VAKULIN, A.A.

Main sand-fixing plants in the deserts and semideserts of Inner
Mongolia (Chinese People's Republic). Bot.zhur. 47 no.11:1680-
1684 N '62. (MIRA 16:1)

1. Volgogradskiy sel'skokhozyaystvennyy institut.
(Mongolia—Desert flora)

PLYUSHCH, A.M.; VAKULIN, A.N.

Experience in the use of solvents to increase petroleum
recovery. Nefteprom. delo no.4:36-39 '63. (MIRA 17:8)

ZABRODIN, P.I.; PRUSLIN, Ya.A.; VAKULIN, A.N.

Laboratory investigations of the flooding of unrecovered oil
from a flooded reservoir with solvents. Trudy VNII no.42:143-
152 '65. (MIRA 18:5)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

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Hibiscus as a source of oil. D. Yakulin, *Mashobino Zhivorez Dala* 11, 496(1935).—Seeds of Russian and German *Hibiscus trionsum* L. produced 23.8 and 21.77% of oil, resp. The related varieties *Hibiscus cannabinus* and *Abutilon avicennae* gave 17-19% oil. Chas. Blanc

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

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EXDOW SYDIBDLYV SYDIBDLYV GNY GNY GNY SYDIBDLYV

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

Handwritten initials: *ca* (top left) and *71* (top right).

Fatty oil of fennel. D. Vakulin. *Mashchinsko Zhitovno*
Dela 11, 614(1935).—It was found that fennel seeds
(*Foeniculum officinale*) after extrn. of ethereal oil contain
18.23% of fatty oil based on the oven-dry material.
Chas. Blanc

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

GROUP	CLASS	SUBCLASS	SECTION	SUBSECTION	ITEM
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PROCESSES AND PROPERTIES INDEX

Yield of essential oil by a new variety of dragonhead (*Dracocephalum Moldavica*, L., var. *hexagonum*, D. Vakulla) from different seed samples. D. J. Vakulin. *Compt. rend. acad. sci. U. R. S. S.* 15, 203-6 (1937). The yield of essential oil varies from 0.133 to 0.627% of the dry wt. The hexagonal-stemmed variety always gave a higher yield of oil than the common square-stemmed type both in full flower and at the stage of fading. B. C. A.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

COMMON VARIETIES INDEX

OPEN MATERIALS INDEX

ALPHABETIC INDEX

SYMBOLIC INDEX

CROSS INDEX

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100 AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

72

Oil consists of various forms of *Lallemantha*. D. Ya. Yakulin and M. Ya. Koltman. *Compt. rend. acad. sci. U. R. S. S.* 24, 192-4(1939).—Four Russian strains of *L. ibérica*, F. and M., and one strain from Madrid were exam'd. for oil content (27.1-31.5%); the oils had d₄²⁰ 0.9335-0.9349, n_D²⁰ 1.484-1.486, sapon. values 189.8-195.25, I values 177.5-197. All the oils were dry after 72 hrs. and are suitable for linseed oil substitutes.

B. C. P. A.

ASME-51A METALLURGICAL LITERATURE CLASSIFICATION

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SECTION TWELVE ONLY 131

SECTION THIRTEEN ONLY 131

SECTION FOURTEEN ONLY 131

SECTION FIFTEEN ONLY 131

SECTION SIXTEEN ONLY 131

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SECTION EIGHTY NINE ONLY 131

SECTION NINETY ONLY 131

SECTION NINETY ONE ONLY 131

SECTION NINETY TWO ONLY 131

SECTION NINETY THREE ONLY 131

SECTION NINETY FOUR ONLY 131

SECTION NINETY FIVE ONLY 131

SECTION NINETY SIX ONLY 131

SECTION NINETY SEVEN ONLY 131

SECTION NINETY EIGHT ONLY 131

SECTION NINETY NINE ONLY 131

SECTION ONE HUNDRED ONLY 131

VAKULIN, D. Ya.

"Reaction of Lallelantia to Reduced Diurnal Illumination at Various Development Periods," Dok. AN, 53, No. 4, 1946

VAKULIN, D.Ya., prof. (Odessa)

Leaf fall. Priroda 54 no.11:126-127 '65.

(MIRA 18:11)

ANNENKOV, V.A., kand.t.khm.ranks VAKULICH, V.S., inzh.; HUGHENKO, I.G.;
ROCOZHIN, P.A.

Treaded packing of a molding vulcanizer. Khim. i nef. mashinostr.
no.2:40 F '65. (MIRA 18:4)

VAKULOV, A.A.

Measuring of fabrics. Tekst. pron. 19 no.11:82-84 N '59.
(MIRA 13:2)

(Textile fabrics--Measurement)

VAKULOV, K.V.; YEFREMOVA, A.S.; MIKHEYENKO, A.K.

Repair and reconstruction of semiacid refractory laying of compartment ovens at the "Slantsy" combine. Trudy VNIIT no.10:29-43 (MIRA 15:3)
'61.

(Ovens)

VAKULOV, N., inzh.; SERGEYEV, A., inzh.

Maintenance of the motorship "Mamadysh." Rech. transp. 22 no.8:30
Ag '63. (MIRA 16:10)

1. Upravleniye Volzhskogo ob'yedinennogo rechnogo parokhodstva.
(Ships—Maintenance and repair)

VAKULOV, N., inzh.

Eight navigation seasons without the necessity of medium-type repairs.
Reqd. transp. 22 no.6:45 Jo '63. (MIRA 16:9)
(Ships--Maintenance and repair)

VAKULOV, Nikolay Fedorovich; KOMOGORTSEV, P.Ya., red.; GAYDENKOV, V.M.,
retsensent; VIKOGHADOVA, N.M., red.izd-va; YERMAKOVA, T.T.,
tekhn.red.

[Heat-power equipment of hoisting and conveying machinery]
Teplosilovoe oborudovanie pod'emno-transportnykh mashin. Moskva,
Izd-vo "Rechnoi transport," 1959. 226 p. (MIRA 13:3)
(Hoisting machinery) (Conveying machinery)
(Heat engines)

VAKULOV, Nikolay Fedorovich; GAYDENKO, V.M., retsenzent; KOSUL'NIKOV,
N.K., retsenzent; MAKRUSHINA, A.N., red.izd-va; RIDNAYA, I.V.,
tekhn. red.

[Diesel and electric crane operator's manual] Posobie kranov-
shchiku dizel'nogo i elektricheskogo krana. Moskva, Izd-vo
"Rechnoi transport," 1961. 202 p. (MIRA 15:12)
(Cranes, derricks, etc.)

VAKULOV, P.U.

ISSUE I BOOK REFLECTIONS 807/2894

29(2)

Abstracts book 808

Laboratory experiment. 779. 2; Multibody astronomy (astronomy, celestial mechanics) and astrophysics. 779. 2; Results of scientific studies (Artificial Earth Satellites. Pt. 2; Results of Scientific Studies Obtained by the Third Earth Satellite) Moscow, Izdat. M. SSSR, 1958. 82 p. 3,500 copies printed.

Ed.: I. V. Kuznetsov; Ed. of Publishing House: D. M. Akhmetov; Tech. Ed.: N. V. Rykova.

PURPOSE: This work is intended for geophysicists, meteorologists, and other scientific and technical personnel engaged in space exploration and research. CONTENTS: This collection of articles contains certain of the scientific findings recorded by the third earth space satellite. Much of the data from other rocket and satellite investigations is included. The articles are based on papers originally read at the Fifth Assembly of the

Card 1/4

Special UN Committee held in Moscow in August, 1958. Individual articles discuss the ionic composition and density of the atmosphere, the thermodynamic parameters of the stratosphere, and questions dealing with the motion of the satellite. References accompany each article.

- Kuznetsov, I. I. Soviet Research of the Ionosphere by Means of Rockets and Artificial Earth Satellites 36
- Podinov, S. Sh., L. K. Duzguy, and E. V. Pukhov. Preliminary Report on Geomagnetic Measurements on the Third Soviet Artificial Earth Satellite 30
- Kozlov, G. D., V. S. Muzayev, I. B. Kuznetsov, G. M. Polshakov, and L. Z. Buzina. Studies of Microwave Scattering by Rockets and Satellites 34
- Kuznetsov, I. I., N. M. Fubail, G. A. Rukosuev, G. I. Zakharov, and V. M. Zhurav. Investigation of the Ionosphere by the Third Artificial Earth Satellite 32
- Kuznetsov, I. I., E. V. Pukhov, P. V. Gorbunov, N. I. Kozlov, and A. I. Kozlov. Study of the Soft Component of Cosmic Rays Beyond Atmospheric Limits 61
- Kuznetsov, I. I., L. A. Muraviov, and M. I. Kudach. Heavy Nuclei in Primary Cosmic Radiation 70

- Artificial Earth Satellites (cont.) 807/2894
- Shvilya, V. S., A. P. Izrael, and V. E. Shchegolev. Solar Batteries 75
- Zakharchuk, M. I. and S. A. Roz. Accoustical Method of Measuring the Mechanical Parameters of Meteorites 61

AVAILABLE: Library of Congress

Card 1/4

M/21
12-10/59

VERNOV, S.N.; VAKULOV, P.V.; GORCHAKOV, Ye.V.; LOGACHEV, Yu.I.;
CHUDAKOV, A.Ye.

Studying the soft component of cosmic rays beyond the atmosphere
limit. Isk.sput.Zem. no.2:61-69 '58. (MIRA 12:5)
(Cosmic rays) (Artificial satellites)

SOV/20-125-2-16/64

24(7), 24(8)
AUTHORS:

Vernov, S.N., Corresponding Member, AS USSR,
Chudakov, A.Ye., Vakulov, P.V., Logachev, Yu.I.

TITLE:

Investigation of Terrestrial Corpuscular Radiation and of
Cosmic Rays During the Flight of a Cosmic Rocket (Izucheniye
zemnogo korpuskulyarnogo izlucheniya i kosmicheskikh luchey pri
polete kosmicheskoy rakety)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 2, pp 304 - 307 (USSR)

ABSTRACT:

The rocket launched on January 2, 1959 in the direction of the
moon had apparatus for recording cosmic- and terrestrial corpuscular
radiation on board. By the latter the authors mean the fluxes of
fast charged particles in great altitudes, for which the terrestrial
magnetic field is a so-called "magnetic trap". The particles were
recorded by 2 Geiger-counters and 2 scintillation-counters. The
first apparatus, with scintillation-counter, was a constructive
further-development of the device which the authors had built into
the third Soviet Sputnik. A cylindrical sodium-iodide crystal
served as a detector. The authors, above all, described the results
obtained by the preliminary evaluation of the data ascertained in
altitudes of from 8000 to 150000 km (from the center of the earth).
A schematical drawing shows the trajectory of the rocket with

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Investigation of
Radiation and of

Terrestrial Corpuscular
Cosmic Rays During the Flight of a Cosmic Rocket

SOV/20-125-2-16/64

respect to the terrestrial magnetic field. The intensity maximum is ~26000 km from the center of the earth. At a distance of 55000 km the intensity of terrestrial corpuscular radiation becomes practically equal to zero, and the remaining ionization in this distance is entirely due to cosmic radiation. According to the authors' opinion the particles oscillate along the lines of force symmetrically to the equatorial plane. The increase of intensity along a given line of force in the transition from low to high altitudes serves as an experimental proof for this assumption. The particle flux is directed not only towards one side, and, in any case, the predominant part of the particles undergoes complete reflection when approaching the earth, and is therefore subjected to oscillations from one hemisphere to the other. The trajectory of the rocket nowhere intersects the so-called "internal zone". . . Actually, the apparatus built into the cosmic rocket in no range of their trajectory record particles of high energy which are characteristic of the inner zone. On the other hand, the composition of radiation is very similar to that observed by means of the third Sputnik in polar regions. Next, the composition of radiation in the outer zone with

Card 2/3

Investigation of Terrestrial Corpuscular SOV/20-125-2-16/64
Radiation and of Cosmic Rays During the Flight of a Cosmic Rocket

high intensity is dealt with. In the center of the outer zone, where particle density is the greatest, the effective energy of electrons is minimal. In conclusion, cosmic radiation is dealt with. Beginning with a distance of 66000 km, the intensity of all components remains constant. The strict constants of all components at distances of from 66000 to 150000 km indicates the existence of a radiation upon which the terrestrial magnetic field exercises no influence. Therefore, either the terrestrial magnetic field vanishes at a distance of 10 earth-radii, or there are no particles with momenta of

$1.5 \cdot 10^8$ to $4 \cdot 10^7$ ev/c in interplanetary space. The energy-flux of the photons is very low and contributes partly nothing to ionization. There are 2 figures and 4 Soviet references.

SUBMITTED: February 25, 1959

Card 3/3

VERNOV, S.N.; CHUDAKOV, A.Ye.; VAKULOV, P.V.; LOGACHEV, Yu.I.; Nikolayev, A.G.
Associate Member, Academy of Science, USSR

"Radiation Measurements During the Flight of the Second Soviet
Space Rocket."

report presented at the First Intl Space Science Symposium, Nice, France, Jan 1960.
National Academy of Sciences of the USSR, Moscow.'

VAKULOV, P. V.

PHASE I BOOK EXHIBITION

SOV/2882

Abstracts and SOV

Iskusstvennyye spetsial'nyye volny, 7P. 5 (Artificial Earth Satellites, No. 5) Moscow, Izdatel'stvo MFTI, 72 P. Earth 21p inserted. 7,000 copies printed.

Author: M. I. V. Dymovskiy. Ed. of Publishing House: M. I. Fedotkin; Tech. Ed.: O. M. Oshchepkova.

Notes: The booklet is intended for scientists and engineering and scientific personnel working in the field of space travel and satellite flight.

Subjects: The collection of 10 articles deals with problems of satellite orbits, magnetic measurements, radiation, the reliability of space vehicles, the upper atmosphere, and meteoric substances. 50 personalities are mentioned. References accompany some of the articles.

Author: S. Sh. D. G. Troshchinskii, L. K. Duzgort, J. I. Popylov, and L. G. Zhuravskaya. Magnetic Measurements on the Second [Series] Space Rocket 15

Author: S. Sh. D. G. Troshchinskii, L. K. Duzgort, J. I. Popylov, and L. G. Zhuravskaya. Radiation Measurement in the Flight of the Second Space Rocket 24

Author: L. V. V. I. Logvinov, L. A. Nekozhnyy and M. I. Fedotkin. Investigation of Cosmic Radiation in the Flight of the Second Space Rocket to the Moon 30

Author: T. B. Results of the Investigation of Meteoric Substances With the Help of Instruments Mounted in Space Rockets 38

Author: S. I. P. Some Problems of Control in Interplanetary Space 41

Author: A. D. Determining the Problem of the Formation of PO⁺ in the Upper Atmosphere 60

Author: L. B. Oscillations of Signals from the Third Soviet Artificial Earth Satellite from One Conjunction 66

Author: I. M. and O. V. Gurev. Change of the Altitude of the Artificial Earth Satellite Resulting from the Action of External Factors 71

AVAILABILITY: Library of Congress

Card 3/3

SOV/2882
11-50-60



VERNOV, S.N.; CHUDAKOV, A.Ye.; VAKULOV, P.V.; LOGACHEV, Yu.I.;
NIKOLAYEV, A.G.

Measurement of radiation during the flight of the second
cosmic rocket. Isk.sput.Zem. no.5:24-29 '60.

(MIRA 13:5)

(Lunar probes) (Radiation--Measurement)

67908

3.9000
3.2000
~~29 (2), 29 (5)~~

S/020/60/130/03/009/065
B014/B014

AUTHORS: Vernov, S. N., Corresponding
Member of the AS USSR, Chudakov, A. Ye.,
Vakulov, P. V., Logachev, Yu. I., Nikolayev, A. G.

TITLE: Radiation Measurement During the Flight of the Second Cosmic
Rocket ✓

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 3, pp 517 - 520
(USSR)

ABSTRACT: The equipment of the interplanetary rocket launched on September 12, 1959 was designed for measuring the outer radia-
tion belt of the Earth, for recording cosmic radiation on its tion belt of the Earth, for recording cosmic radiation on its flight from the Earth to the Moon and a potential radiation belt of the Moon. ✓ The individual parts of the apparatus, which consisted of six gas-discharge and four scintillation counters, are described in detail. Furthermore, this paper contains results of the first evaluation of data obtained for the range of from 9,000 to 120,000 km away from the center of the Earth and in the neighborhood of the Moon. Figure 1 illustrates the trajectories of the first and second interplanetary rockets referred to the terrestrial magnetic field. Ionization measure- ✓

Card 1/3

67908

Radiation Measurement During the Flight of the
Second Cosmic Rocket

S/020/60/130/03/009/065
B014/B014

ments are also graphically represented in figure 1. It is noted that the shift of the ionization maximum between the two measurements was not caused by the slight difference of the trajectories of the two rockets. The radiation belt is most probably deformed by streams of solar corpuscles. This assumption seems to be confirmed by a comparison with the results of measurements performed by the American rocket Pioneer III. The energy-flux density of electrons of more than 5 Mev or of protons of more than 30 Mev is said to be

1 particle/cm².sec. Furthermore, a radiation was detected which consisted of electrons having an energy of the order of 10⁶ ev, or of protons of an energy of about 10 Mev. The first possibility is considered to be more probable. This electron flux is said to be 5.10⁵ particles/cm².sec. The existence of electron fluxes having an energy of between 20 and 50 kev (flux: 10¹⁰ particles/cm².sec), which had already been detected by the first intercontinental rocket, were proven again. Thus, two essential groups of particle fluxes were found: electrons

Card 2/3

67908

Radiation Measurement During the Flight of the
Second Cosmic Rocket

S/020/60/130/03/009/065
B014/B014

of about 20 kev and 10^6 ev electrons. The energy of the first group is close to the mean energy of the solar corpuscular radiation and allows to assume the existence of a thermodynamic equilibrium between protons and electrons on their penetration into the terrestrial magnetic field. It is pointed out that the electron momenta of the second group are close to the proton momenta of corpuscular radiation and to the momenta of the electrons arising from the decay of the reflected neutrons. The existence of a lunar radiation belt could not be proven. Constant radiation intensity was measured at a distance of 70,000 km from the Earth. There are 2 figures, 1 table, and 2 references, 1 of which is Soviet. ✓

SUBMITTED: November 20, 1959

Card 3/3

34350

S/203/61/001/006/002/021
D055/D113

9,6150

3.2420 (1049, 1482)

AUTHORS: Vernov, S.N.; Chudakov, A.Ye.; Vakulov, P.V.; Gorchakov, Ye.V.;
Logachev, Yu.I.

TITLE: Radiation measurements in the outer radiation belt on
February 12, 1961, during the rocket flight towards Venus

PERIODICAL: Geomagnetizm i aeronomiya, vol 1, no 6, 1961, 872-874

TEXT: The article deals with data on the Earth's outer radiation belt collected when the Earth-Venus rocket launched on February 12, 1961, was 30,000 - 45,000 km from the Earth's center. The special equipment installed in the hermetic container consisted of a scintillation counter and an ^{CTC-5} (STS-5) gas-discharge counter. The distribution of matter around the NaJ(Tl) crystal and the gas-discharge counter is shown in a table. By reducing the dimensions of the crystal and increasing the resolving power of the electronic system of the counter, the radiation intensity in the belt was correctly registered. Fig. 1 shows the overload characteristics for the counting channels of the scintillation (1) and gas-discharge (2) counters.

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D055/D113

Radiation measurements ...

These channels could register up to 10^6 and 10^5 pulsations/sec. respectively. To penetrate the crystal of the scintillation counter and the working volume of the gas-discharge counter, electrons must have an energy of ≥ 3 Mev, protons - an energy of ≥ 32 Mev and the bremsstrahlung quanta - an energy of ≥ 30 kev. Curves on fig. 2 represent the counting speed of the scintillation counter (1), that of the gas-discharge counter after corrections were made according to the curves in fig. 1 (3) and the energy release in the crystal in relation to the distance from the Earth's center (2). As all three curves were more or less parallel, the mean energy release in the crystal for one reading of the scintillation counter was 130 kev and remained constant between 32,000 and 40,000 km and the mean energy of the bremsstrahlung quanta did not vary with distance. The constancy of the mean energy release showed that no great changes occurred in the spectrum of electrons of the outer radiation belt. A diagram (fig. 3) shows the paths of the interplanetary rocket (curve 1) and those of another three Soviet rockets (curve 2). A comparison of radiation and ionization data concerning the interplanetary rocket and the space rockets no. 1 and 2, showed that the outer radiation belt was stable for a period of 2 years when no magnetic perturbances were recorded. However, this period was not long enough to

Card 2/6 4

Radiation measurements ...

S/203/61/001/006/002/021
D055/D113

evaluate solar effects on the outer belt, but could be taken as an indication of the absence of such an effect. The space rocket no 3 was launched during a moderate magnetic storm (the change in the vertical and horizontal components of the terrestrial magnetic field was about 250 and 150 γ respectively). The external side of the belt was not measured, but the total energy release in the crystal during the entire flight coincided with that calculated for the rocket no 1 and was 1.5 times less than that of the rocket no 2, i.e. no changes occurred in the mean state of the outer zone during the flight of the rocket no 3 during a moderate magnetic storm. Since measurements were started a few hours after the beginning of a magnetic storm, the radiation intensity in the belt had not yet decreased. On the other hand, it is also possible that not all magnetic storms cause the radiation intensity of the Earth's outer radiation belt to decrease. There are 4 figures, 1 table and 3 non-Soviet references. The three English-language references are: W.H. Hess, J. Geophys. Res., 1960, 65, no 10, 3107; P. Rothwell, C.E. McIlwain. J. Geophys. Res., 1960, 65, no. 3, 799; R.L. Arnoldy, R.A. Hoffman, J.R. Winckler, J. Geophys. Res., 1960, 65, no 5, 1361.

Card 3/4

Radiation measurements ...

S/203/61/001/006/002/021
DO55/D113

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Institut yadernoy fiziki (Moscow State University, Institute of Nuclear Physics)

SUBMITTED: September 9, 1961

+

Card 4/8 4

9.6150

34352

S/203/61/001/006/004/021
D055/D113

AUTHORS: Vakulov, P.V.; Goryunov, N.N.; Logachev, Yu.I., and Sosnovets, E.N.

TITLE: Radiation registered during the flights of Soviet artificial satellites and space rockets

PERIODICAL: Geomagnetizm i aeronomiya, v.1 , no.6, 1961, 880-887

TEXT: Methods of registering radiation, based on the use of scintillation and gas-discharge counters and applied in Soviet artificial satellites and space rockets, are described. The registration of weak currents (up to 10^{-10} a) with the aid of a relaxation oscillator on a neon tube is described. The scintillation counters measured the number of particles releasing more energy in the crystal than that determined by the thresholds of the counting devices. Ionization caused by radiation in the entire crystal was also measured. The gas-discharge counters registered charged particles and γ -radiation to an accuracy of $\sim 1\%$. The counters were located behind screens of various materials to facilitate the analysis of radiation according to

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3/203/61/001/006/004/021
D055/D113

Radiation registered ...

penetration. The devices with the counters were located both inside and outside the container with scientific apparatus. For economy the photomultipliers in the counters were fed without a divider by leads from a high-voltage battery direct to the electrodes. Ionization was determined from the currents of the anode and seventh dynode. By using two channels, these currents could be compared in order to estimate how much of the energy produced in the crystal resulted from saturation of the anode current during intense scintillation in the crystal. By this means comparatively high-energy particles could be detected in the inner zone during tests with the third artificial Earth satellite. The use of a single scintillation counter to measure many parameters permitted the weight and size of the device to be reduced but required careful selection of photomultipliers, which had to satisfy the following requirements: (1) there must not be more than one sound impulse per 10 sec. corresponding to energy liberation of above 30 kev in an NaJ(Tl) crystal and there must be practically no impulses corresponding to energy liberation of > 300 kev; (2) leakage current of the seventh dynode $\leq 1 \cdot 10^{-10}$ a; (3) anode dark current $\leq 1 \cdot 10^{-8}$ a; (4) leakage current of the other dynodes of the intervals $\leq 1 \cdot 10^{-7}$ a. The CTC-5(STS-5)

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Radiation registered ...

S/203/61/001/006/004/021
D055/D113

gas-discharge counters used were small and had a low operating voltage (~ 400 v) and a thin wall, which facilitated the recording of low-energy particles. The electronic circuits operating on semi-conductor elements and the calibration method are described in detail. There are 9 figures and 5 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
Institut yadernoy fiziki (Moscow State University imeni
M.V. Lomonosov. Institute of Nuclear Physics).

SUBMITTED: October 12, 1961

+

Card 3/3

89610

S/O20/60/136/002/013/034
B019/B056

9.9130 (1041, 1046, 1060)

AUTHORS: Vernov, S. N., Corresponding Member of the AS USSR,
Chudakov, A. Ye., Vakulov, P. V., Gorchakov, Ye. V.,
Logachev, Yu. I., and Nikolayev, A. G.

TITLE: Radiation Measurements During the Flight of the Third Cosmic
Rocket

PERIODICAL: Doklady Akademii nauk SSSR, ¹⁹⁶¹1960, Vol. 136, No. 2, pp. 322-324

TEXT: The third cosmic rocket launched on October 4, 1959 contained a scintillation counter and three gas discharge counters. All gas discharge counters had a wall strength of 50 mg/cm² steel sheets and were, in addition, surrounded by several shields. Counter I had a shield made from 3 mm lead + 1 mm aluminum with a counter window of 0.28 cm², which was closed by a 0.2 mm thick aluminum sheet. Counter II had the same shield, but without counter window, and counter III was in an aluminum container made from 2.5 mm thick aluminum. The scintillation counter recorded the ionization of the crystal (NaI) and the counting rate. Preliminary results of evaluation of the instrument readings are given from the time from

Card 1/2

89610

Radiation Measurements During the Flight of
the Third Cosmic Rocket

S/O20/60/136/002/013/034
B019/B056

October 4, 1959, to October 18, 1959. The trajectory of the rocket was in practical agreement with that of the first and second cosmic rocket. From a comparison of the readings of the various counters, the authors conclude that the intensities of the particles recorded by the instruments depend on the absorption in the container walls. Measurements in the interplanetary space showed that the cosmic radiation on the boundary of the terrestrial magnetic field is very strong; only individual small fluctuations were recorded. Finally, the agreement existing between the recorded intensities and those of a monitor are dealt with. From these considerations the authors draw the conclusion that the weak variations in the time from October 4 to October 18 are in connection with the variations of the magnetic fields in the solar system and the interactions among the latter are connected with cosmic radiations. There are 1 figure, 1 table, and 3 Soviet references. f

SUBMITTED: October 26, 1960

Card 2/2

3.2420

38967
S/048/62/026/006/013/020
B125/B102

AUTHORS: Vakulov, P. V., Vernov, S. N., Gorchakov, Ye. V., Logachev, Yu. I., Nesterov, V. Ye., Nikolayev, A. G., Pisarenko, N. F., Savenko, I. A., Chudakov, A. Ye., and Shavrin, P. I.

TITLE: Radiation studies during the flights of satellites, spaceships and rockets

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 6, 1962, 758-781

TEXT: This report deals with radiation measurements made by the second and the third Soviet spaceship, by the rocket launched toward the Venus on February 12, 1961, and by the third Soviet earth satellite (August 15, 1958). The spaceships were equipped with scintillation counters, gas discharge counters and elements for storing data through 24 hours. The northern and southern zones of increased radiation intensity are undoubtedly linked by the lines of force of the geomagnetic field. The increased radiation intensity is due to electrons of the outer radiation belt, slowed down in the jacket of the spaceship. The

Card 1/3

Radiation studies during the flights ...

S/048/62/026/006/013/020
B125/B102

boundaries of this belt were determined more accurately by the lower orbiting Soviet spaceship. At 16 hours after the chromosphere flare of June 17, 1958 had vanished but still a few hours before the magnetic storm, charged particle intensity increased. The electron spectrum of the outer radiation belt does not change much at an altitude of 32,000-40,000 km, nor did the magnetic storm which occurred during the flight of the third Soviet spaceship have any substantial effect on the outer radiation belt. Except for a few percent, the proton intensity of the inner radiation belt remained constant during the three weeks' flight of the third Soviet satellite. The increased radiation intensity over the Brazilian anomaly, observed on board of the second spaceship at an altitude of 320 km, was due to the inner radiation belt. In this anomaly, the proton component of the inner radiation belt is predominant at small geomagnetic latitudes. The portion of X-rays increases with increasing latitude. A zone of lower bremsstrahlung intensity separates the outer from the inner radiation belt. This zone is practically absent in the region of the Brazilian anomaly. The equator of cosmic rays determined by the second and the third Soviet spaceship resembles remotely a sine curve running between 11° of northern and 11° of southern latitude.

Card 2/3

Radiation studies during the flights ...

S/048/62/026/006/013/020
B125/B102

Between 60° western and 60° eastern longitude the equator of cosmic radiation lies north of the theoretical sine curve. The general trend of the lines of equal cosmic radiation intensity corresponds in general to the distribution of magnetic rigidity. There are 16 figures and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki
Moskovskogo gos. universiteta im. M. V. Lomonosova
(Scientific Research Institute of Nuclear Physics of the
Moscow State University imeni M. V. Lomonosov).
Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P. N. Lebedev of the Academy of
Sciences USSR)

4

Card 3/3

6
VAKULOV, P.V., VERNOV, S.N., GORCHAKOV, YE.V., LOGACHEV, YU.I.
CHARAKHCHYAN, A.N., CHARAKHCHYAN, T.N., CHUDAKOV, A. YE.

Cosmic rays in the stratosphere and their correlation with
solar activity.

Report to be submitted for Space Research Committee on COSPAR 6th
plenary meeting
Warsaw, Poland 11 June 63-

KOLESNIKOV, A.G.; PANTELEYEV, N.A.; PISAREV, V.D.; VAKULOV, P.V.

Deepwater autonomous turbulence meter, an instrument for recording the turbulent velocity fluctuation and the temperature of the ocean. Okeanologiya 3 no.5:911-921 '63. (MIRA 16:11)

... ..

magnetic field made during the flight of Mars-1 on November 13, 1971.

... ..
are given. The equipment aboard Mars-1 consisted of two scintillation

... ..
distance of 1000 kilometers at a rate of 100 kilometers per hour.

ACCESSION NR: AP4143572

slow and smooth variations in cosmic-ray intensity connected with changes of the magnetic situation in the solar system were reported. The particle fluxes in the solar system were reported.

ADDITIONAL INFO: none

SUBJECT: none

SUB CODE: AA, SV

NO REF SOV: 002

OTHER: 000

TC(V)-3/BEC(m)/FCC/FSF(h)/FSS-2

ionization measurement.
scintillation counter

1. 3110-40
2. 3110-40
a. 3110-40
was mounted under the shell of the shell and was filled with
aluminum shavings. The shell was filled with a mixture of
aluminum shavings and a mixture of aluminum shavings and
aluminum shavings.

mounted under the shell of the shell and was filled with
aluminum shavings. The shell was filled with a mixture of
aluminum shavings and a mixture of aluminum shavings and
aluminum shavings.

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ACCESSION NO: AP000000

bremstrahlung, the photomultiplier and the crystal were shielded

against background radiation. This counter carried out ionization measure-

ments in the range of 0.1 to 100000 counts per second.

APPROVED FOR RELEASE

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ACCESSION NO: 4P610814

201 10 11

no. #	no. 05				
4	STS-5 counter	35 Mev	3 Mev	30 kev	
	CaI crystal				
5	ionization	500 kev	30 kev	1 kev	
6	Threshold, 45 kev	500 kev	80 kev	45 kev	
7	Threshold, 160 kev	660 kev	180 kev	160 kev	
8	Threshold, 1.1 Mev	1.1 Mev	1.1 Mev	1.1 Mev	
9	Threshold, 1.5 Mev	1.5 Mev	1.5 Mev	1.5 Mev	

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L 3227-66 FSS-2/EMT(1)/FS(v)-3/ECC/EWA(d)/EWA(h) TT/OS/GW
ACCESSION NR: AT5023609 UR/0000/65/000/000/0393/0394

AUTHOR: Vakulov, P. V.

TITLE: Radiation study by the "Kosmos-17" satellite

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); Trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 393-394

TOPIC TAGS: primary cosmic ray, satellite data analysis, radiation belt, gas discharge counter, scintillation counter

ABSTRACT: The "Kosmos-17" carried equipment for studying emission from the earth's radiation belts and primary cosmic radiation at altitudes up to 800 km. Two scintillation counters and a gas discharge counter were included in this equipment. One of the scintillation counters was mounted on the outer shell of the satellite for two-threshold recording of electrons with energies greater than 50 and 180 kev and protons with energies greater than 600 kev. This same counter was used for recording protons with energies greater than 5.4 and 8.5 Mev on two separate thresholds. The second scintillation counter as well as the gas discharge counter

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L 3227-66

ACCESSION NR: AT5023609

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were located under an aluminum shell with a thickness of approximately $1 \text{ g}\cdot\text{cm}^{-2}$. The data obtained by the satellite may be divided into two categories: 1) emission recorded in radiation belts and 2) emission outside of radiation belts (cosmic rays and emission genetically associated with cosmic rays). Large electron flows due to the American high-altitude Starfish explosion were recorded in the inner radiation belt. The average lifetimes of these electrons are determined for various magnetic shells. The absolute fluxes of these electrons are found as well as the energy spectrum of trapped protons and their intensities in the inner belt. The spatial zones are determined where the satellite recorded trapped radiation. It is shown that these regions coincide well with the regions calculated from B, L -maps. [14]

ASSOCIATION: none

SUBMITTED: 02Sep65

NO REF SOV: 000

ENCL: 00

OTHER: 000

SUB CODE: ES, NP

ATD PRESS: 4105

Card 2/2

L 1553-66 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW

ACCESSION NR: AT5023610

UR/0000/65/000/000/0394/0405

AUTHOR: Vernov, S. N.; Chudakov, A. Ye.; Vakulov, P. V.; Gorchakov, Ye. V.;
 Kuznetsov, S. N.; Logachev, Yu. I.; Nikolayev, A. G.; Sosnovets, E. N.;
 Rubinshteyn, I. A.; Stolpovskiy, V. G.; El'tekov, V. A.

TITLE: Geometric position and particle composition of the earth's radiation belts

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow,
 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii.
 Moscow, Izd-vo Nauka, 1965, 394-405

TOPIC TAGS: cosmic radiation, earth radiation belt, cosmic ray, Elektron 1, Elek-
 tron 2

ABSTRACT: An exhaustive study is made of data recorded by the Elektron-1 and -2
 satellites, which were launched on 30 January 1964. Orbital data are given in
 Table 1 of the Enclosure. The first orbits were positioned so that the satellites
 passed their apogee at about 3 o'clock a.m. local time. The outer boundary of the
 radiation belt was thus crossed at about midnight and again at about 7-8 a.m. on the
 return branch of the orbit. The subsequent orbits were shifted toward the sunset:
 Elektron-1, by 8 min, and Elektron-2, by about 4 min in the 24-hr period. Elek-

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ACCESSION NR: AT5023610

tron-1 and -2 were equipped with similar instrumentation. In some cases, however, there were differences in energy thresholds. A chart summarizing all data shows the electron and proton fluxes of different energies in the equatorial plane and for comparison gives IMP-1 data. The following conclusions can be made from the chart: 1) A belt of artificially injected electrons exists at distances closest to the Earth's center. The maximum of the belt in February 1964 was at $L = 1.35$. The flux of electrons with energy above 2 Mev at the maximum was about $1 \times 10^7 \text{ cm}^{-2} \cdot \text{sec}^{-1} \cdot \text{ster}^{-1}$. 2) The average directed flux of protons with an energy of 45-70 Mev at the maximum of the inner belt ($L = 1.45$) was about $1.5 \times 10^3 \text{ cm}^{-2} \cdot \text{sec}^{-1} \cdot \text{ster}^{-1}$. A change in the integral spectrum at proton energies above 50 Mev was observed at $L = 2.2$; the spectrum of these energies is in the process of hardening, which could be explained by the theory of albedo neutrons. 3) The spatial distribution of protons with an energy of one to several Mev differs from that of the electrons. There is a definite regularity in the distribution of protons according to their energies. The average directed flux of protons with an energy above 2 Mev was about $4.5 \times 10^5 \text{ cm}^{-2} \cdot \text{sec}^{-1} \cdot \text{ster}^{-1}$ in the equatorial plane at $L = 2.8$. It appears that the majority of the protons in this energy range are created by transverse drift with respect to the magnetic field lines. 4) A belt of high-energy electrons was observed at $L = 2.75$. Its width at the equator was about 0.4 earth radii. The average directed flux of electrons above 6 Mev was about $10^2 \text{ cm}^{-2} \cdot \text{sec}^{-1} \cdot \text{ster}^{-1}$. 5) A minimum of distribution

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ACCESSION NR: AT5023610

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of electrons of above 150 kev energy was observed in the region between L = 3 and L = 4. The altitude intensity shift is subject to large fluctuations in time and may drop at times to negligible magnitudes. 6) The maximum of the outer belt is positioned, on the average, at L = 4.8. The maximum altitude intensity shift indicator $m = 0.5 + 0.3 / - 0.2$ within a wide range of L. There is a sharp intensity jump on the night side at L = 7 + 0.5. On the morning side, a slow monotonic drop of intensity was observed. The average directed flux of electrons with an energy of over 70 kev at the maximum of the outer belt is about $5 \times 10^6 \text{ cm}^{-2} \cdot \text{sec}^{-1} \cdot \text{ster}^{-1}$ and can change by more than an order of magnitude. The electron energy spectrum observed within the 70 to 600 kev range is in agreement with the data of other researchers. The electron energy spectrum in the energy range above 1 Mev appears to be softening, in comparison with measurements of earlier years. Orig. art. has: 11 figures: [FP]

ASSOCIATION: --none

SUBMITTED: 02Sep65

ENCL: 01

SUB CODE: AA, SV

NO REF SOV: 007

OTHER: 004

ATD PRESS: 4094

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ACCESSION NR: AT5023610

ENCLOSURE: 01

Table 1. Orbital data

	Elektron-1 (low altitude)	Elektron-2 (high altitude)
Altitude, apogee	7, 140 km	68,200 km
Altitude, perigee	406 km	460 km
Orbital period	2 hr 48 min	22 hr 30 min
Inclination of orbital plane	61°	61°
Period of rotation	40 sec	120 sec

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L 3281-66 FSS-2/ET(1)/FS(v)-3/FCC/EWA(d)/EWA(h) T¹/GS/GW
UR/0000/65/000/000/0425/0433
ACCESSION NR: AT5023614

AUTHOR: Vernov, S. N.; Chudakov, A. Ye.; Vakulov, P. V.; Kuznetsov, S. N.;
Logachev, Yu. I.; Sosnovets, E. N.; Stolpovskiy, V. G.

TITLE: Irregular flows of high energy electrons close to the boundary of the earth's radiation belts

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); Trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 425-433

TOPIC TAGS: geomagnetic field, satellite data analysis, radiation belt¹²

ABSTRACT: The authors analyze data obtained from "Elektron-1" and "Elektron-2" during their first month of operation. The equipment used on the satellites is briefly described. Analysis of data pertaining to the midnight meridian indicates that the intensity of the electrons at the boundary of the outer belt decreases by two or three orders of magnitude within a narrow range of radial distances. It is established that the radiation belt on the night side of the earth terminates on quiet days at $L = 6.5-7.5$. On the day side, the boundary of the belt extends on the

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ACCESSION NR: AT5023614

average to $L = 9-10$. (Here L is the nominal McIlwain parameter calculated in the dipole approximation and expressed in earth radii.) It is found that irregular flows of electrons outside the boundary of the earth's radiation belts appear with an increase in perturbation of the geomagnetic field both at the surface of the earth and at distances of $\sim 30,000$ km from the earth. A theoretical explanation is given for this phenomenon. The experimental data support the hypothesis of a closed system of lines of force in the earth's magnetic field up to latitudes of 75° .
Orig. art. has: 9 figures and 1 table. [14]

ASSOCIATION: none

SUBMITTED: 02Sep65

ENCL: 00

SUB CODE: ES,SV

NO REF SOV: 002

OTHER: 010

ATD PRESS: 4105

Card 2/2 *OP*

L 3096-66 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d) TT/GS/GW

ACCESSION NR: AT5023615

UR/0000/65/000/000/0433/0434

AUTHORS: Vernov, S. N.; Chudakov, A. Ye.; Vakulov, P. V.; Gorchakov, Ye. V. ⁹⁸
 Logachev, Yu. I.; Nikolayev, A. G.; Rubinshteyn, I. A.; Sosnovats, E. N.; ^{44.55}
 Ternovskaya, M. V. ^{44.55}

TITLE: Pulsations of the earth's magnetic field, from the measurements taken by the Elektron-3 satellite

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva, Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 433-434

TOPIC TAGS: satellite, satellite data analysis, pulse counter, pulse amplifier, pulse amplitude, earth magnetic field

ABSTRACT: The Elektron-3 ¹² satellite, launched on July 11, 1964, carried a coil with a ferrite core. Signals from this coil were transmitted to two amplifying circuits, one for the band of 1-10 cps, the other for 30-300 cps. Both circuits recorded pulses with amplitudes exceeding ~ 1 , ~ 5 , $\sim 25 \gamma$. The type and operation of the memory bank are briefly described. From a small amount of data processed it can be seen that no pulses with the amplitudes $\sim 25 \gamma$ were recorded, that at

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L 3096-66

ACCESSION NR: AT5023615

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the maximum sensitivity ($\approx 1 \gamma$) the count exceeded seven pulses per 2 minutes, and that at the intermediate sensitivity ($> 5 \gamma$) about 2—3 pulses were recorded by the low-frequency circuit and about 1 by the high-frequency circuit. It is noted that the number of magnetic field pulses with the amplitude $\approx 5 \gamma$ is generally greater in the frequency region of 1—10 cps than in the region of 30—300 cps and that the pulse intensity tends to increase in some geographical regions. Normally, this increase is recorded by the low-frequency circuit but not by the high-frequency one. [04]

ASSOCIATION: none *Служба космических исследований Академии Наук СССР* *Служба космических исследований Академии Наук СССР*

SUBMITTED: 02Sep65

ENCL: 00

SUB CODE: ES, SV

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4106

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Card 2/2

L 1552-66 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW

ACCESSION NR: AT5023628

UR/0000/65/000/000/0502/0506

AUTHOR: Vernov, S. I.; Vakulov, P. V.; Zatselin, V. I.; Logachev, Yu. I.; Okholopkov, V. P.; Chudakov, A. Ye.

44,55

44,55

44,55

44,55

60
B+1

TITLE: Primary cosmic radiation investigations

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii, Moscow, Izd-vo Nauka, 1965, 502-506

44,55

TOPIC TAGS: cosmic ray, cosmic radiation, primary cosmic ray, primary cosmic radiation, Elektron 2, Elektron 4

12,55

12,55

12,44,55,

ABSTRACT: Experimental data obtained by Elektron-2 and -4 on primary cosmic radiation are presented and interpreted. The data, covering the period 30 January to 1 November 1964, were obtained primarily by means of gas-discharge counters with an average frequency of 20 pulses/sec. The apogee of the satellites was 68,000 km, keeping them outside the earth's radiation belts most of the time. The higher count frequency as the thickness of the screens was increased, made it possible to conclude that the primary radiation did not contain particles within the 50 to 110 Mev range. Two types of radiation intensity variations were distinguished:

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