OBUKHOV, V. M.

Cutting Machines

"Cutting machine." Stek. i ker. 9 no. 7, 1952.

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

OBUKHOV, V. M.

Automatic regulation of pressure in glass furnaces. V. G. Gutop and V. M. Obukhov (Glass & Ceramics, Moscow, 1952, 9, No. 8, 10; Glass Ind., 1953, 33, 88 -89).—It was found that the rate and efficiency of melting and refining were noticeably affected by a change of furnace atm. pressure (above the surface of the molten glass) of 0·1 mm. water gauge. An automatic control was fitted which maintained a pressure constant to within 0·1 mm., except for the first 3 min. after the switch of regenerators. I. A. Sucobog.— ①

OBUKHOV, V. M.

USSR/Engineering - Glass production

Card   : 1/1 Pub. 104 - 12/12

Authors   : Obukhov, V. M.

Title   : Automatic control of a furnace for tempering glass

Periodical : Stek. i ker. 11/7, 30 - 32, June 1954

Abstract   : Detailed description is given of powered equipment for automatically con-
               trolling a furnace during the tempering of glass, such automatication be-
               ing considered essential to the prevention of losses in glass materials.
               Drawings; graph.

Institution : ...

Submitted   : ...

OBUKHOV,V.M.

Simplified method of automatic pressure control in glass furnaces.
Stek. i ker. 12 no.7:23-25   Jl '55.   (MIRA 8:10)

1. Stekol'nyy zavod imeni Dzerzhinskogo
              (Glass manufacture) (Automatic control)

OBUKHOV,V.M.; MAKHNOVETSKIY,A.S.

Method of continuous surface temperature measurement and recording
on ShS-500 conveyers. Stek. i ker. 12 no.9:28-29 S'55.
(MLRA 8:12)

1. Gusevskoy stekol'nyy zavod
(Glass manufacture) (Thermometry)

OBUKHOV, V.M.; MAKHNOVETSKIY, A.S.; GUTOP, V.G., nauchnyy redaktor;
GLADYSHEVA, S.A., redaktor; LYUDKOVSKAYA, N.I., tekhnicheskiy
redaktor

[Automatization and heat control in glass production; work practice
of the Dzerzhinskii glass factory in Gusev] Avtomatizatsiia i teplovoi
kontrol' v proizvodstve stekla; iz opyta-raboty Gusevskogo stekol'nogo
zavoda imeni Dzerzhinskogo. Moskva, Gos. izd-vo lit-ry po stroit.
materialam, 1956. 99 p.   (MLRA 9:12)
          (Gusev—Glass manufacture)   (Automatic control)

OBUKHOV, V.M.

Automatic control of heat processes in a glass furnace. Stek.i
ker. 13 no.1:30-32 Ja '56.
(MLRA 9:3)

1. Nachal'nik tsekha kontrol'no-izmeritel'nykh priborov Gusevskogo
stekol'nogo zavoda imeni Dzerzhinskogo.
(Glass manufacture) (Automatic control)

OBUKHOV, V.M.

Automatic moisture control of the blast under the gas producers
grate. Stek.i ker. 13 no.5:26-27 My '56.   (MLRA 9:8)
(Gus-khrustalny--Glass manufacture)
(Automatic control)

OBUKHOV, V.M.

AUTHOR: Obukhov, V.M.   72-2-10/20

TITLE: Temperature Control in the Channels of Machines and in Glass
               Melting Kettles (Kontrol' temperatury v mashinnykh kanalakh i
               basseyne pechi).

PERIODICAL: Steklo i Keramika, 1958,   Nr 2, pp. 27-28 (USSR)

ABSTRACT: The temperature in machine channels in the vertical system of glass
               stretching should be maintained with an accuracy of $\pm$ 5°. In the
               majority of glassworks temperature control is carried out every hour
               by means of a transportable optic pyrometer of the type ОППИР-45,
               or ОП ПИР-09, and it is difficult to measure temperature fluctuations
               of from 5 to 10°. At present multipoint-electron-potentiometers of
               the type ЭПП-09 are being used at the Gusev glassworks imeni
               Dzerzhinskiy; in order to increase the sensitivity of the radiation
               pyrometer, the existing shunt of 175Ω was removed. The pyrometer is
               switched on to the potentiometer. The characteristic of the pyrometer
               before and after its improvement may be seen from table 1; by chang-
               ing the scale from 900-1800° to 1000-1250° a measuring accuracy of
               2-3° was attained. Fig. 1 shows the building in of the radiation
               pyrometer, which is described. The recordings obtained from the firm-
Card 1/2   ly built-in pyrometers are controlled once a day, and at some points

Temperature Control in the Channels of Machines and   72-2-10/20
in Glass Melting Kettles

twice a week by means of an optical control pyrometer. In order to
increase the reliability of the potentiometers, they are switched
on only periodically for some minutes every hour. Some months ago
such a plant was built in according to the same principle for the
purpose of measuring temperatures of furnace basins, and thus it
was possible to measure temperatures with an accuracy of up to 1°.
Table 2 shows the characteristic of the pyrometer before and after
reconstruction. The temperature curves before and after the exchange
of scales may be seen in figs. 2 and 3. Thus, the conditions for
the introduction of an automatic temperature control in glass smelt-
ing furnaces have been created. There are 3 figures and 2 tables.

ASSOCIATION.   Gus' - Khrustal'nyy Glass Works imeni Dzerzhinskiy (Gusevskoy
stekol'nyy zavod imeni Dzerzhinskogo).

AVAILABLE: Library of Congress

Card 2/2

72-58-5-14/18

AUTHOR: Obukhov, V. M.

TITLE: Signalling Device for Bulk Level (Signalizator urovnya
               sypuchikh materialov)

PERIODICAL: Steklo i Keramika, 1958, Nr 5, p 40 (USSR) ·

ABSTRACT: Laborers of the department for control-instruments of the
               Gusev imeni Dzerzhinskiy Glass Factory USM developed this
               signalling device and also produced it (see figure). It
               has on the one side the diaphragm (1), which is compressed
               by two disks (2). Through their center passes a bolt (3)
               which pushes against the microcontact. The signalling
               device is lowered into the bunker by a rope or a tube so
               that the diaphragm is in horizontal position. As soon as the
               bulk covers the diaphragm the latter gives way and the bolt
               presses the contact and closes the circuit. When the level of
               the bulk goes down the spiral spring (5) pushes back the
               diaphragm and the circuit is interrupted. The diaphragm is
               limited in its mobility by three thrust bolts. When two
               signalling devices are mounted within the bunker (one up
               and one lower) signals are obtained on the level of the bulk.

Card 1/2

Signalling Device for Bulk Level   -58   -1

ASSOCIATION: Gusevskoy stekol'nyy zavod imeni Dzerzhinskogo (Gus'-Khrustal'nyy
               Glass Factory imeni Dzerzhinskiy)

AVAILABLE: Library of Congress

               1. Glass--Production   2. Control systems--Instrumentation

Card 2/2

OBUKHOV, V.M.

Temperature control in machine ports and furnace tanks. Stek. i
ker. 15 no.2:27-28 F '58.   (MIRA 11:3)

1. Gusevskiy stekol'nyy zavod im. Dzerzhinskogo
        (Glass manufacture) (Potentiometer)

15(2)
AUTHORS: Dubinin, V. ., ___ CV, V. .   307/72-59- -11 12

TITLE: High Working Index igures of a Glass elti.. urnace
               (Vysokiye pokazateli raboty steklovarernoy echi)

PERIODICAL: Steklo i keramika, 1..., .r ., pp 52-57

ABSTRACT: The **Gusevskoy Glass Factory** imeni Dzerzhinski; ...ces technical
               plate lass for otor cars, appliances, mirrors and
               photographic plate . .. requirements placed on it are very
               high, and therefore special attention is devoted to quality in
               the mentioned factory.As far as stability of glass quality and
               the utilization coefficient of the glass mass are concerned,
               this factory occupies a leading position in the plate glass
               industry of the Soviet Union. Figures 1 and 2 show the glass
               melting furnace of the factory. The temperature curve of the
               furnace may be seen from figure 3. Since 1956 the basin and the
               channel walls are made of fire clay beams of a large format
               and high density. Figures 4, 5 and 6 show the nature of
               destruction undergone by these beams. The basin walls of the
               tank furnace are intensively cooled by blowing. The furnace
               worked for 24 months and 10 days without need for repairs,
Card 1/3   which circumstance led to a high efficiency and to saving in

High Working Index Figures of a Glass Melting
Furnace

repair costs. The furnace temperatures are very
conscientiously prepared and maintained, thus permitting
standstills to be cut to a minimum. The individual furnace
sections are continuously controlled by masons keeping watch.
Every month the conditions of all furnace parts are checked by
assistants of the chief technician and the results are recorded
(Table 1). The deviation in the composition of the raw
materials used for a charge in 1958 may be seen from table 2.
To secure a stable production, only 8 out of 9 machines are
operated at a time. The remaining machine is ready for
operation at any event. The glass mass level in the furnace is
automatically maintained within an accuracy of $\pm$ 0.25 mm and
the furnace pressure within oscillations of a maximum $\pm$ 0.05 mm
of the water column. The furnace temperatures are controlled by
18 stationary radiation pyrometers, which are connected to 4
self-recording electronic potentiometers of the $\square$P-0,9 type
(V. M. Obukhov, Ref 1). The radiation pyrometers are controlled
once for each shift by means of an optical pyrometer of the
OPPIR-0,9 type. Table 3 gives the technical and economic
index figures of furnace performance in the last years.

Card 2/3

High Working Index Fig... of ....,..-11/19
Furnace

In conclusion the autho.. .. .. the pre...t ...r state that
an extension o. the .. ...i...e by the mentioned factory
to other factories would mean an additional great amount of
plate glass for the country. There are 6 figures, 3 tables,
and 1 Soviet reference.

ASSOCIATION: Gusevskoy stekol'nyy zavod imeni Dzerzhinskogo
        (Gusevskoy Glass Factory imeni Dzerzhinskiy)

Card 3/3

OBUKHOV, V.M.

Controlling temperature in glass-melting furnaces. Stek.1
ker. 17 no.7:41-42 Jl '60.
(MIRA 13:7)
(Gusev--Glass furnaces)   (Thermocouples)

OBUKHOV, V.M.;   ZHBANOV, B.V.

Automatic pressure regulation inside a glass-melting furnace.
(MIRA 14:5)
Stek. i ker. 18 no. 3:27-29 Mr '61.
(Glass furnaces)

OBUKHOV, V.M.

Are protective floaters necessary in pot furnaces? Stek. i ker.

19 no.6:36-41 Je '62.

(Glass furnaces)

Stek. i ker.
(MIRA 15:7)

OBUKHOV, V.M.; ZHBANOV, B.V.

Induction thickness gauge. Stek. i ker. 19 no.7:35-37 Jl
'62.   (MIRA 15:7)
(Calipers)

OBUKHOV, V.M.

Simplified diagram for the reversal of flame direction.
Stek. i ker. 21 no.10:36-38 O '64.   (MIRA 18:11)

GRUKHOV, J.M.

....nt of air blown into the glass furnace through loose joints in the masonry and wedge openings. Stek. i ker. 22 no.1:37-38 Ja '65. (MIRA 18:1)

OBUKHOV, V.N.

Stomach cancer at a young age. Khirurgiia no.8:65-73 Ag '62.
(MIRA 15:8)

1. Iz kafedry fakul'tetskoy khirurgii (zav. - zasluzhennyy deyatel'
nauki prof. N.N. Yelanskiy) I Moskovskogo ordena Lenina meditsinskogo
instituta imeni I.M. Sechenova.
(STOMACH—CANCER)

OBUKHOV, V.P.

The introduction of automatic control is an indispensable
condition for the improvement of tank furnace operations.
Stek. i ker. 14 no.9:13 S '57. (MIRA 10:10)

1.Gusevskoy stekol'nyy zavod im. Dzerzhinskogo.
(Glass furnaces)
(Automatic control)

OBUKHOV, V.V. (g.Chelyabinsk)

Track alignment after heaving with contiguous bumps. Put' i put.
khoz. 5 no.3:12-13 Mr '61.   (MIRA 14:3)
                    (Railroads--Track)

ALEKSANDROV, Aleksandr Petrovich; LAZAREV, Dmitriy Filippovich; OBUKHOV,
Vladimir Vladimirovich; KOLTUNOVA, M.P., red.; BOBROVA, Ye.N.,
tekhn.red.

[Collection of important laws concerning labor protection and
safety engineering in transportation construction] Sbornik
vazhneishikh materialov po okhrane truda i tekhnike besopasnosti
na transportnom stroitel'stve. Moskva, Gos. transp. zhel-dor.
izd-vo, 1958. 1233 p.   (MIRA 12:2)

1. Russia (1923- U.S.S.R.) Laws, statutes, etc.
        (Railroads--Safety measures) (Railroad law)

OBUKHOV, V.Ya., inzh.

Problem of evaluating the accuracy of the calculation of the volume of material removed. Izv.vys.ucheb.zav.; gor.zhur. no.4: 75-80 '60.   (MIRA 14:4)

1. Novocherkasskiy orden Trudovogo Krasnogo Znameni politekhnicheskiy institut imeni S.Ordzhonikidze. Rekomendovana kafedroy markshey-derskogo dela.

   (Mine surveying)

L 23920-66   EWT(d)/EWP(1)   IJP(c)   BE/GG

ACC NR: AP6014962   SOURCE CODE: UR/0302/65/000/001/0032/0034

AUTHOR: Obukhov, V. Ye.

ORG: none

TITLE: Input converter for parametron-type electronic computers

SOURCE: Avtomatika i priborostroyeniye, no. 1, 1965, 32-34

TOPIC TAGS: electronic computer, computer input unit

ABSTRACT: Known input devices convert input data introduced from punched cards or punched tape to electrical signals in the form of pulses or voltages. Therefore, the linking of input devices to a high-speed electronic computer built of parametrons requires input circuits that convert the current or voltage signal to the corresponding phase signal. Amplitude-to-phase modulation converters must meet the following requirements: circuit simplicity, high reliability; good matching with input devices; absence of phase distortions; stability of the amplitude, frequency, and phase of the converted voltage. These requirements are met by the circuit described by the author. Experimental studies of the circuit showed that it performs reliably and stably, the stability of its output parameters is determined by the stability of the constant-phase parametron, and there are no phase distortions of output voltage. This circuit includes a constant-phase parametron which induces an e.m.f. in the secondary windings of a transformer. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 09 / SUBM DATE: none

Card 1/1 GK   UDC: 681.142.678:681.142.62

ZUBOV, V.M., dotsent, kand.tekhn.nauk; OBUKHOV, V.Ia., inzh.;
SAMOTUGA, M.F.

Accuracy of survey control in open-pit mines. Ugol' Ukr.
4 no.5:18-20 My '60.   (MIRA 13:8)

1. Novocherkasskiy politekhnicheskiy institut (for Zubov,
Obukhov). 2. Glavnyy marksheyder tresta Aleksandriyaugol'
(for Samotuga).
          (Strip mining) (Mine surveying)

OBUKHOV, V.Ye.

Input converter for electronic computers using parametrons.
Avtom. i prib. no.1: 32-34 Ja-Mr '65.   (MIRA 18:8)

L 62234-65   EEC-4/EED-2/EED-2/EWT(d)   UR/0302/65/000/002/0043/0045
ACCESSION NR: AP5016091   621.376.223   4
                                                                                    B

AUTHOR: Obukhov, V. Ye.; Mikhaylenko, A. P.

TITLE: Modulator for a three-cycle parametron exciter without a d-c voltage
source

SOURCE: Avtomatika i priborostroyeniye, no. 2, 1965, 43-45

TOPIC TAGS: parametron, parametron exciter, parametron exciter modulator

ABSTRACT: A simple original circuit (Author's Certificate no. 163214) of a
3-cycle parametron-excitation modulator (see Enclosure 1) is described. The
transistor bases are excited by three $120°$-shifted negative trigger drops, which
results in producing $120°$-shifted r-f output pulses at windings W_1. Excitation
by 3-phase sinusoidal voltages is also possible but, in this case, the transistor
turn-off state will necessarily be longer than the transistor turn-on state. Orig.
art. has: 3 figures and 4 formulas.

Card 1/3

L 62234-65

ACCESSION NR: AP5016091

ASSOCIATION: none

SUBMITTED: 00   ENCL: 01   SUB CODE: EC

NO REF SOV: 000   OTHER: 000

Card 3/3

L 62234-65
ACCESSION NR:AP5016091

ENCLOSURE:1

Square 120°-shifted   CW waves
pulses
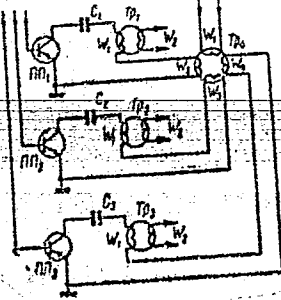
Modulator for a 3-cycle
parametron exciter

Card 3/3

L 50750-65   ZWT(1)/EWA(h)   Peb   UR/0286/65/000/009/0095/0095
ACCESSION NR: AP5015348   681.142

AUTHOR: Obukhov, V. Ye.; Mikhaylenko, A. P.

TITLE: A three-phase power source for parametrons. Class 42, No. 170765

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 95

TOPIC TAGS: parametron, power supply, resonant circuit, digital computer, computer
component

ABSTRACT: This Author's Certificate introduces a three-phase power supply for para-
metrons. The device contains a source of three-phase oscillation cutoff pulses and
a source of continuous pumping oscillations. In order to improve the reliability
of parametron operation, the unit contains a voltage regulator which is connected
to the parametron fixed bias windings. The parametrons are also connected to the
source of oscillation cutoff pulses and continuous pumping oscillations.

ASSOCIATION: none

Card 1/3

L 50750-65

ACCESSION NR: AP5015348

SUBMITTED: 15Apr63

NO REF SOV: 000

ENCL: 01

OTHER: 000

SUB CODE: DP, EC

O

Card 2/3
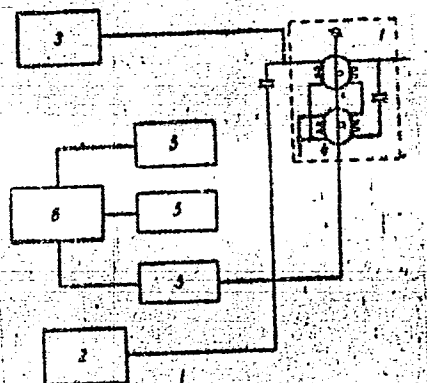
Fig. 1. 1--parametron; 2--generator of high frequency sinusoidal oscillations; 3--regulated source of fixed bias current; 4--oscillation cutoff windings; 5--amplifier; 6--staggered square pulse generator

Card 3/3

L 3179-66   ETC(m)   WW
ACCESSION NR: AP5015353

UR/0286/65/000/009/0098/0099
681.14

AUTHOR: Chekalov, D. N.; Mulyar, L. G.; Krasikov, V. I.; Miroshnichenko, A. K.;
Smirnov, N. Ye.; Kheyfets, A. I.; Smirnov, K. F.; Obukhov, Yu. A.; Vorontsov, A. M.;
D'yakonov, O. M.; Dubro, G. B.; Alipov, A. N.

TITLE: Electronic instrument for measuring velocity, distance traversed, and time.
Class 42, No. 170776

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 98-99

TOPIC TAGS: tellurometer, radio rangefinder, geodetic instrument

ABSTRACT: An Author Certificate, issued for a device which measures velocity,
distance traversed, and time, combines a high-precision tellurometer, a phase
recorder equipped with a unit for converting sinusoidal signals to pulsed signals,
and a unit for measuring phase differences. Readings are made visually. The
circuit connections of the device, consisting of a series of computer-type modules,
are described in detail.   [SP]

ASSOCIATION: none

Card 1/2

L 3179-66
ACCESSION NR: AP5015353

SUBMITTED: 04Mar63

NO REF SOV: 000

ENCL: 00

OTHER: 000

SUB CODE: ES, EC

ATD PRESS: 4025

Card 2/2

SAGINOV, A.S.; ALOV, G. Ye., kand. tekhn. nauk; OBERKOV, V..D.

Effect of stoping on the state and moisture of the Karaganda
coal beds. Vest. AN Kazakh. SSR 20 no.12:54-60 D '64.
(MIRA 18:2)

1. Chlen-korrespondent AN KazSSR (for Saginov).

66359

AUTHORS: Kotov, V. I., Obukhov, Yu. L. and Pushtarik, V.A.

TITLE: On the Theory of a Cyclic Phasotron with Radial Sectors

ABSTRACT: An analysis is given of the free oscillations in a cyclic
            phasotron with radial sectors in the ideal case. The
            analysis is an extension and a generalization of the
            theory given by Cole, Hoxby et al. (Ref 4) and Symon,
            Kerst et al. (Ref 6). Formulae are derived which may be
            used to calculate the geometric parameters of an
            accelerator (angular apertures of the sectors, frequencies
            of free oscillations etc.) and also to determine the
            permissible range of values for the mean field exponent k.
            The magnetic field in a cyclic phasetron is determined by
            the function given by Eq (1) which is taken from the
            paper by Symon et al. (Ref 6). The equations of free
            oscillations in such a field are of the form given by
            Eq (3) which are taken from the paper by Kotov et al.
            (Ref 7). Eqs (3) are solved assuming that the instantaneous
            orbit consists of a circular orbit of radius ρ_1 in the

Card1/2

66359

SOV/120-59-5-2/46

On the Theory of a Cyclic Phasotron with Radial Sectors

positive and ρ_2 in the negative sectors, while in the interval between them it is a straight line (Fig 1). It is also assumed in the solutions of Eq (3) that the local field exponent on the orbit remains constant within each sector and is equal to the mean value of the exponent (along the orbit) for the given sector. Under these assumptions the equations of motion are of the form given by Eq (13). It is shown that a change in the mean field exponent has a much stronger influence on the frequency of radial oscillations than on the frequency of vertical oscillations.

There are 1 figure and 9 references, 3 of which are Soviet, 1 German and 5 English.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy
           (Joint Institute for Nuclear Studies)

SUBMITTED: September 2, 1958

Card2/2

OBUKHOV, Yu. L.

21.2000 ob. 153P

AUTHORS: Petukhov, V. A., Gabunia, I., Zhuravlev, A. A., Karasnin, M.,
          Kotov, V. I., Myae, E. A., Obukhov, Yu. L., Sokhor, Yu.,
          Tsirak, Yu., Bonda, P., Dobiash, I., Mark, M., Fuksiko, T.,
          Svetov, L. V.

TITLE: The model of the ring proton synchrotron

PERIODICAL: Atomnaya energiya, v. 9, no. 6, 1960, 491-493

TEXT: The ring proton synchrotron which is a powerful focusing
accelerator with a magnetic field constant with respect to time, has been
suggested in 1953 by L. A. Kolomenskiy, V. A. Petukhov, and M.S. Rabinovich
and, independently of them, in 1955 by Symon (Phys.Rev. 98, 1152 (1955)).
The new device seem to be able to produce very intensive accelerated
particle beams. A model of this ring synchrotron (with radial sectors)
has been constructed in the Ob'yedinenny Institut yadernykh issledovaniy
(Joint Institute of Nuclear Research). The electro-magnet consists of
eight elements arranged periodically, each of which has a direct and an
inverse sector; it also has two straight sections. The azimuthal

Card 1/3

22447

The model of the ring...

dimension of the direct sector, which focuses the beam in radial
direction, is 22°30', and that of the inverse sector, which brings about
direction, is 7°30'. The inverse sectors cause the orbital
the vertical focusing, to be bigger than that of a standard
perimeter of the ring synchrotron. The ratio of the maximum radius of the
strongly focusing accelerator. The ratio is approximately equal to), The
orbit to the minimum radius of curvature is arranged such that the magnetic field in-
coils generating the field are arranged such that H = H₀(R/R₀)⁴, i.e.,
crease with the radius of the orbit according to H = H₀(R/R₀)⁴, i.e.,
it increases from 42 cm at R = 35 cm to 340 cm at R = 59 cm. The magnet
exhibits the characteristic that the gap between its poles increases in
proportion to the gap radius. Therefore, the vertical dimensions of the
working area will also change from 2 to 4 cm. The increase of all
geometrical dimensions of the sectors and the constancy of the field
index k (the field index of the model is equal to 4) bring about a
dynamic similarity of the orbit, and the frequency of the free oscilla-
tions will also be constant. The number of betatron oscillation per
circulation may be varied from 1 to 3 in the vertical direction, and from
2.5 to 3.5 in the radial direction. The model is especially suited for

Card 2/3

The model of the ring...

electron acceleration; the injection (of 20-40 kev electrons) may be done
continuously or in a pulsed manner. The acceleration is done with an
electric rotational field having a voltage of 10 to 20 v per circulation from this
and a frequency of 450-500 cps. The first test results obtained from this
unit showed that it is very sensitive with regard to the accuracy of
collection and the stability of the principal magnetic characteristics.
There are 2 figures and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc.
The two references to English-language publications read as follows:
K. Symon, Phys.Rev. 98, 1152 (1955); T. Ohkawa. Rev.Scient.Instrum., 29,
100 (1958).

SUBMITTED: May 26, 1960

Card 3/3

ZHURAVLEV, A.A.; IVANOV, I.N.; KAIMASIN, M.; KOTOV, V.I.; MYAE, E.A;
    OBOZNYY, V.A.; OBUKHOV, Yu.L.; PETUKHOV, V.A.

[Motion of particles in an annular synchro-cyclotron] Issledovanie
dvizheniia chastits v kol'tsevom fazotrone. Dubna, Ob"edinennyi in-t
iadernykh issl., 1961. 24 p.   (MIRA 14:12)
                                    (Synchrotron)

OBUKHOV, I L.

26850
Z/038/61/000/004/005/005
D238/D305

also 2406, 2606

AUTHORS: Petukhov, V.A., Habanec, J., Zhuravlev, A.A.. Karmasin, M.,
Kotov, V.J., Myae, E.A., Obukhov, J.L., Sochor, V., Cirák,
J., Bunda, F., Dobiáš, J., Marek, M., Fukátko, T., Svetov,L.
V.

TITLE: A model of an annular cyclotron

PERIODICAL: Jaderná energie, no. 4, 1961, 136 - 137

TEXT: This is a translation of an Russian article entitled "Model'
kol'tsevogo fazotrona" (Model of an Annular Cyclotron) originally published
in the Soviet periodical "Atomnaya energiya", .9, (1960), no. 12, pp 491-493.
It deals with the model of an annular cyclotron which is a fixed-field, al-
ternating-gradient accelerator, built by Soviet and Czechoslovak physicists
at the United Institute of Nuclear Research in Dubna. The proposal for an
annular cyclotron was made for the first time in 1953 by A.A. Kolomenskiy,
V.A. Petukhov and M.S. Rabinovich (Ref 1: Nekotoryye voprosy teoriyi tsikli-
cheskikh uskoriteley(Some Problems of the Theory of Cyclic Accelerators), AN
SSSR, 1955; Pribory i technika experimenta (1956), no. 2, p. 26). The elec-

Card 1/2

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26850
Z/038/61/000/004/005/005
D238/D305

A model of an annular cyclotron

tromagnet of the accelerator consists of eight similar, alternately reserved parts, each of which has two sectors with opposite orientation of the magnetic field, and two straight sections. The accelerator is used for electron acceleration. Electrons with energies of 20-40 kev can be injected either continuously or in pulses. Using a combination of eddy and radio-frequency fields, a beam energy up to 2MeV can be obtained with this model. Preliminary results obtained during test runs have shown the high accuracy of the machine and the great stability of its principal magnetic characteristics. Also, in agreement with the theory, a number of various resonances was observed which have a substantial influence on the intensity of the accelerated beam. There are 2 figures and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: K. Symon, Phys. Rev. 98 (1952), 1152; T. Okhawa, Rev. Scient. Instrum. 29, (1958), 108.

Card 2/2

28780
S/057/61/031/010/013/015
B111/B112

24670
AUTHORS:

Benda, F., Gabanets, I., Dobiash, I., Zhuravlev, A. A., Karmasin, M., Kotov, V. I., Marek, M., Myae, E. A., Obukhov, Yu. L., Petukhov, V. A., Svetov, L. V., Sokhor, V., Fukatko, T., and Tsirak, Yu.

TITLE: Annular proton synchrotron with radial sectors

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 10, 1961. 1253-1261

TEXT: This article describes the model of an annular proton synchrotron with radial sectors, built and put into operation at the Ob'yedinennyy institut yadernykh issledcvaniy (Joint Institute of Nuclear Research).
Technical data:
Number of periodicity elements   8
Azimuthal dimensions of a direct sector   22°30'
Azimuthal dimensions of an inverse sector   7°30'
Azimuthal dimensions of the gap   7°30'
amplification factor   ~3
Initial radius   35 cm

Card 1/5

Annular proton synchrotron with ...

Final radius	59 cm
Vertical dimension of the chamber for the initial radius	2 cm
Coefficient k for which $H = H_0 (r/r_0)^k f(\Theta)$	4
Field strength in the initial radius	~ 42 oe
Field strength in the final radius	~ 340 oe
Injection energy	20 - 40 kev
Critical energy (total)	1.12 Mev
Final energy (total)	~ 2 Mev

The frequencies of free particle oscillations were found to be $\nu_x \cong 3.$ and $\nu_z \cong 1.8$, which are lower than the theoretical value. The machine can also be used for studying the behavior of the particle beam and its accumulation. A cross-sectional view of the electromagnet is shown in Fig. 1. A pressure of $1 - 2 \cdot 10^{-6}$ mm Hg prevailed in the vacuum chamber. The injection system is designed both for pulsed and continuous operation. Acceleration is effected by an electric rotating field of 500 cps and 10 - 25 v per revolution. A special "speed up" system (rotating field of 600 v per revolution) serves for improving the electron-capture efficiency.

Card 2/4

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S/057/61/031/0:0/013/015

B111/B112

Annular proton synchrotron with ...

The pulse, which is excessively increase! by the "speed up" process, is reduced by a thyratron circuit. A constant value of k could be attained with a theoretically calculated arrangement of the field coils along the ideal orbit. In addition to the principal coils, a coil was placed at the yoke of each sector, by which the influence of the iron resistance was eliminated. k and the azimuthal field distribution were measured with induction coils and a ballistic galvanometer. With a few exceptions, the values of k agreed with theoretical values to within ±1%. The azimuthal inhomogeneity of the field was never greater than ±1%. The position of the magnetic surfaces was determined with Permalloy feelers with an error of 0.2 mm. The deviation from the theoretical values was never greater than 0.5 mm. The indication of the beam during the first revolutions (without acceleration) was carried out with screens and coordinate nets in the chamber, and later (with acceleration) with photomultipliers equipped with radially adjustable nets of targets. The measurements showed that the field is strongly affected by the induction and "speed-up" core (e.g., azimuthal inhomogeneity). It was found that under optimum conditions, the upward deviation of the beam from the center of the chamber did not exceed ±4 mm, and that the deviation of the equilibrium

Card 3/5/4

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S/057/61/031/0~0/0~3/0~5
B~11/B1~2

Annular proton synchrotron with .

orbits at one and the same point of the magnetic field was ±5 mm per revolution. It is noted that this model can be used to study resonances with free oscillations, electron capture into a betatron system, and accumulation of accelerated particles. Yu A. Chernyshov. A. Grachev and R. N. Fedorov are thanked for assistance. There are 6 figures, ' table, 9 references: 4 Soviet and 5 non-Soviet. The three most recent references to English-language publications read as follows: R-f 7: T. Ohkawa, Rev. Sci. Instr.. 29, ~08. 1958. Ref. 8: P. T. Cole e: a... Rev. Sci. Instr., 28, 403, 1957. Ref. 9: K. M. Terwilliger et al., Rev. Sci. Instr., 28, 987, 1957.

SUBMITTED: December 6, 1960

Fig. 1: Cross-sectional view of electromagnet and vacuum chamber. Legend: (1) magnet; (2) chamber; (3) principal coils of magnet; (4) yoke coils.

Card 4/5

44437

S/120/62/000/006/003/029
E032/E114

АUTHORS: Zhuravlev, A.A., Kotov, V.I., Myae, E.A.,
Oboznyy, V.A., Obukhov, Yu.L., and Fisher, E.

TITLE: The capture of electrons into the inductive
acceleration regime in the annular synchrocyclotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.6, 1962, 21-24

TEXT: The authors report a series of experimental results on
the capture of electrons into the inductive acceleration regime in
a new type of accelerator, namely, the annular synchrocyclotron.
The conditions of capture of electrons in this accelerator differ
from those in a betatron (time independent magnetic field,
strong focusing).   The experiments were carried out on the annular
synchrocyclotron of the Ob'yedinennyy institut yadernykh
issledovaniy (Joint Institute for Nuclear Research) which was
described by P. Benda, I. Gabanets, I. Dobiash, A.A. Zhuravlev
et al. (Zh. tekhn. fiz., v.31, 1961, 1253).   In the first series
of experiments a determination was made of the number of
accelerated electrons as a function of the number of electrons
completing the first orbit.   The second series of experiments was

Card 1/2

The capture of electrons into the ...   S/120/62/000/006/003/029
E032/E114

concerned with the effect of the radial distance Δ from the centre of the cathode to the edge of the injector, on the capture process.   In all cases the measurements were carried out with and without "forcing", i.e. the presence of an additional induced electric field (c.f. the reference quoted above).   The results were as follows: the electron capture coefficient in the single electron capture region was 0.5%, and in the collective capture region 2.5-3.5%.   It was also found that the magnitude of Δ in the presence of "forcing" may be increased to 3.5, while in the absence of "forcing" the effect of Δ on the number of captured particles becomes significant at lower values of Δ.   Finally, a plot was obtained of the number of captured particles as a function of the position of the "forcing" pulse relative to the centre of the injection pulse.   It was concluded from the form of this curve that the optimum capture conditions correspond to the tail of the injection pulse.   There are 5 figures.
ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy
Card 2/2   (Joint Institute for Nuclear Research)
SUBMITTED: February 20, 1962

ZHURAVLEV, A.A.; IVANOV, I.N.; KARMASIN, M.; KOTOV, V.I.; MYAE, E.A.;
OBOZNYY, V.A.; OBUKHOV, Yu.L.; PETUKHOV, V.A

Study of particle motion in a circular synchrocyclotron. Zhur.
tekh.fiz. 32 no.8:905-913 Ag '62.   (MIRA 15:8)
                        (Synchrotron)

OBUKHOV, Yu V.

SUBJECT	USSR / PHYSICS
AUTHOR	BALAC, M.JA., LEBEDEV, P.I., OBUCHOV, JU.V. CARD 1 / 2
TITLE	Measuring the Life of K-Mesons.
PERIODICAL	Žurn.eksp.i teor.fis, 31, fasc. 3, 531-533 (1956)
	Issued: 12 / 1956

PA - 1623

The average life of the charged K-mesons of cosmic radiation was measured at sea level with the help of liquid-scintillation-counters and of a high frequency oscillograph. The arrangement and the mode of operation of the counters is discussed in short. The time needed for development was $1,3.10^{-7}$ sec and the minimum time of growth in the amplifier was $2,5.10^{-9}$ sec. The error, which was found by experimenting and which is connected with the fluctuations in time of the photomultiplier FEU-19 remained below 10^{-9} sec. A further source of errors is mentioned.

For the purpose of taking "post impulse" of the multiplier and of the shifts with respect to time between impulses (which occur as a result of the difference in the time needed for the passage of two coupled particles) into account, the distributions of the time intervals between impulses in the case of different arrangements of the counters are measured. In connection with these control tests the number of acts of decay in the counter itself was negligibly small. The results of these control tests were taken into account when dealing with the results.

Žurn.eksp.i teor.fis,<u>31</u>,fasc.3,531-533 (1956) CARD 2 / 2   PA - 1623

The lowest energy of the decaying myon which was still able to obtain a response from the measuring system, amounted to 25 MeV. Thus the acts of decay $\pi \rightarrow \mu + \nu$ were eliminated. An act of decay $\mu \rightarrow e + 2\gamma$ was able to cause the device to respond, but because the resolving power of the coincidence scheme amounts to 4.10^{-8} sec, the probability of such a response was sufficiently small.

All in all, 64 acts of decay were noticed during 1600 hours of operation in the interval of from 10^{-8} to 4.10^{-8} sec. The integral distribution of the times of decay is shown in a graph. The average life of K-mesons obtained is $(9,5 \pm 2,0).10^{-9}$ sec if a decay rule with an exponent is assumed. This result is in agreement with those of several American works. Two further graphs illustrate the scheme of the measuring system and the curve of the resolving of the threefold coincidences.

INSTITUTION:

120-2-18/37

AUTHOR: Balats, M. Ya., Lebedev, P. I., and Obukhov, Yu. V.

TITLE: A High Speed Oscilloscope. (Vysokoskorostnoy Ostsillograf).

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.2,
pp. 63 - 67 (USSR).

ABSTRACT: A description and analysis of an oscilloscope for the
photographic investigation of pulses with 3×10^{-9} secs.
rise time is given. The scope has been built in the Soviet
Union using Russian components. The signal is applied to
a two stage pre-amplifier and via a 20 meter HF cable;
a phase inverter and push-pull output is applied to the
vertical deflection plates of a 5RP1-A CRT (since replaced
by a tube of Russian manufacture). A part of the 150-180V
signal is applied via an inverting pulse transformer to a
high speed time base using type 2050 thyratron. Part of
the scanning voltage is used for triggering the relay of
the camera shutter. The final vertical deflection amplifier
consists of 12 tubes type 6ЖIП in distributed amplifier
connection. Matching from the pre-amplifier to the output
amplifier is achieved by means of a phase inverter designed
as a three tube distributed parameters amplifier with 6ЖIП
tubes. This amplifier has a gain of about 1 and band-width
of about 200Mc/s. The pre-amplifier consists of two
identical travelling wave amplifiers of 8 tubes 6ЖIП in

Card 1/3

A High Speed Oscilloscope.   120-2-18/37

each stage. The delayed triggering is obtained using a
co-axial cable length of 200 ohms impedence between the
phase inverter and the pre-amplifier. Matching between
all stages is achieved by means of a 200 ohms impedence
for the grid line of the vertical deflection amplifier
and for the anode line of the phase inverter and of the
pre-amplifier. Artificial anode and grid lines are
m-derived filters with m = 1.27. The load lines have
m-derived sections with m = 0.6, which permits to keep
the wave impedence constant up to $f \approx 0.8f_{cr}$. A detailed
description of all distributed line sections is given
(Ref. 5): the total gain of the vertical deflection
amplifier is 500, its response flat up to 170Mc/s, which
corresponds to a rise time of about 2.5×10^{-9} secs. A
detailed description of the fast time thyratron base
generator is also given, two speeds being available for
the final anode voltage of 23kV: 130 and 40cm per μsec.
Photographs are taken using 1 : 1.5 objective and type PФ-3
      film with a sensitivity of 800 units ГOCT. One
block diagram, three circuit diagrams, the frequency
response graph, a detailed drawing of the loading section,
Card 2/3 photograph of the 8 tube distributed amplifier and four

A High Speed Oscilloscope.   120-2-18/37

      photographs of pulse pictures are given. S. Ya. Nikitin
and A. G. Meshkovskiy have co-operated in the construction
of the instrument. There are 6 references, 2 of which
are Slavic.

SUBMITTED: November, 18, 1955.

AVAILABLE: Library of Congress.

Card 3/3

BURKHAY, Yu. V.

11835

MEASUREMENT OF ... K MESON.

M. la. Balats, R. ... Dudey, ... , ...

Phys ...

The integral spectrum of K meson decay ...

interval of ...

a single exponent decay yielded a mean lifetime of K mesons of $(9.5 \pm 2.0) \times 10^{-9}$ sec. (R.V.J.)

21(7)

AUTHORS: Balats, M. Ya., Lebedev, P. I., Obukhov, Yu. V.

TITLE: Production of K^+-Mesons by Protons of Cosmic Rays Altitude of 3250 m Above Sea Level

ABSTRACT: It was the aim of the present paper to determine the momentum spectrum of K^+-mesons produced by cosmic **ray** rotons as well as to evaluate the production cross sections. In the first part of the paper the experimental arrangement (Fig 1) is described in great detail. Within a system of Geiger-Mueller counters there were 6 lead slabs of equal thickness (50 g/cm^2) and different size; below this hodoscope system there were 4 liquid-scintillation counters, two of which $(C_3$ and $C_4)$ were symmetrically located on the two sides of an aluminum absorber. These four counters were connected in triple coincidence $(C_1+C_2+C_3(C_4))$. The scintillation counters are discussed separately and are schematically represented by figure 2. Figure 3 shows a block scheme of the entire apparatus. Also the radio·

Card 1/3

Production of K$^+$-Mesons by Protons of Cosmic Rays   SOV/56-37-3-../62
at an Altitude of 325o m Above Sea Level

technical system of K meson recording (life time : 2·'0^8 se-·
is briefly discussed. In the following part of this paper
the K$^+$-decay scheme is briefly discussed. Four experiments w-re
carried out on the device described: Experiment a: Duration
!2oo hours; it served the purpose of investigating the K$^-$
spectrum in the range interval (5o-35o) g/cm^2 as well as determ
ining the production cross section of these mesons. Experiment
b: 2oo hours; this experiment is carried out for the purpose
of investigating the degree of efficiency of K$^+$-recording in
the individual layers; the three lowest lead slabs had been
removed for this experiment. Experiment c: 5oc hours; this ex
periment was carried out in the same manner as experiment a,
but this time the absorber had been removed. Experiment d·
196 hours. This experiment was carried out for the purpose of
determining the background connected with the air showers. The
directives for the evaluation of results are given, and the
thus obtained data are shown in table 1. Finally, the results
were discussed. In figure 6 the momentum spectrum of the K'-
mesons within the range of o.2 - o.9 Bev/c is shown; figure ?
shows the curve of the duration of decay The exact value of

Card 2/3

Production of K^+-Mesons by Protons of Cosmic Rays   SOV/56-37-3-1/62
at an Altitude of 3250 m Above Sea Level

the life time of the K^+-mesons found in these experiments
amounts to $(10.0 \pm 1.2).10^{-9}$sec. The momentum spectrum at an
altitude of 3200 m may be approximated by the function
$N(p)dp = A^{-2.7}dp$, where $A = 0.9.10^{-3}$ particles/cm^2sec. steradian
and the angular distribution is expressed by $N(\theta)d\theta \sim cos^6\theta \, d\theta$.
The authors finally thank A. I. Alikhanov, G. P. Yeliseyev, V
A. Lyubimov, and A. G. Meshkovskiy for discussion, A. I. Ali-
khanyan for making it possible to work at Mount Alagez Cosmic
Station, and further K. A. Zaytsev and A. N. Rozanov for
assisting in the experiments. There are 7 figures, 2 tables,
and 9 references, 3 of which are Soviet.

SUBMITTED: December 3, 1958

Card 3/3

OBUKHOV, Yu. V.

ALIKHANOV, A.I., BABYEV, A.I., PALATS, M. Ya., KAFTANOV, V.S., LANDSBERG, L.G., LYUBIMOV, V.A., OBUKHOV, Yu. V.

"Search for $\mu \to e + \gamma$ Decays"

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

Institute of Theoretical and Experimental Physics, Moscow, USSR

OBUKHOV, YU. V.

BABAYEV, A.I., PALATS, M.Ya., KAFTANOV, V.S., LANDSBERG, L. G., LYUBIMOV, V.A.,
OBUKHOV, Yu. V.

"Search for $\mu \to \gamma e$ Decay"

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

Inst. of Theoretical and Experimental Physics, Moscow, USSR

ALIKHANOV, A.L.; BABAYEV, A.I.; BALATS, M.Ya.; KAFTANOV, V.S.; LENDSBER,
     L.G.; LYUBIMOV, V.A.; OBUKHOV, Yu.V.

     Further searching for the $\mu \to e + \gamma$ -decay. Zhur. eksp. i teor.
     fiz. 42 no.2:630-631 F '62.   (MIRA 15:2)

     1. Institut teoreticheskoy i eksperimental'noy fiziki.
                         (Mesons—Decay)

S/056/62/042/006/046/047
B104/B112

AUTHORS: Babayev, A. I., Balats, M. Ya., Kaftanov, V. S., Landsberg, L. G., Lyubimov, V. A., Obukhov, Yu. V.

TITLE: Search for the $\mu^+ \longrightarrow e^+ + e^+ + e^-$ decay

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 6, 1962, 1685-1687

TEXT: An attempt to find the $\mu \longrightarrow 3e$ decay was made with the apparatus shown in Fig. 1. The current of 70-Mev π^+ mesons was separated by coincidences in counters I, II, and 0. The number of π^+ mesons stopped in counter 0 was determined from the number of $\mu^+ \longrightarrow e^+ + \nu + \bar{\nu}$ decays recorded by counters 0 and III (1, 2, 3 + 4, 5, 6 + 7, 8, 9 + 10, 11, 12). Fast coincidences of any pair of lateral counters with a central counter generate a control signal which is amplified and fed to the high-voltage electrodes of two spark chambers. The particle tracks in the chambers are photographed and the interval between the stoppage of a π^+ meson and the generation of the control signal is measured simultaneously. The amplitude of the pulses generated in counter 0 by decay π^+ mesons and decay

Card 1/3

Search for the $\mu^+ \longrightarrow e^+ + e^+ + e^-$ decay

S/056/62/042/006/046/047
B104/B112

electrons is recorded by an oscilloscope. After 70 hrs of operation it was not possible to find a $\mu \longrightarrow 3e$ decay among $6.90 \cdot 10^8$ atops. There are 2 figures.

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

SUBMITTED: April 9, 1962

Fig. 1. Experimental apparatus.
Legend: (Ц) and (П) spark chambers; (K-1) and (K-2) motion-picture cameras;
(3) mirror for stereoscopic pictures.

Card 2/8 2

BABAYEV, A.I.; BALATS, M.Ya.; KAFTANOV, V.S.; LANDSBERG, L.G.;
    LYUBIMOV, V.A.; OBUKHOV, Yu.V.

Further search of the $K^+ \to e^+ + e^-$ decay.
Zhur. eksp. i teor. fiz. 43 no.5:1984 N '62. (MIRA 15:12)
                        (Mesons--Decay)

L 1571-66   EWT(m)/EWP(t)/EWP(b)   DIAAP/IJP(c)   JD/JG

ACCESSION NR: AP5019208   UR/0056/65/049/001/0007/0009

AUTHOR: Balats, M. Ya.; Karapetyan, V. V.; Kondrat'yev, L. N.; Obukhov, Yu. V.

TITLE: Intensity of nonradiative transitions in Ta and Pu^{239} mesic atoms

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 1, 1965, 7-9

TOPIC TAGS: mesic atom, nonradiative transition, tantalum, plutonium, Mu meson, x ray spectrum

ABSTRACT: This is a continuation of intensity measurements of nonradiative transitions in a number of heavy elements (ZhETF v. 38, 1715, 1960 and v. 39, 1168, 1960), carried out by means of a scintillation γ-spectrometer. The authors investigated the mesic x-ray spectra and have determined the ratio of the intensities of the 2p--1s transitions in Ta and Pu^{239} relative to Pb. Some modification was made in the experimental set-up for the measurements with Pu in order to accomodate the large background in the γ-spectrometer counter from the natural radioactivity of Pu^{239}. Preliminary measurements have shown that when the γ-detector is loaded by the Pu activity the γ-ray spectrum from the 2p--1s transitions in Pb is displaced towards the hard region by 3--5%, but this shift causes no noticeable error in the experimental results. The fraction of the nonradiative 2p--1s transitions was determined by comparison of the γ-spectra obtained with lead and with the materials

Card 1/2

L 1571-66

ACCESSION NR: AP5019208   2

studied. The number of radiative transitions was 1 ± 0.08 and 0.59 ± 0.06 for Ta and Pu^{239}, respectively. The corresponding fractions of nonradiative transition were therefore 0 ± 0.08 and 0.41 ± 0.06. In the case of tantalum, a correction was made for the solid angle. The results are consistent with the theoretical assumptions of D. F. Zaretskiy and V. M. Novikov (ZhETF v. 41, 214, 1961). "The authors thank Prof. B. Pontecorvo for suggesting the experiment and for interest in the work." Orig. art. has: 2 figures and 1 table.

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

SUBMITTED: 18Nov64   ENCL: 00   SUB CODE: NP

NR REF SOV: 002   OTHER: 000

Card 2/2

LOSHAKOV, A.M., inzh.; BIBIKOV, A.V., inzh.; OBUKHOV, Yu.V., inzh.;
       GORYASHCHENKO, Yu.N., tekhnik

Use of an A-564 gun for welding studs in an overhead position.
Svar. proizv. no.1:36 Ja '65.
                                              (MIRA 18:3)

1. Trest "TSentroenergomontazh".

L 29083-66

ACCESSION NR: AP5019208   UR/0056/65/049/001/0007/0009

AUTHOR: Balats, M. Ya.; Karapetyan, V. V.; Kondrat'yev, L. N.; Obukhov, Yu. V.

TITLE: Intensity of nonradiative transitions in Ta and Pu^{239} mesic atoms

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 1, 1965, 7-9

TOPIC TAGS: mesic atom, nonradiative transition, tantalum, plutonium, Mu meson,
x ray spectrum

ABSTRACT: This is a continuation of intensity measurements of nonradiative transi-
tions in a number of heavy elements (ZhETF v. 38, 1715, 1960 and v. 39, 1168, 1960),
carried out by means of a scintillation γ-spectrometer. The authors investigated
the mesic x-ray spectra and have determined the ratio of the intensities of the
2p--1s transitions in Ta and Pu^{239} relative to Pb. Some modification was made in
the experimental set-up for the measurements with Pu in order to accomodate the
large background in the γ-spectrometer counter from the natural radioactivity of
Pu^{239}. Preliminary measurements have shown that when the γ-detector is loaded by
the Pu activity the γ-ray spectrum from the 2p--1s transitions in Pb is displaced
towards the hard region by 3--5%, but this shift causes no noticeable error in the
experimental results. The fraction of the nonradiative 2p--1s transitions was de-
termined by comparison of the γ-spectra obtained with lead and with the materials

Card 1/2

L 29083-66

ACCESSION NR: AP5019208

studied. The number of radiative transitions was 1 ± 0.08 and 0.59 ± 0.06 for Ta
and Pu^{239}, respectively. The corresponding fractions of nonradiative transition
were therefore 0 ± 0.08 and 0.41 ± 0.06. In the case of tantalum, a correction was
made for the solid angle. The results are consistent with the theoretical assump-
tions of D. F. Zaretskiy and V. M. Novikov (ZhETF v. 41, 214, 1961). "The authors
thank Prof. B. Pontecorvo for suggesting the experiment and for interest in the
work." Orig. art. has: 2 figures and 1 table.

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

SUBMITTED: 18Nov64   ENCL: 00   SUB CODE: NP

NR REF SOV: 002   OTHER: 000

Card 2/2

L 22404-66   EWP(e)/EWT(m)/T   WH

ACC NR: AP6006791   SOURCE CODE: UR/0386/66/003/001/0003/0004

AUTHOR: Babayev, A. I.; Balats, M. Ya.; Myasishcheva, G. G.; Obukhov, Yu. V.;
Roganov, V. S.; Firsov, V. G.

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

TITLE: Observation of atomic muonium in crystalline quartz

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy Yiziki. Pis'ma v redaktsiyu.
Prilozheniye, v. 3, no. 1, 1966, 3-4

TOPIC TAGS: quartz, muon, positron, angular distribution, spin, magnetic moment,
relaxation process

ABSTRACT: The asymmetry coefficient (c') in the angular distribution of the posi-
trons from the decay of mesons stopped in crystalline quartz at room temperature
was measured in the meson beam of the OIYaI synchrocyclotron with the aid of ap-
paratus used to observe μ^+-meson spin precession in a magnetic field. Four cycles
of the sinusoidal precession curve, with a frequency corresponding to the magnetic
moment and spin of the μ^+ meson, were traced at a magnetic field intensity 50.0
± 0.3 oe for ~6 µsec after the stopping of the μ^+ meson in the target. The asym-

Card 1/2

L 22404-66

ACC NR: AP6006791

metry coefficient corrected for the energy spectrum of the emitted positrons, for the counter geometry, and for the beam polarization was equal to $c' = 0.065 \pm 0.006$ (the total number of μ^+ mesons stopped in the target was 4×10^6, and the product of the solid angle by the counter efficiency was ~1/30). At a magnetic field intensity 2.70 and 1.35 oe the obtained precession corresponded to the frequency of revolution of atomic muonium with exponentially damped amplitude and with relaxation time 0.3--0.4 μsec. The experimental asymmetry coefficient, extrapolated to zero time, was $c_0' = 0.09$--0.13 without correction for the beam polarization. A more detailed investigation of the precession of atomic muonium was hindered by the presence of intensity modulation, connected with the fine structure of the accelerator pulse. Work on the investigation of the phenomenon is being continued.

SUB CODE: 20/   SUBM DATE: 03Nov65

Card 2/2

L 36381-66   EWT(m)/T   WVH

ACC NR: AP6014026   SOURCE CODE: UR/0056/66/050/004/0877/0889

AUTHOR: Babayev, A. I.; Barats, M. A., Vyasistineva, ...; Obuhov, ...;
Firsov, V. G.; Roganov, V. S.

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

TITLE: Experimental investigation ... muonium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 4, ...,
877-889

TOPIC TAGS: muonium, positron, angular distribution, magnetic field, ...
action, atomic muonium, positron distribution

ABSTRACT: The asymmetry coefficients in the angular distribution of positrons,
emitted in μ-e-decays were measured for a number of compounds and their ... ...
tures. The rate constant for interaction between the atomic muonium and ... ...
computed on the basis of the results obtained. The method of ... ...
for parallel reactions was employed with the aim of raising the ... ...
ments and elucidating the mechanism of the process. The dependence of ...
asymmetry coefficients on the magnetic field strength were measured for ... ...
compounds. The data were discussed within the framework of the chemical ... ...
with muonium. The authors express their thanks to Academicians A. I. Alikhan ...

Card 1/2

L 15381-66

ACC NR: AP6014026

V. A. Lynbimov for their support and interest in this work, V. I. Volkov for assistance with measurements, and A. M. Brodsk, A. G. Vaysenberg, V. I. Z and L. N. Kondrat'yev for valuable comments and useful discussions. has: 11 figures, 2 formulas, and 4 tables. [Based on authors' abstract.]

SUB CODE: 20, 11/ SUBM DATE: 01Nov65/ ORIG REF: 008/ OTH REF: 012

Card 2/2

L 01240-67   EWT(m)/T

ACC NR: AT6031145   SOURCE CODE: UR/3138/65/000/388/0003/0028

AUTHOR: Babayev, A. I.; Myasishcheva, G. G.; Obukhov, Yu. V.; Roganov, V. S.;
Firsov, V. G.; Balats, M. Ya.

/7
/2
B+l

ORG: none

TITLE: Experimental investigation of the chemical reactions of muonium
/9

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii.
Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 388, 1965.
Eksperimental'noye issledovaniye khimicheskikh reaktsiy myuoniya, 3-28

TOPIC TAGS: muonium, muon chemical interaction, muonium interaction, atomic
muonium, assymetry coefficient, angular positron distribution, binary mixture,
competing acceptor method

ABSTRACT: Measurements were made of assymetry coefficients in the angular
distribution of escaping positrons μ^-e^+ for several compounds and their binary
mixtures. The results obtained were used to compute the constants of the rate of
interaction between atomic muonium and substance. To augment the accuracy of
the results and to clarify the mechanism of the process, a method of competing

Card 1/2

L 01240-67   5

ACC NR: AT6031145

acceptors was used for reactions in parallel. The dependence of the coefficient of assymetry on the intensity of the magnetic field was determined for several com- pounds. The data are discussed from the point of view of the chemical interaction of muonium. The authors thank Academician A. I. Alikhanov and V. A. Lyubimov for their interest in this work, V. I. Volkov for his assistance in carrying out the measurements, and A. O. Vaysenberg and L. N. Kondrat'yev for their helpful evaluations and discussion of the work. Orig. art. has: 4 tables and 11 figures.

[SP]

[Based on authors' abstract]

SUB CODE: 07, 20/ SUBM DATE: 15Oct65/ ORIG REF: 006/ OTH REF: 012/

awm

Card 2/2

LOTKOVA, E.N.; OBUKHOV-DENISOV, V.V.; SOBOLEV, N.N.; CHEREMISINOV, V.P.

Infrared and Raman spectra of boric anhydride. Part 1. Opt.
i spektr. 1 no.6:772-782 O '56.   (MIRA 9:12)

1. Fizicheskiy institut imeni P.N. Lebedeva Akademii nauk SSSR.
                (Boron oxides--Spectra)

LOTKOVA, E.N.; OBUKHOV-DENISOV, V.V.; SOBOLEV, N.N.; CHEREMISINOV, V.P.

Raman spectra of vitreous boron oxide. Fiz. sbor. no.3:445-448
'57.
(MIRA 11:8)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR.
(Boron oxide—Spectra) (Raman effect)

AUTHORS: Obukhov-Denisov, V. V., Sobolev, N. N.,   SOV/48-22-9-18,43
                Cheremisinov, V. P.

TITLE: Raman Spectrum of Vitreous Germanium Dioxide (Spektr
                kombinatsionnogo rasseyaniya stekloobraznoy dvuokisi
                germaniya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958,
                Vol 22, Nr 9, pp 1083 - 1085 (USSR)

ABSTRACT: Owing to the fact that no monocrystals of GeO_2 are
                found in nature and that the investigation   of
                polycrystals presents great difficulties the authors
                have hitherto not succeeded in studying Raman spectrum
                of crystalline germanium dioxide. This report presents
                the results from an investigation of the Raman spectrum
                of vitreous germanium dioxide and a comparison with
                the spectrum of silicon dioxide (Ref 1). The two
                substances were assumed to have the same structure.
                Hence the vibration spectra of both substances can be
                considered as dioxide spectra of only one element,
                which, however, exhibits a different atomic weight in
Card 1/3   either case. The polarization of the Raman spectrum

Raman Spectrum of Vitreous Germanium Dioxide   SOV, $:0-22-7-\cdot:,\;4\circ$

of vitreous germanium dioxide was investigated
with the assistance of Ya.S.Bobovich by means of a
diffraction spectrometer. This spectrometer with
double monochromatizing was developed by Kiselev
(Ref 3). The spectrum is shown in figure 2. As Ge
has a higher atomic weight than Si, it must be taken
into account that the bands of the vibration spectrum
of GeO_2 have a smaller frequency that the corresponding
bands in the spectrum of SiO_2. In this comparison the
degree of the depolarization of the Raman lines
and their intensity was taken into consideration
(Table 2). A particular feature of the two spectra
is the existence of a continuous spectrum continuing
from the exciting line $\lambda = 4358$ Å. It is, howev r,
less intensive in the spectrum of GeO_2 than in that
of SiO_2. The comparison of the Raman spectra of
vitreous GeO_2 and SiO_2, as presented in this paper,
may come in useful in the interpretation of their
vibration spectra. There are 2 figures, 2 tables, and

Card 2/3   3 references, 2 of which are Soviet.

Raman Spectrum of Vitreous Germanium Dioxide   SOV, __-??-_-__.__

ASSOCIATION: Fizicheskiy institut im.P.N.Lebedeva Akademii nauk SSSR
              (Institute of Physics imeni P.N.Lebedev, AS USSR)

Card 3/3

69274

S/051/60/008/04/012/032
E201/E691

AUTHORS: Obukhov-Danisov, V.V., Sobolev, N.N. and Cheremisinov, V.P.

5 2200 24.3400
TITLE: The Vibrational Spectra of [Various Forms of] Germanium Dioxide Modi-
             fications

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 4, pp 505-510 (USSR,

ABSTRACT: The authors investigated the vibrational spectra of three forms of
             germanium dioxide. These three forms are: (1) a glassy form,
             (2) a soluble hexagonal form with α-quartz structure, and (3) an
             insoluble tetragonal form with rutile structure; the properties of
             the three forms are listed in Table 1. The white crystalline powder
             of GeO_2, obtainable commercially, consists mainly of the soluble form
             with a small mixture of the insoluble form.   Pure soluble form was
             produced by recrystallization of the commercial powder from an aqueous
             solution. The insoluble form was prepared by a hydrothermal method
             (Ref 10) from the soluble form. The glassy modification was prepared
             from the commercial powder in a special high-temperature furnace heated
             with six Silit rods. The powder was placed in platinum test tubes and
             after melting was cooled at the rate of ~0.2 deg/min. An ISP-51
             spectrograph was used to obtain all the Raman spectra, which were excited
             with the 405 or 435 mμ lines from a low-pressure mercury lamp. The

Card 1/2

69274
S/051/60/008/04/012/032
E201/E691

The Vibrational Spectra of [Various; Forms of] Germanium Dioxide Modifications

Raman spectra of the crystalline forms of GeO$_2$ were obtained from the measured transmission of the exciting line through powder layers of 0.25-1 mm thickness. The Raman spectra of the glassy samples were recorded in the usual way. The infrared absorption spectra (Figs 1-3) in the 2.5-35 μ region were recorded with a double-beam spectrophotometer developed at the Physics Institute of the Academy of Sciences (Ref 11) using powders suspended in paraffin oil. The results obtained are given in Table 1 in Figs 1-3. The spectra of the soluble and glassy forms differed only a little from one another which suggests that their structures are similar. The insoluble form had a completely different vibrational spectrum, showing that it has a different structure (confirmed by X-ray crystallography). The vibrational spectra of the soluble form of GeO$_2$ and the low-temperature modification of α-quartz were compared and the resultant classification of the GeO$_2$ spectrum is given in Table 3.   There are 3 figures, 3 tables and 15 references, 4 of which are Soviet, 7 English, 3 German and 1 Indian.

SUBMITTED: June 11, 1959
Card 2/2

Obukhov-Denisov, V. V

5.2400 (B)

81973

81973

S/076/60/034/07/09/009
B015/B070

AUTHORS: Obukhov-Denisov, V. V.,   Sidorov, T. A.,   Fayzullov, F. S.,
             Cheremisinov, V. P.

TITLE: The Vibration Spectrum of Vitreous Beryllium Fluoride

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7,
             pp. 1622-1624

TEXT: The vibration spectrum of vitreous beryllium fluoride is investigat-
ed and the results are discussed. All investigations of Raman spectra were
made on a three prism spectrograph ИСП (ISP)-51 and the spectra were
photographed. No Raman spectrum, however, of vitreous beryllium fluoride
was observed. Infrared absorption spectrum was investigated on a double
radiation spectrophotometer (Ref. 2) and an intensive absorption band with
a maximum at 750 cm^{-1} was established. It is assumed that the structure
of BeF_2 is neither typically ionic nor molecular. The high degree of
homopolarity of the Be – F bond shows that the valence electrons are for
most of the time between Be and F atoms and guarantee the formation of

Card 1/2

The Vibration Spectrum of Vitreous Beryllium   S/076/60/034/07/09/009
Fluoride   B015/B070
                                                 81973

molecules or complicated ions. The ionic character of the bond on the
other hand shows that in BeF_2 molecule the atoms of Be and F possess
charges and a strong interatomic interaction is present. The authors thank
L. R. Batsanova and A. V. Novoselova for the BeF_2 sample and N. N. Sobolev
for advice. There are 1 figure and 8 references: 6 Soviet, 1 German, and
1 American.

ASSOCIATION: Akademiya nauk SSSR Fizicheskiy institut im. P. N. Lebedeva
                (Academy of Sciences of the USSR, Physics Institute imeni
                P. N. Lebedev)

SUBMITTED: October 31, 1958

Card 2/2

S/051/62/012/002/004/020
E032/E514

26.2311

AUTHORS: Kitayeva, V.F., Obukhov-Denisov, V.V. and Sobolev,N.N.

TITLE: Concentration of charged particles in the plasma of
             an arc burning in an argon-helium atmosphere

PERIODICAL: Optika i spektroskopiya, v.12, no.2, 1962, 178-185

TEXT: The authors report an experimental study of the
profiles of the hydrogen lines H_α, H_β, H_γ and H_δ emitted by the
plasma of an arc excited in an argon and helium atmosphere in
the current range 1-200 A.   The arc was produced in a special
water-cooled chamber.   Hydrogen was added to argon and helium
in amounts corresponding to 0.2-5% by pressure.   The central
part of the arc was photographed with the grating spectrograph
ДФС-4 (DFS-4) whose dispersion in the second order was 6.9 Å/mm.
The spectrograph slit was 0.025 mm and the corresponding half-
width of the instrumental function was 0.3 Å.   This half-width
was determined experimentally from narrow lines emitted by a
Geisler hydrogen-filled discharge tube.   The line profiles were
compared with the theoretical profiles based on the work of
H. R. Griem, A. C. Kolb, K. J. Shen (Ref.5: Stark broadening of
Card 1/5

Concentration of charged ...

S/051/62/012/002/004/020
E032/E514

hydrogen lines in plasma. March 4, 1960, N.R. Report 5455, U.S. N.R. L., Washington; Phys. Rev., 116, 1960; A.C. Kolb, H.R.Griem. Phys. Rev., III, 514, 1958). A satisfactory agreement between the theory and experiment was established. This comparison also yielded the charged-particle concentrations for arcs produced in argon and in helium in the current range 1-200 and 6-200 A, respectively. The results obtained are shown in Fig.5. There are 8 figures.

FIG.5 Legend. Concentration of charged particles N_i in the plasma of an arc as a function of the arc current.
a - neglecting the instrumental functions and Doppler broadening,
b - allowing for these two effects: I - argon, II - helium.
The experimental points are identified as follows:
Argon: 1-5% H_2 flashed at 10 litres/min, electrode separation 12 mm; 2-5% H_2 at 10 litres/min, electrode separation 25 mm; 3-5% of H_2 at 3 litres/min, l = 12 mm; 4-2% H_2 at 10 litres/min,

Card 2/4

Concentration of charged ...   S/051/62/012/002/004/020
                                       E032/E514

$l = 12, 25$ mm.   The numbers on the curve
indicate the temperature in °K.

SUBMITTED: January 30, 1961

Card 3/4

OBUKHOV-DENISOV, V.V.; CHERZMISINOV, V.P.

Raman spectrum and structure of vitreous polyphosphate. Opt. i
spektr. 12 no.6:723-727 Je '62.   (MIRA 15:5)
(Raman effect) (Phosphates)

41325

S/057/62/032/009/008/014
B125/B186

AUTHORS: Kitayeva, V. F., Kolesnikov, V. N., Obukhov-Denison, V. V.,
and Sobolev, N. N.

TITLE: Structure of the positive column of an arc discharge in
argon. I. The local electrical characteristics of the
column

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1084 - 1089

TEXT: The field strength and the radial distribution of the concentration
of charged particles are determined from the contour of the hydrogen line
H_β, and the radial distribution of temperature is measured for a non-
equilibrium plasma (i = 4a) and for an equilibrium plasma (i = 10 - 200a)
in an arc discharge in a hydrogen-argon mixture (Ar $\geq$ 94.0%, $H_2 \sim$ 5%, N, O
and C impurities). The volt-ampere characteristics (Fig. 2) are shifted
if there is a change in the diameter and material of the cathode, the
hydrogen concentration, or the velocity of the gas flow. The general
shape of the characteristics is practically independent of these quantities.

Card 1/4

The dashed line shows the extrapolated sum of anode and cathode drops. The
descending branch is due to the change in amperage of the column, and the
ascending one to the increase of anode and cathode voltage drops. The
field strength is practically constant at $i \gtrsim 50a$. The radial distributions
of the concentration N_e of charged particles (Fig. 3) and of the current

density $j(r) = \sigma(r)E$ (Fig. 4) in the column are calculated from the exact
formulas of the kinetic theory for the plasma conductivity σ. The
concentration of charged particles and the column radius increase with in-
creasing amperage. There is no indication of a pinch effect in air at
these amperages. The amperages calculated from $j(r)$ in a partially ionized
equilibrium plasma agree well with the amperages measured. The formulas
here given for σ in plasma hold as long as the Boltzmann equation is
applicable to the plasma. The applicability of these formulas for

concentrations of $N_{ion} \lesssim 10^{15}$ cm^{-3} cannot be established yet, from lack of
experimental data. There are 4 figures and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva, Moskva (Physics
             Institute imeni P. N. Lebedev, Moscow)

Card 2/4

Structure of the positive...

S/057/62/032/009/008/014
B125/B186

SUBMITTED: July 27, 1961 (initially)
              January 29, 1962 (after revision)

Fig. 2. Volt-ampere characteristics. (1) Diameter of the cathode 2 mm, of the anode 6 mm; (2) diameter of the cathode 6 mm, of the anode 12 mm.

Fig. 3. Radial distributions of the concentration of charged particles in the column of the arc. (1) 200a; (2) 40a; (3) 10a; (4) 4a.

Fig. 4. Radial distributions of the current density in the column of the arc. Designations as in Fig. 3.

Card 3/4

Structure of the positive...

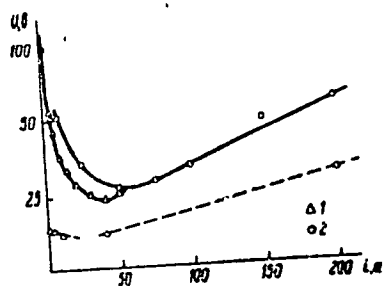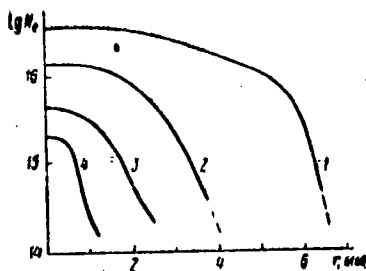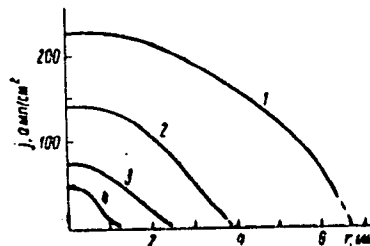S/057/62/032/009/008/014
B125/B186

Fig. 2

Fig. 3

Fig. 4

Card 4/4

AUTHORS: Kolesnikov, V. N., Obukhov-Denisov, V. V.

TITLE: Scattering cross section of slow electrons from hydrogen atoms

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 4, 1962, 1001-1009

TEXT: Earlier determinations of cross sections for the scattering of slow electrons ($E \sim 1$ ev) by hydrogen atoms from conductivity measurements (H. Maecker et. al. Zs. Phys. 140, 119 1955; H. W. Drawin, Zs. Phys. 146, 295, 1956) have yielded much too high values as compared with results from crossed beam experiments and theoretical values. It is suggested that this discrepancy is caused by the adoption of a too simple approximation for the electrical conductivity of a plasma. An improved conductivity formula is derived from Ginzburg and Gurevich's solution of Boltzmann's transport equation for a plasma in a homogeneous electric field. Using this formula,

$$\langle Q \rangle = \frac{1}{6} \left(\frac{m}{kT} \right)^3 \int_0^\infty q_{tr}(v) v^5 \exp\left(-\frac{mv^2}{2kT} \right) dv$$

Card 1/2