18(5) SOV/91-59-8-6/28

AUTHOR: Uvarov, O.F., Engineer

TITLE: The Application of Welded Flanges for Pipelines

PERIODICAL: Energetik, 1959, Nr 8, pp 11-12 (USSR)

ABSTRACT: The author suggests a method of manufacturing welded flanges in case steel plates of the required thickness are not available. He recommends cutting two flange blanks from thinner plates. These blanks are welded to the tube and a V-groove about 6 mm deep is cut by a lathe in the center between the two sections, as shown in fig.1. The two sections are then welded in the area of the groove. The author explains also the welding of collar flanges using steel plates and steel bars. Only small flanges may be produced by this method, since, without additional machining on a lathe, their diameter is limited by the size of the drill which must be used for this purpose. Such a flange is shown in fig.2. The author states that flanges produced by this method are in operation for several years without showing any defects. A note from the editor says that this method should be used only

Card 1/2

The Application of Welded Flanges for Pipelines

in urgent cases when no other material is available. There are 2 diagrams.

UVAROV, O.F., inzh.

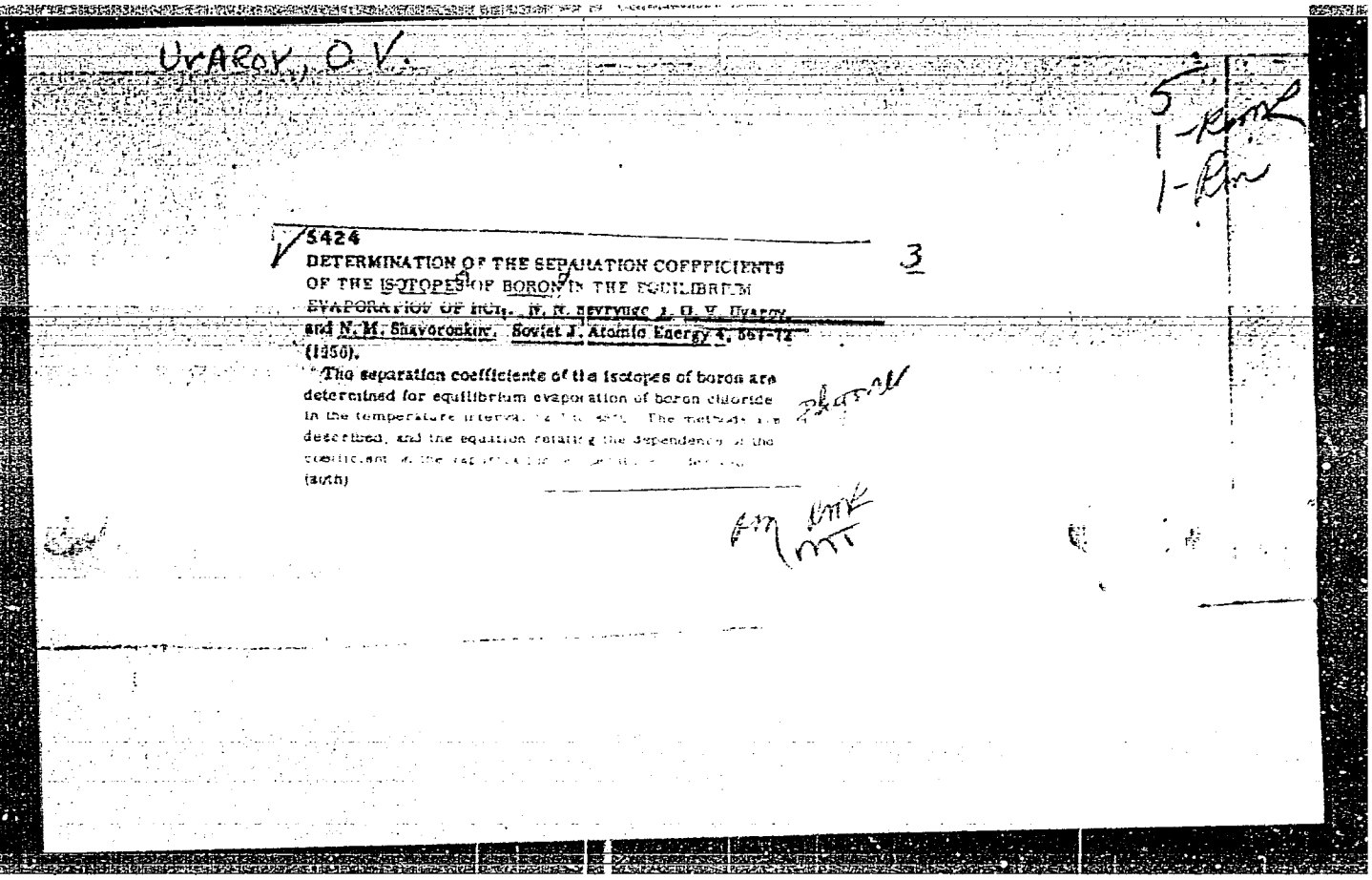
Welded pipe joints used abroad. Mont. i spets. rab. v stroi. 24 no.5:28-31 My '62. (MIRA 15:5)
(Pipe--Welding)

UVAROV, O.F., inzh.

Vessels and apparatus lined with stainless materials; digest of foreign literature. Khim. i neft. mashinostr. no.1:44-46 Jl '64. (MIRA 17:12)

UVAROV, O.F. (Ivanovo)

Use in the United States of methods for calculating underground metal pipelines for external stress resistance. Stroi. truboprov. 10 no.8:16-19 Ag '65. (MIRA 18:11)



UrAROV, O. V.

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5424

DETERMINATION OF THE SEPARATION COEFFICIENTS OF THE ISOTOPES OF BORON IN THE EQUILIBRIUM EVAPORATION OF BCl_3. N. N. Nevyazhskaya, O. V. Uvarov, and N. M. Shavorankin. Soviet J. Atomic Energy 4, 561-72 (1956).

3

The separation coefficients of the isotopes of boron are determined for equilibrium evaporation of boron chloride in the temperature interval [illegible]. The methods [illegible] described, and the equation relating the dependence of the coefficient [illegible] (auth)

"Rectification Column for Obtaining Water That Contains Heavy Oxygen," by O. V. Uvarov, V. A. Sokol'skiy, and N. M. Zhavoronkov, Scientific-Research Physicochemical Institute imeni L. Ya. Karpov, Khimicheskaya Promyshlennost' No 7, Sep 56, pp 404-405

A procedure and equipment with the use of which water containing 24.5% of H_2O^{18} is obtained are described. The importance of developing procedures for the concentration of deuterium, O^{18}, and N^{15} is pointed out.

SUM-1305

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1520
AUTHOR SEVRJUGOVA,N.N., UVAROV,O.V., ŽAVORONIKOV,N.M.
TITLE The Determination of the Separation Coefficients of Boron Isotopes at equilibrium Evaporation of BCl_3.
PERIODICAL Atomnaja Energija, 1, fasc.4, 113-116 (1956)
Issued: 19.10.1956

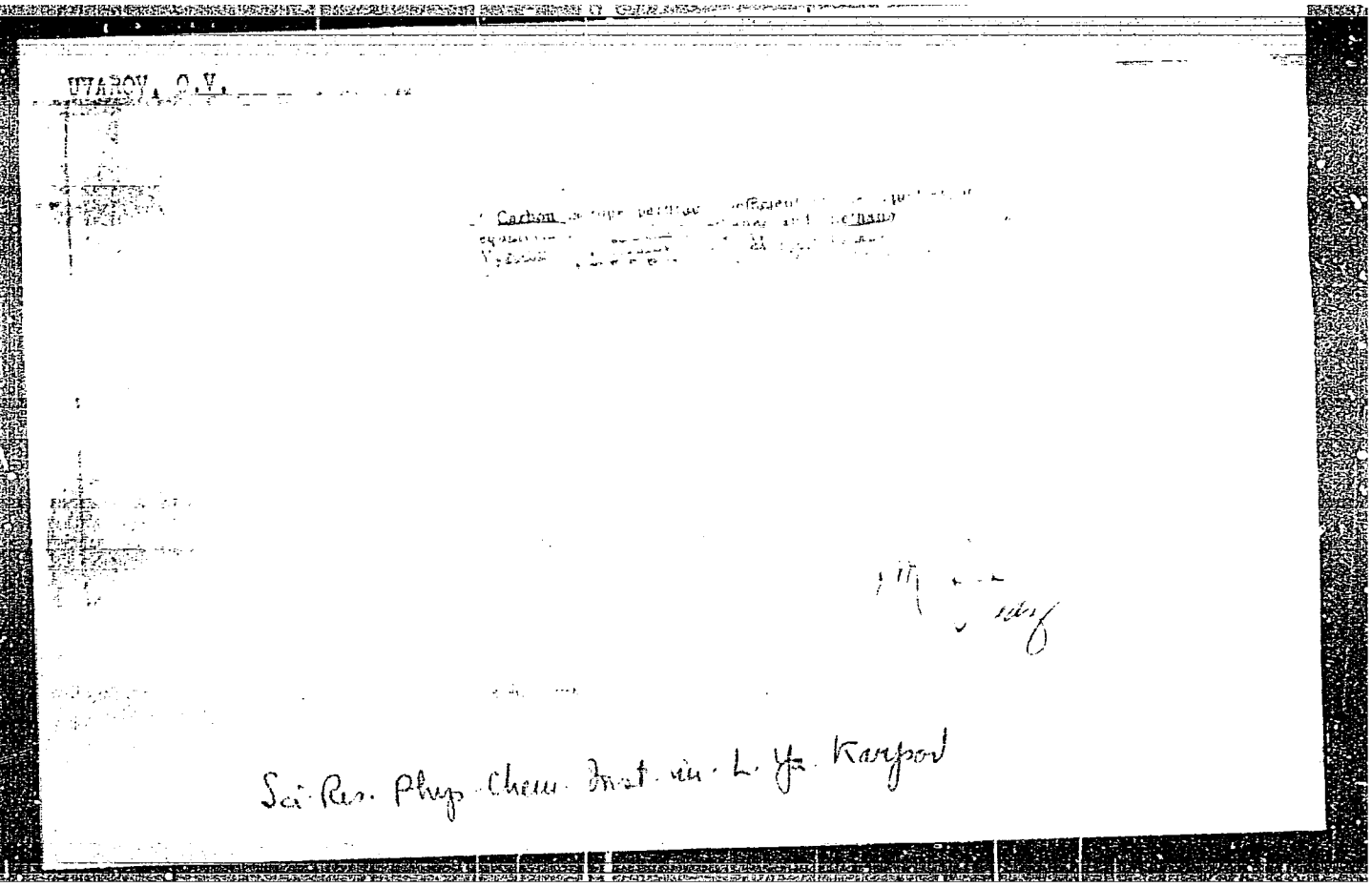
The present work describes the exact determination of the separation coefficient α of the system $B^{11}Cl_3 - B^{10}Cl_3$ and of its temperature dependence by the method of RALEIGH'S distillation. With this method a large quantity of the substance to be investigated is evaporated with the exception of a small remainder, and α is then determined from the modification of isotopic conditions at the beginning and at the end of the process of distillation. Distillation took place in two stages. The determination of the separation coefficient is possible if the following conditions are satisfied: The composition of the liquid must always remain unchanged in the entire volume. Evaporation must be slow without any violent boiling. The walls, particularly above the liquid, must always be a little warmer than the liquid. The first stage of distillation extends from 2000-3000 g to 50-70 g. The distilling device is described on the basis of a drawing. After this evaporation the metal balloon was removed and replaced by the evaporator for the second stage.
Also the apparatus for the second stage of distillation is illustrated by a drawing. This second distillation was carried out under the same conditions as

the first, and 0,5 to 1,0 g of the liquid was left over in the evaporator. This remainder of liquid was carefully and exactly weighed. The samples were filled into glass ampules which were fitted to the evaporator. On the occasion of the introduction of the evaporator into the DEWAR vessel with liquid air, the air was pumped out. The evaporator was then heated to room temperature and in the ampule about 0,3 g BCl_3 were condensed. Also a second ampule was filled in the same manner.

At 300 revolutions performed by the vanewheel-like mixing device α attains its maximum value.

By means of the same apparatus the influence exercised by the evaporation velocity on the separation coefficient of $B^{10}Cl_3$-$B^{11}Cl_3$ was investigated. In the interval of evaporation velocities of from 1,8 to 4,7 cm^3/cm^2.hour this amount remained practically constant. With rising temperature α decreases considerably. At $-61,7^\circ$ the vapors of $B^{10}Cl_3$ and $B^{11}Cl_3$ have the same viscosity, but at lower temperatures the viscosity of $B^{10}Cl_3$ is lower than that of $B^{11}Cl_3$. This dependence can be represented by the equation $\alpha=1,1112.e^{-2,33/T}$. According to a mass-spectroscopic analysis of isotopes of the compound BCl_3 the ratio of isotopes in the initial state is 4,11. This corresponds to the following concentration: B^{10} - 19,5%, B^{11} - 80,5%.

INSTITUTION:



UVAROV, O.

ZHAVORONKOV, N. and UVAROV, O.

"Separation of Stable Isotopes of Light Elements."

paper to be presented at the 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy, Geneva, 1 - 13 Sept 58.

UVAROV, O.V.

5(2) PHASE I BOOK EXPLOITATION SOV/1916

Vsesoyuznoye soveshchaniye po khimii bora, 1955

Bor; trudy Konferentsii po khimii bora i yego soyedineniy (Boron; Transactions of the Conference on the Chemistry of Boron and Its Compounds) Moscow, Goskhimizdat, 1958. 189 p. Errata slip inserted. 2,400 copies printed.

Ed.: G.P. Luchinskiy; Tech. Ed.: N.S. Lur'ye.

PURPOSE: This book is intended for chemists, as well as for industrial personnel working with boron and its compounds.

COVERAGE: This collection contains 24 studies on the chemistry, crystalline structure, physicochemical properties, and technology of boron and its compounds. Twenty-two of the studies were presented at the All-Union Conference on Boron Chemistry, held at the Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Physicochemical Institute im. L. Ya. Karpov) in

Boron; Transactions of the Conference (Cont.) SOV/1916

December 1955. Two of these articles deal with the thermochemistry of boron. The two studies on "borundum" production are being published for the first time. The studies are well illustrated and accompanied by bibliographies.

TABLE OF CONTENTS:

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UVAROV, O.V.

PHASE I BOOK EXPLOITATION SOV/1297

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke, Moscow, 1957

Polucheniye izotopov. Moshchnyye gamma-ustanovki. Radiometriya i dozimetriya; trudy konferentsii... (Isotope Production. High-energy Gamma-Radiation Facilities. Radiometry and Dosimetry; Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science) Moscow, Izd-vo AN SSSR, 1958. 293 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR; Glavnoye upravleniye po ispol'zovaniyu atomnoy energii SSSR.

Editorial Board: Frolov, Yu.S. (Resp. Ed.), Zhavoronkov, N.M. (Deputy Resp. Ed.), Aglintsev, K.K., Alekseyev, B.A., Bochkarev, V.V., Leshchinskiy, N.I., Malkov, T.P., Sinitsyn, V.I., and Popova, G.L. (Secretary); Tech. Ed.: Novichkov, N.D.

PURPOSE: This collection is published for scientists, technologists, persons engaged in medicine or medical research, and others concerned with the production and/or use of radioactive and stable isotopes and radiation.

COVERAGE: Thirty-eight reports are included in this collection under three main subject divisions: 1) production of isotopes 2) high-energy gamma-radiation facilities, and 3) radiometry and dosimetry.

TABLE OF CONTENTS:

PART I. PRODUCTION OF ISOTOPES

This report is a general survey of production methods, apparatus, raw materials, applications, investigations and future prospects for radio isotopes in the Soviet Union.

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A method is described for enriching natural mixtures containing ~18.6 percent B^{10} concentration to ~80 percent B^{10} concentration by low temperature (~ - 100 degrees, scale not stated) adiabatic rectification. Separation capability was B^{10} of 95-96 percent purity after 480 hours processing; but, as the desired concentration was ~80 percent, separation yield was 4 liters per 24 hours. Block diagrams of installations are given.

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SOV/20-125-3-32/63

21(5)

AUTHORS: Matveyev, K. I., Uvarov, O. V., Zhavoronkov, N. M., Corresponding Member, AS USSR

TITLE: The Coefficients of the Separation of Chlorine Isotopes in the Equilibrium Evaporation of HCl (Koeffitsiyenty razdeleniya izotopov khlora pri ravnovesnom isparenii HCl)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 3, pp 580-583 (USSR)

ABSTRACT: The authors determined the influence exerted by the amount of impurities upon the value of the coefficient of separation. The computation was made in a provisional manner according to Rayleigh's equation. A diagram illustrates the results, i.e. the coefficient of separation as a function of the coefficient of enrichment F and of the degree of concentration. The liquid hydrochloric acid was evaporated out of a cylindrical vessel with conical bottom. Two figures illustrate this vessel which was contained in a vacuum jacket, as well as the scheme of the whole evaporator. The experimental conditions are listed, and the experimental results are shown in the following table:

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The Coefficients of the Separation of Chlorine Isotopes in the Equilibrium Evaporation of HCl

T	P	F	$\alpha_{experimental}$	$\alpha_{computed}$
167	190	1.0221	1.0022±0.00025	1.0022
173	285	1.017	1.00193±0.000125	1.00194
181	534	1.012	1.0014±0.0001	1.0016
185	—			1.0014
189	760			1.0013

The temperature dependence of ln α is expressed by the equation $\ln \alpha = \frac{1.2846}{T} - 0.0055$, where T denotes the absolute zero. The resultant small value of α (at the normal boiling temperature of 1.0013) indicates that it is not advisable to employ the rectification of HCl for the purpose of separating chlorine

The Coefficients of the Separation of Chlorine Isotopes in the Equilibrium Evaporation of HCl

isotopes, not even in the presence of columns with a high degree of efficiency. There are 3 figures, 1 table, and 9 references, 5 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Scientific Research Institute imeni L. Ya. Karpov)

SUBMITTED: December 10, 1958

5 (2), 21 (5)

AUTHORS: Sevryugova, N. N., Uvarov, O. V., Zhavoronkov, N. M., Corresponding Member AS USSR

SOV/20-126-5-36/69

TITLE: Separation of Boron Isotopes by Boron Chloride Rectification (Razdeleniye izotopov bora rektifikatsiyey khloristogo bora)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 1044 - 1046 (USSR)

ABSTRACT: At the beginning, the differences between the two boron isotopes B^{10} and B^{11} are indicated (Ref 1). The light isotope B^{10} is used for filling neutron counters; besides, it can be used as a protection against neutron radiation, and for regulating the operation of reactors. The separation of boron isotopes is achieved by 5 different methods: a) electromagnetically, b) by thermodiffusion, c) by means of diffusion by vapor, d) by the chemical isotope exchange, and e) by rectification. The methods a) and c) make possible a high degree of separation, but are little productive. The method b) failed. At present, the two latter methods d) and e) can be regarded as most convenient for the B^{10}-production. Both of them have been chemically developed.

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Separation of Boron Isotopes by Boron Chloride Rectification SOV/20-126-5-36/69

The authors think that rectification is one of the most economical methods. They carried out the rectification of the BCl_3 in columns of various types of construction (Fig 1). The procedure is described in detail. Figure 2 shows the course of the increase in $B^{10}Cl_3$ in the retort liquid. Within 28 days, a 5-fold enrichment was obtained at a content of 100 cm^3 liquid in the distillation vessel. The stationary phase was not attained during the period mentioned. The calculation showed that the (maximum possible) separability of the column is equal to 800 theoretical steps. This should guarantee the obtaining of a product with a content of about 75 Mol-% $B^{10}Cl_3$. An approximate calculation showed that the production method for elementary boron described here is acceptable from an economical point of view. There are 2 figures and 5 references, 4 of which are Soviet.

Card 2/3

Separation of Boron Isotopes by Boron Chloride Rectification SOV/20-126-5-36/69

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Physico-chemical Research Institute imeni L. Ya. Karpov)

SUBMITTED: September 5, 1958

Card 3/3

KAZANSKIY, B.A.; LUKINA, N.Yu.; NAKHAPETYAN, L.A.; ZOTOVA, S.V.; LOZA, G.V.; SHATENSHTEYN, G.A.; OVODOVA, V.A.; UVAROV, O.V.; SOKOLOV, N.M.; SMOL'NIKOV, V.P.

Production of high purity cyclopropane. Khim. prom. no. 6:462-465 S '60. (MIRA 13:11)

(Cyclopropane)

82733
S/089/60/009/002/004/015
B006/B056

24.6710

AUTHORS: Sevryugova, N. N., Uvarov, O. V., Zhavoronkov, N. M.

TITLE: Separation of Stable Boron Isotopes

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 2, pp. 110-125

TEXT: The present article gives a detailed description of the methods of separating the boron isotopes B^{10} and B^{11} which are interesting for industrial purposes. The molar ratio of the two isotopes in naturally occurring boron is about 20 : 80. The various methods furnish somewhat different values, and various authors also obtained different results by one and the same method (on BF_3) (cf. Table 1). These problems are briefly dealt with in the introduction, after which the electromagnetic method, the method of thermal diffusion, and the method of diffusion in the vapor current of an inert substance are discussed, while in the following the two most important methods of industrial separation of isotopes are explained in great detail: the method of chemical isotopic exchange and the method of rectifying boron halides. G. M. Panchenkov, V. D. Moyseyev, and A. V. Makarov

Card 1/4

(Ref. 31) were among the first who suggested using the chemical exchange between boron halides and organic boron halogen complexes for the separation of boron isotopes. The separation factor α is comparatively large for these processes and is, on the average, about 1.03. Its temperature dependence for the systems $(C_6H_5)(CH_3)OBF_3$ - BF_3 and $(C_4H_9)SBF_3$ - BF_3 is given in Tables 2 and 3. For the last-mentioned system α attains a maximum value of 1.054 at -20°C. The α-values determined by various authors by means of different isotopic exchange methods are given in Table 4. The grave disadvantage of the method consists in the high molecular weight of the complex. This is the reason why industrial plants find it less economical to work by this method. The rectification methods are considerably more simple, but, in this case, the separation factor is small. In $BO_3(CH_3)_2$, e.g., it is only 1.001; in practice, only BF_3 and BCl_3 are used, which have a somewhat higher α. In the first case, the temperature dependence of α is given by $\alpha = 1.0488\ e^{-6.17/T}$, and in the second case by $\alpha = 1.0112\ e^{-2.33/T}$. The temperature- and pressure dependence of α

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in BF_3 rectification are illustrated also by the numerical values in Table 6 and the $\alpha(T)$ curve in Fig. 3. $\alpha(T)$ for BCl_3 rectification is shown in Fig. 5. The greatest disadvantage of the rectification methods consists in the fact that, for the purpose of increasing α, it is necessary to work at the lowest possible temperatures, which reduces productivity because of the consumption of liquid air. BCl_3 rectification seems to be the most profitable method; though the separation factor is only about 1.003, this value may be attained at atmospheric pressure and room temperature. A large table (5) shows the characteristics of the individual columns for rectification- and isotopic exchange methods (taken from Refs. 40-47). The most important data of the various methods are compared in Table 7. There are 7 figures, 7 tables, and 71 references: 23 Soviet, 20 US, 5 German, 4 British, 1 French, 6 Dutch, 2 Swedish, and 1 South African.

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Separation of Stable Boron Isotopes

S/089/60/009/002/004/015
B006/B056

SUBMITTED: April 4, 1960

4

Card 4/4

S/076/60/034/05/10/038
B010/B002

5.2400(A)

AUTHORS: Sevryugova, N. N., Uvarov, O. V., Zhavoronkov, N. M.

TITLE: Separation Factors of Boron Isotopes in the Equilibrium Vaporization of Boron Fluoride

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 5, pp. 1004-1008

TEXT: The authors investigated the dependence of the separation factors α on temperature with respect to the system $B^{11}F_3 - B^{10}F_3$ under equilibrium vaporization. The values of α were determined by Raleigh's distillation method. In order to obtain a larger value of G_o/G_E (G_o and G_E = amount of substance at the beginning and at the end of distillation), vaporization was brought about in two stages. Experiments took place in a device suited for the purpose (Fig. 2), the main elements of which are two vaporization vessels (Fig. 1), in which mixing is done with magnetic stirrers. The vessels are installed in a cryostat filled with isopentane, the temperature of which is measured with thermocouples. Experiments showed (Table 1) that the maximum value of α is attained at a stirrer speed of 200 rpm. Determinations of the influence exerted by the boiling temperature (measured at 157 to 168°K) on the value of α revealed (Table 2) that α drops with temperature, which fact had already been observed on the system $B^{11}Cl_3 - B^{10}Cl_3$.

Card 1/2

In the present case, this dependence amounted to $\alpha = 1.0488\ e^{-6.17/T}$ (3). Since α rises with temperature, it is expedient to rectify BF_3 at atmospheric or higher pressure. The samples were analyzed by means of an MC-4 (MS-4) mass spectrometer. $B^{11}F_3$ was found to be the more readily volatilizing component in the temperature range investigated. On the strength of experimental results obtained by G. M. Panchenkov, V. D. Moiseyev, and N. A. Lebedev (Ref. 6) concerning the dependence of the ratio between the peak height of $(B^{10}F_2)^+$ and $(Si^{28}F_3)^+$ on the silicon fluoride content in BF_3, less than 0.1 mole% of SiF_4 was found to occur in the samples investigated.

There are 3 figures, 2 tables, and 6 references: 3 Soviet, 1 American, and 2 German.

SUBMITTED: June 23, 1958

Card 2/2

S/076/60/034/009/039/041XX
B020/B056

AUTHORS: Matveyev, K. I., Uvarov, O. V., Zhavoronkov, N. M.

TITLE: The Separation Factors of Chlorine Isotopes in Equilibrium Vaporization of Cl_2

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9, p. 2123

TEXT: In 1959, the authors published a paper (Ref. 1), in which the separation factors of chlorine in equilibrium vaporization of HCl had been determined. When using the same method, the temperature dependence of the separation factors of the chlorine isotopes Cl^{35} and Cl^{37} in equilibrium evaporation of molecular chlorine was measured. On the assumption that the ratio of the vapor pressures of two kinds of isotopes of chlorine molecules is equal to the separation factor α (which holds for the majority of isotopic systems), the temperature dependence of this ratio may be expressed by the following equations:

$$\ln \alpha_1 = \ln(pCl_2^{35}/pCl_2^{37}) = 1.7736/T - 0.00723 \quad (1)$$

$$\ln \alpha_2 = \ln(pCl^{35}Cl^{37}/pCl_2^{37}) = 1.1392/T - 0.003896 \quad (2)$$

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The Separation Factors of Chlorine Isotopes in Equilibrium Vaporization of Cl_2

S/076/60/034/009/039/041XX
B020/B056

The partial pressures of the various kinds of isotopes are determined from the isotopic ratio by means of mass spectrometry. The data given in the accompanying table show that the preparation of pure chlorine isotopes by rectification of molecular chlorine is unsuitable, because even at a pressure of about 100-200 mm Hg the separation factor is very small (1.0015 - 1.0010). There are 1 table and 1 Soviet reference.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: February 17, 1960

Card 2/2

MATVEYEV, K.I.; UVAROV, O.V.; ZHAVORONKOV, N.M.

Separation of chlorine isotopes by the chemical exchange method. Zhur.prikl.khim. 34 no.11:2563-2566 N '61. (MIRA 15:1)
(Chlorine—Isotopes)

43783

G/025/62/000/004-5/004/005
I041/I241

11,3600

AUTHORS: Uvarov, O.V., Sokolov, N.M., and Zavosonokov, N.M.

TITLE: Physico-chemical constants of H_2O^{18}

PERIODICAL: Kernenergie, no.4-5, 1962, 323-329

TEXT: The elementary separation factor for the system H_2O^{16}-H_2O^{18} in the temperature range from 20-210°C was determined by a differential vapour pressure measurement method. The results are given by the formula $\alpha = 0.9835 \exp (7.598/T)$. From these results one calculates the difference in latent heat of evaporation of the two water species as 14.98 cal/niob and the boiling point of pure H_2O^{18} at atmospheric preasures as 100.13°C. The refractive index difference - Δn - between light and heavy water was measured at 20°C with the results: $\Delta n = 3.4 \cdot 10^{-4}$. The temperature coefficient of the refractive index difference between 10° - 30°C was found to be

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G/025/62/000/004-5/004/005
I041/I241

Physics-chemical constants of H_2O^{18}

(1.18-1.20) 10^{-6}. The density of enriched waters of varying H_2O^{18} concentration was measured at 25°C and 30°C and the result obtained was d = A+0.00107. N where $N_{}$ = water concentration of H_2O^{18} and A at 25° = 0.99720. Pure H_2O^{18} at 25° is then 1.10723 denses than normal water. There are 5 drawings including a schematic sketch of the differential vapour pressure apparatus and 6 table of results (translator's note: modified translation of author's abstract)

ASSOCIATION: Karpov Institut for Physical Chemistry, Moscow.

SUBMITTED: Paper presented at the 2nd conference on Stable Isotopes, October 30, - November 4th, 1961.

Card 2/2

MALYUSOV, V.A.; ZHAVORONKOV, N.M.; MALAFEYEV, N.A.; ROMEYKOV, R.N.;
Prinimali uchastiye: BABKOV, S.I., UVAROV, O.V.; SOLYANKIN,
L.N.; GRISHIN, D.M.

Effectiveness of regular packings in the rectification of water.
Khim.prom. no.7:519-529 JL '62. (MIRA 15:9)
(Packed towers)

UVAROV, O.V.; SOKOLOV, N.M.; LYAPIN, V.V.; ZHAVORONKOV, N.M.

Coefficients of separation of the carbon isotopes $C^{12} - C^{14}$ during the equilibrium vaporization of methane. Zhur. VKHO 7 no.6:695-697 '62. (MIRA 15:12)

1. Nauchno-issledovatel'skiy fiziko-tekhnicheskiy institut imeni L.Ya. Karpova.

(Methane)
(Carbon--Isotopes)
(Evaporation)

43470

S/076/62/036/012/005/014
B101/B180

AUTHORS: Uvarov, O. V., Sokolov, N. M., and Zhavoronkov, N. M. (Moscow)

TITLE: Physical and chemical constants of heavy oxygen water

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 12, 1962, 2699 - 2706

TEXT: Water containing ~47% H_2O^{18} and up to 60% D_2O was purified, and the D_2O content was reduced to 0.016 mole% with reduced heated metallic hot iron. The following physicochemical constants were determined: (A) The H_2O^{16} - H_2O^{18} separation coefficient α by a differential method similar to that used by W. H. Keesom, J. Haantjes (Physica, 2, 986, 1935) for separating neon isotopes. Result: between 20 and 210°C, $\log \alpha = 3.500/T - 0.00722$ which is in good agreement with data obtained by other researchers; $\alpha_{100°C} = 1.0038$. The difference in heats of vaporization is 14.97 cal/mole, the boiling point of H_2O^{18} at 760 mm Hg is 100.13°C. (B) The refractive index was determined with an interferometer. $\Delta n = 0.00034N_{H_2O^{18}}$ holds for

Card 1/2

white light at 20°C; $N_{H_2O^{18}}$ is the molar part of H_2O^{18} in the mixture. Between 10 and 30°C, the temperature coefficient of the difference in refractive indices of H_2O^{16} and H_2O^{18} is $(1.18 - 1,20)\cdot10^{-6}$. (C) The water density was determined pycnometrically for different H_2O^{18} contents. Results: $d_4^t = A + 0.001070\ N_{H_2O^{18}}$, where A = 0.99720 at 25°C, 0.99580 at 30°C, and 0.99230 at 40°C. At 25°C, the density of 100% H_2O^{18} is 1.10724 with respect to river water. There are 3 figures and 5 tables. The most important English-language references are: S. Sakata a. N. Morita, Bull. Chem.Soc. Japan, 29, 284, 1956; H. E. Watson, J. Amer. Chem. Soc., 76, 5884, 1954.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: June 23, 1961

UVAROV, O. V.; SOKOLOV, N.M.;

"Betrachtung einiger Methoden zur Bestimmung der Koeffizienten der relativen Fluchtigkeiten stabiler Isotope."

Third Working Conference on Stable Isotopes, 28 October to 2 November 1963, Leipzig.

UVAROV, O.V.; SOKOLOV, N.M.

Effect of the evaporation conditions on the value of the partition factor α in the course of Raleigh distillation. Zhur. fiz. khim. 38 no.7:1863-1864 Jl '64. (MIRA 18:3)

UVAROV, P.

Correct organization of material and technical supplies. Fin. SSSR 17 no.4:54-58 Ap '56. (MLRA 9:8)
(Gorkiy--Automobile industry--Finance)

UVAROV, P.

Conducting the classes on industrial safety. Prof.-tekh. obr. 20 no.8:29 Ag '63. (MIRA 16:9)

1. Starshiy inzh. po podgotovke kadrov kombinata Rostovugol', g. Shakhty Rostovskoy obl.
(Mining engineering—Safety measures)

1. UVAROV, P. S., POPOV, E. G.
2. USSR (600)
4. Horses
7. Horsebreeding on a leading collective farm, Konevodstvo 23 No. 2, 1953

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

UVAROV, P.T.

Business accounting of the supply departments of the Gorkii Automobile Plant. Avt.trakt.prom. no.11:1-4 N '54. (MLRA 8:1)

1. Gor'kovskiy avtozavod im. Molotova.
(Automobile industry--Costs)

UVAROV, P.T.

Introducing a pneumatic gun for spot welding. Biul. tekh.-ekon. inform. Gos. nauch.-issl. inst. nauch. i tekh. inform. 18 no.6:19-20 Je '65. (MIRA 18:7)

Uvarov, P. T.

USSR/ Engineering - Supply

Card 1/1 Pub. 128 - 27/33

Authors : Uvarov, P. T.

Title : Supply reserves in the service of economics

Periodical : Vest. mash. 36/1, 76-79, Jan 1956

Abstract : The importance of a timely supply and proper distribution of raw materials to manufacturing plants are emphasized, and problems connected with inter-factory transport, cost accounting procedures and economical methods adopted in various manufacturing plants in organizing supply, transportation and loading and unloading of materials, seating of cost accounting units, wholesale prices, etc., are discussed.

Institution : .....

Submitted : .....

UVAROV, P.T.

KISELEV, I.I.; BORISOV, N.I.; YASINOVSKIY, B.S., inzh.; SANNIKOV, Yu.K., inzh.; SOKOLOV, V.A., inzh.; LEVCHENKO, L.D., inzh.; NALOYEV, G.A., inzh.; CHICHAKOV, K.K., inzh.; BARYKIN, V.I., inzh.; FREYDLIN, A.Ya., inzh. GULYAYEV, A.I., inzh.; STIGNEYEV, Ya.F., inzh.; SHAGANOVA, K.N., inzh.; KHELIMSKIY, I.Ye., inzh.; AVROV, A.N., inzh.; DEMIDOVA, M.I., inzh.; NIKIFOROVA, Ye.D., inzh.; KLIBANOVA, F.I., inzh.; CHIVKUNOV, K.I., inzh.; STOROZHKO, I.G., inzh.; NOVAKOVSKIY, Ye.Ya., inzh.; GOYKHTUL', A.O., inzh.; TARASOV, A.M., inzh.; SHISHKO, A.P., inzh.; UVAROV, P.T., ekonomist; DRAGUNOV, M.V., ekonomist; KARANDASHOV, A.A., ekonomist; KONKIN, M.V., ekonomist; GOREV, M.S., ekonomist. Prinimali uchastiye: LAPIN, T.I.; RAMENSKIY, Yu.A.; KADINSKIY, B.A.; SOKOLOV, S.D.; STOROZHKO, I.G.; FOMINYKH, A.I.; POLYAKOVA, N., red.; SMIRNOV, G., tekhn.red.

[Organization and improvement of production; practices of the Gorkiy Automobile Plant] Organizatsiia i sovershenstvovanie proizvodstva; opyt Gor'kovskogo avtozavoda. Moskva, Gos. izd-vo polit. lit-ry, 1958. 332 p. (MIRA 12:2)

1. Direktor Gor'kovskogo avtomobil'nogo zavoda (for Kiselev).
2. Glavnyy inzhener Gor'kovskogo avtomobil'nogo zavoda (for Borisov).
3. Gor'kovskiy avtomobil'nyy zavod (for all except Kiselev, Borisov, Polyakova, Smirnov).

(Gorkiy--Automobile industry)

deceased
17 Sep. 62

MARKOVICH, Mark Moiseyevich; UVAROV, Petr Yakovlevich; DROZHZHIN, Yu.N., red.; KOVALENKO, V.L., tekhn. red.

[Engineering taught in a physics class] Tekhnika na urokakh fiziki. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1960. 164 p. (MIRA 14:6)

(Engineering--Study and teaching)

1. UVAROV, S., Eng.

2. USSR (600)

4. Loading and Unloading

7. Mechanization of unloading operations in lumber yards, Mast. ugl., 2, no. 2, 1953.

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

UVAROV, S.A.; TIKHONOV, A.Ya., mostovoy master (Novosibirsk)

Providing for safety in work on bridges. Put' i put.khoz. 7 no.9:31 '63. (MIRA 16:10)

1. Zamestitel' nachal'nika Novosibirskoy distantsii po iskusstvennym sooruzheniyam (for Uvarov).

UVAROV, S.I., glavnyy red.; POPOV, A.S., red.; D'YAKONENKO, V.M., red.; GROSMAN, S.M., red.; PETROVA, T.G., red.; KOLESNIKOV, F.M., red.; KRUTOUS, V.P., tekhn.red.

[Papers at a technical conference on design, construction, manufacture, and use of reinforced concrete poles for electric transmission lines and telephone communications, November 27-30, 1956] Materialy nauchno-tekhnicheskoy konferentsii po proektirovaniiu, stroitel'stvu, proizvodstvu i ekspluatatsii zhelezobetonnykh opor liniy elektroperedachi i svyazi. [Groznyi] Checheno-Ingushskoe knizhnoe izd-vo, 1957. 163 p. (MIRA 11:6)

1. Nauchno-tekhnicheskaya konferentsiya po proyektirovaniyu, stroitel'stvu, proizvodstvu i ekspluatatsii zhelezobetonnykh opor linii elektroperedachi i svyazi. Groznyy, 1956.
(Reinforced concrete construction) (Electric lines--Poles)

UVAROV, S. G.

Lumbering.

Log unloading device of the All-Union coal Institute. Mekh. trud. rab. 6 no. 1, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953 Unclassified.

UVAROV, S.G., inzh.

Coal and timber yards for mines with removable equipment. Ugol' 34 no.4:53-54 Ap '59. (MIRA 12:7)
(Coal mines and mining--Equipment and supplies)

UVAROV, S.G., inzh.

Determining the fields of application in coal mines and basic parameters of coal loading into railroad cars without using storage bins. Ugol' 36 no.4:31 Ap '61. (MIRA 14:5)
(Loading and unloading) (Coal mines and mining)

FROLOV, A.G.; KOZLOVSKIY, S.I.; MELAMED, Z.M.; [redacted], I.S.; UVAROV, S.G.; ZVENIGORODSKAYA, G.V.; KOSTAN'YAN, A.Ya., red.izd-va; SHEVCHENKO, G.N., tekhn. red.; PRUSAKOVA, T.A., tekhn. red.

[Principles for the improvement of industrial complexes on mine surfaces] Osnovy sovershenstvovaniia tekhnologicheskikh kompleksov poverkhnosti shakht. [By] A.G.Frolov i dr. Moskva, Izd-vo AN SSSR, 1963. 135 p. (MIRA 16:12)

1. Moscow. Institut gornogo dela.
(Mine buildings)

L 09123-67 EWT(m)/EWP(f) FDN/WW/DJ/WE

ACC NR: AP6031769 (A) SOURCE CODE: UR/0094/66/000/007/0048/0050

AUTHOR: Omel'chenko, V. I. (Engineer); Krasnikov, A. S. (Engineer); Voronin, V. L. (Engineer); Konstantinovskiy, V. A. (Engineer); Uvarov, S. N. (Candidate of technical sciences)

ORG: None

TITLE: Industrial electric power generators using aviation turbine engines

SOURCE: Promyshlennaya energetika, no. 7, 1966, 48-50

TOPIC TAGS: electric power engineering, electric power plant, turboprop engine

ABSTRACT: The authors discuss the advantages of using discarded aviation turbine engines for generating power in industrial plants, transport and in various branches of the petroleum industry. Units using aviation turbine engines could be made for various power requirements varying from several hundred to several thousand kilowatt output. The authors describe a successful attempt to set up such a unit in the Soviet Union in 1965. This unit utilized an AI-20 turboprop engine in conjunction with an SGN-14-49-6 1000 kw synchronous generator. This generating plant was equipped with an automatic control which ensured its starting, controlled its fuel and oil supply and handled emergencies. The AI-20 turboprop engine is capable of running on various fuels. It was found that it could be operated on diesel fuel and natural gas if the natural gas

UDC: 621.311.23+629.13.02/.07

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L 09123-67

ACC NR: AP6031769

4

was compressed to 10 atm. The lubrication mixture used for operating this engine consisted of 75% transformer oil or MK-8 and 25% MS-20 or MK-22 oil. The engine consumed 0.8 liters of oil per hour. Since a 1600 kilowatt generator could not be found, the engine was set to function at 50% capacity. The weight to power ratio of this unit was 12.3. The unit functioned normally throughout the test period. One of the advantages of using such a unit is that it does not require water for cooling and the exhaust gases of the turbine can be used for heating purposes. Orig. art. has: 4 figures.

SUB CODE: 10, 13 / SUBM DATE: None

Card 2/2 nst

L 45518-66 T-2/EWP(f) WW

ACC NR: AP6016917 (A) SOURCE CODE: UR/0104/66/000/002/0005/0008

AUTHOR: Bukreyev, B. A. (Engineer); Tandler, M. M. (Engineer); Yakovlev, N. A. (Engineer); Uvarov, S. N. (Candidate of technical sciences); Uspenskiy, A. N. (Candidate of technical sciences)

ORG: none

TITLE: Electric generating stations with AI-20 gas turbines

SOURCE: Elektricheskiye stantsii, no. 2, 1966, 5-8

TOPIC TAGS: gas turbine, turboprop engine, electric power plant, power generating station/AI-20 gas turbine

ABSTRACT: In 1964, plans and blueprints were developed by the Giprolestrans Planning Institute of stationary, quick-assembled, and transportable AI-20 turboprop-engine-driven electric power plants. Such a 50-cps, 6.3-kv plant is to have a capacity of 1250, 1600, 2000, or 4000 kw. Sketches of the stationary and transportable plants are shown. Estimates show that such a plant will be economical if it is operated as a peak-load station, up to 3000—4000 hrs per year, and particularly if it uses a partly worn-out airplane engine. Orig. art. has: 4 figures and 1 table.

SUB CODE: 10, 09 / SUBM DATE: none / ORIG REF: 003

UDC: 621.311.23

Card 1/1

KASHIRTSEV, Arkadiy Sergeyevich. Prinimali uchastiye: TOLSTYKH, A.N.; IVENSEN, T.Yu.; UVAROV, S.V.. STEPANOV, D.L., prof., otv.red.; KORDE, K.B., red.izd-va; SUSHKOVA, L.A., tekhn.red.

[Field atlas of the fauna of Permian deposits in the north-eastern part of the U.S.S.R.] Polevoi atlas fauny permskikh otlozhenii Severo-Vostoka SSSR. Moskva, Izd-vo Akad.nauk SSSR, 1959. 84 p. (MIRA 13:2)
(Siberia, Eastern--Paleontology, Stratigraphic)

UVAROV, S.Ya., inzh.

Power distribution network of a modern shop. Prom. energ. 19 no.3:35-36 Mr '64. (MIRA 17:4)

UVAROV, V.; SKRYAGA, V.

High-speed burning-in of the bottom of open-hearth furnaces. Metallurg 10 no.9:23 S '65. (MIRA 18:9)

1. Kramatorskiy metallurgicheskiy zavod.

2-58-6-15/16

AUTHOR: Uvarov, V., and Lovashev, S.

TITLE: Conference of the Chiefs of Statistical Departments (Soveshchaniye rukovoditeley statisticheskikh upravleniy)

PERIODICAL: Vestnik statistiki, 1958, Nr 6, pp 88-92 (USSR)

ABSTRACT: On April 15 - 17, 1958, the TsSR RSFSR convened a conference of the chiefs of statistical departments of the autonomous republics, krays and oblast's. The conference heard reports by B.T. Kolpakov, Chief of the TsSU RSFSR; V.G. Ol'shevskiy, Head of the Statistical Department of the Stalingrad Oblast'; K.F. Yershova, Head of the Statistical Department of the Novosibirsk Oblast'; I.I. Logachev, Deputy Chief of the TsSU RSFSR; K.D. Gorbatov, Chief of the Statistical Department of the Krasnodarov Oblast'. The speakers pointed out the great importance of statistics for efficient control over the economic development of the country and mentioned the centralization of the statistical control over industry and construction as a new stage in the building of communism. Other speakers referred to various statistical problems that are still to be solved in their respective oblasts and krays.

Card 1/2

Conference of the Chiefs of Statistical Departments 2-58-6-15/16

Card 2/2

POPOV, Yu.; KAPITSKIY, R.; GOLOTA, D.; UVAROV, V.; KHAIS, A.; ZHUKOV, A., insh.-geolog; ABUSHAYEV, I. (Kaliningrad)

Our readers' letters. NTO 3 no.3:57 Mr '61. (MIRA 14:3)

1. Nachal'nik proizvodstvenno-tekhnicheskogo otdela i chlen soveta nauchno-tekhnicheskogo obshchestva tresta "Pechorlesosplav", g. Pechora (for Popov). 2. Zamestitel' predsedatelya Rostovskogo obshchestva, g. Rostov-na-Donu (for Kapitskiy). 3. Uchenyy sekretar' soveta nauchno-tekhnicheskogo obshchestva Krasnodarskoy geologicheskoy ekspeditsii (for Golota). 4. Zamestitel' direktora Gorodenkovskogo khlebopriyemnogo punkta g. Gorodenko, Stanislavskoy oblasti (for Uvarov). 5. Chlen Zapadno-Sibirskogo pravleniya nauchno-tekhnicheskogo obshchestva gornoye, st. Izhmorskaya, Kemerovskoy oblasti (for Zhukov).

(Technology--Information services)

UVAROV, V., inzh.

Machine for drying roadbeds. Avt.dor. 24 no.2:28 F '61. (MIRA 14:3)

(Road machinery)

UVAROV, V.A., inzhener.

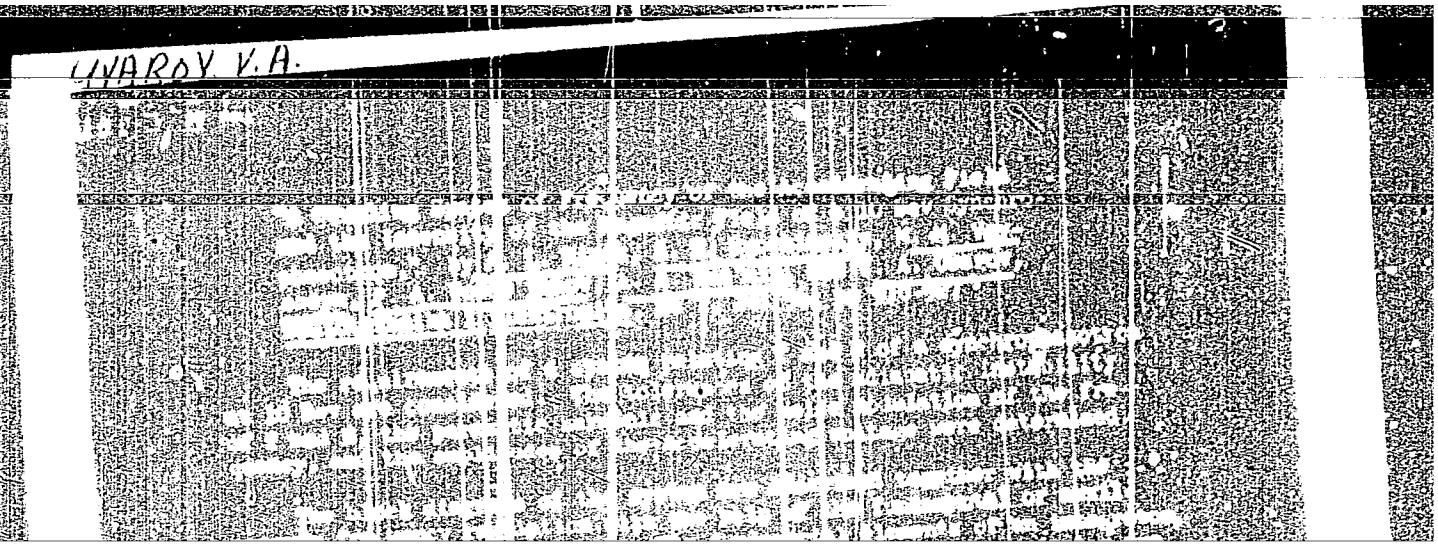
Valuable manual for road foremen. Avt.dor.19 no.8:26-27 Ag '56. (MIRA 9:10)
(Road construction)

TRAPEZNIKOV, A.P.; UVAROV, V.A.

Hydraulic manipulator. Metallurg 8 no.2:35 F '63. (MIRA 16:2)

1. Listoprokatnyy tsekh Novolipetskogo metallurgicheskogo zavoda.

(Rolling mills—Equipment and supplies)



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S/051/61/010/001/009/017
E201/E491

AUTHORS: Grigor'yev, B.A., Yershov, A.G. and Uvarov, V.A.

TITLE: Reflection of Radiation by an Infinite Plane Illuminated With a Point Source.
I. Characteristics of the Radiation Field

PERIODICAL: Optika i spektroskopiya, 1961, Vol.10, No.1, pp.96-103

TEXT: The authors derive theoretically characteristics of the radiation field for perfectly diffuse reflection and for specular (directed) reflection by an infinite plane when scattering in the medium above the plane can be neglected and only directional attenuation of the medium need be allowed for. Fig.1 and 2 show coordinates employed in calculations. The paper is entirely theoretical. There are 2 figures and 9 Soviet references.

SUBMITTED: October 3, 1959

Card 1/1

GRIGOR'YEV, B.A.; YERSHOV, A.G.; UVAROV, V.A.

Reflection of radiation from an unbounded plane surface irradiated by a point emitter. Part 2: Particular cases of importance for practical applications. Opt. i spektr. 10 no.2:198-208 F '61. (MIRA 14:2)

(Radiation) (Reflection (Optics))

UVAROV, V. A.

40738
S/120/62/000/004/003/047
E140/E420

AUTHORS: Rubchinskiy, S.M., Batskikh, G.I., Vasil'yev, A.A., Vodop'yanov, F.A., Gutner, B.M., Kuz'min, A.A., Kuz'min, V.F., Lebedev-Krasin, Yu.M., Uvarov, V.A.

TITLE: The electronic system of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 20-26

TEXT: The article surveys the electronic system of the 7 Gev proton synchrotron, the individual parts of which are described in individual articles in the same number of the journal. The electronic circuits control the continuous increase of the energy of the accelerated particles. For the chamber aperture used in the apparatus, the deviation of the momentum from the equilibrium value cannot exceed $\pm$ 5 x 10^{-3}. The instantaneous values of H must be held to within 10^{-3} at the start (f = 0.67 Mc/s) and 5 x 10^{-5} at the end of the acceleration cycle (f = 8.31 Mc/s). The synchrotron frequency varies from 3600 to 130 c/s. To keep the oscillations of phase with passage through resonance less than the adiabatic damping of these oscillations, the harmonic frequency modulation of the accelerating potential by the synchrotron frequency should not exceed 0.5 c/s and the harmonic amplitude

Card 1/3

The electronic system of ...

of the modulation at the same frequencies should be less than 2×10^{-4} at the start and 5×10^{-3} at the end of the cycle. The spectral density of noise modulation should be of the order of 2×10^{-3} cs^2/cs. The precision of measuring H at the instant of injection was prescribed as 3×10^{-4}. These requirements are met by a programmed frequency control with correction for the radial and phase positions of the beam, calculated for beam intensities of 10^8 to 10^{12} particles. The beam measuring system consists of a precise discrete integrator and a meter for the initial level of the magnetic field intensity. Special equipment is required for the automatic measurement of the instantaneous values of frequency and field intensity, the measurement of micromodulation of the frequency and amplitude of the accelerating potential, variations of beam intensity over the acceleration cycle, the azimuthal distribution of particle density in the bunch, and the position of the beam in the vacuum chamber. An overall block diagram of the system is given and also summary descriptions of the systems for generating the accelerating field, the acceleration control and the measuring equipment. The

Card 2/3

The electronic system of ...

particles are accelerated at the seventh harmonic of their frequency of revolution - in the band from 0.67 to 8.31 Mc/s. The energy increase is 4.3 keV per revolution. The accelerating elements are 2.4 m drift tubes located in 11 compensating electromagnets. The transit angle in each tube is about 25° and the ratio of accelerating potential to the potential across the tube is about 0.43. The system ensures a phase oscillation of the beam below 0.05 r and stabilizes the radial position to within ± 1 mm. There is 1 figure.

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio Engineering Institute GKAE)

SUBMITTED: April 23, 1962

Card 3/3

S/120/62/000/004/015/047
E192/E382

AUTHOR: Uvarov, V.A.

TITLE: A frequency-programmer

PERIODICAL: Pribory i tekhnika eksperimenta, no. 4, 1962, 89 - 93

TEXT: The basic principle of an integrating magnetic field pick-up (transducer) and a nonlinear functional converter of the programme system for controlling the frequency of the 7 GeV proton synchrotron is described. The electronic integrator of the magnetic-field transducer is in the form of an amplifier provided with an RC negative feedback network. The functional converter is in the form of two series-connected amplifiers, K' and K" , which are provided with negative feedback elements in the form of nonlinear quadripoles with diodes (Fig. 1). The diodes are connected in the feedback paths of K' and, when conducting, they reduce the slope of the general characteristic of the programmer; on the other hand, the diodes in the feedback path of K" increase the slope of the characteristic.

Card 1/3

S/120/62/000/004/015/047
E192/E382

A frequency-programmer

The accuracy of the diode functional converter is principally determined by the accuracy of the approximation of the required functional relationship by means of the diode characteristics and their stability. The maximum accuracy of the approximation is dependent on the number and length of the approximating segments. The programmer, as used in the proton synchrotron, permitted acceleration of protons to the required energy while ensuring that the radial deflection of the beam of protons from the axis of the chamber was less than ± 3 mm at the point where the integrator transducer was located. There are 3 figures.

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio-engineering Institute, GKAE)

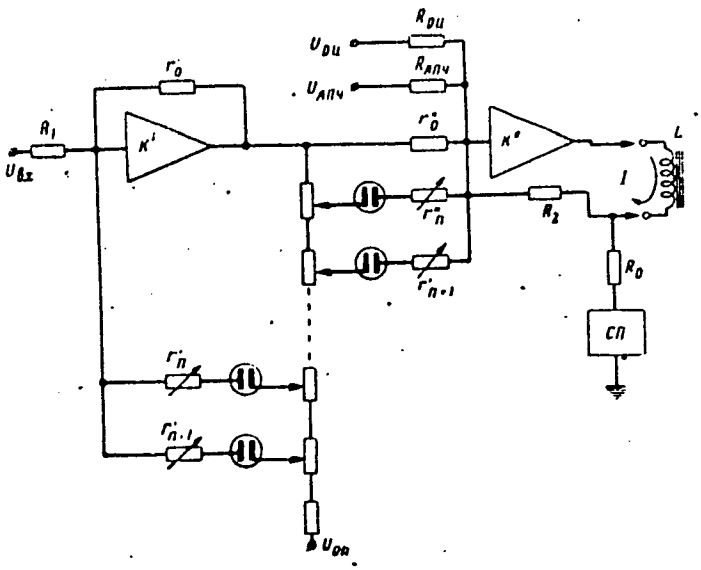
SUBMITTED: April 5, 1962

Card 2/3

S/120/62/000/004/015/047
E192/E382

A frequency-programmer

Fig. 1:



Card 3/3

40749

S/120/62/000/004/017/047
E192/E382

24.6730

AUTHORS: Vodop'yanov, F.A., Zlatov, Yu.M., Uvarov, V.A., Barabash, L.Z. and Lebedev, P.I.

TITLE: Investigation of the precision system of programmed frequency-control of the accelerating field in the proton synchrotron.

PERIODICAL: Pribory i tekhnika eksperimenta, no. 4, 1962, 98 - 101

TEXT: The programmed frequency control in the proton synchrotron is based on two precision elements: a frequency programmer and a driver oscillator (described on pp. 80 and 89 of this issue). During development of this equipment the following problems were investigated: 1) accuracy and stability of the functional relationship of the frequency and the magnetic field in the gaps of the electromagnet; 2) parasitic micro-modulation of the accelerating field and 3) influence of the characteristics of the accelerating field on the process of particle acceleration. The stability was measured at 9 points of the operating-frequency range (between 696 kc/s and 8.295 Mc/s)

Card 1/3 REFERENCE S/120/62/000/004/025/047

Investigation of ....

and it was found that the short-term instability at the lowest frequency was $\pm$ 3 x 10^{-4} and $\pm$ 0.06 x 10^{-4} at the upper limit frequency; corresponding figures for long-term instability are $\pm$4.5 x 10^{-4} and $\pm$0.06 x 10^{-4}. The permissible instability for the two limits is $\pm$ 10 x 10^{-4} and 0.8 $\pm$ 10^{-4}. The parasitic micro-modulation due to noise was measured at 15 fixed frequencies and it was found that this never exceeded the prescribed tolerance. The modulation due to combination frequencies was largely reduced by using a balanced-mixer system. Losses in the proton beam as a function of the accuracy of the frequency-change law were investigated during the starting of the accelerator. For this purpose the frequency-programmer of the system received an additional voltage pulse having the gaussian shape and a duration of 50 - 160 μs. Introduction of such perturbations at magnetic fields of 650, 4 000 and 6 000 Oe produced an additional radial deflection of the beam of $\pm$ 2.5, $\pm$ 3.0 and $\pm$ 1 mm, at which the strength of the beam was halved; the frequency changes corresponding to these deflections were $\pm$ 1.3 x 10^{-3}, $\pm$ 10^{-4} and $\pm$ 1.5 x 10^{-5}.

Card 2/3

S/120/62/000/004/017/047
E192/E382

Investigation of ....

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio-engineering Institute, GKAE)

SUBMITTED: April 5, 1962

Card 3/3

40753

S/120/62/000/004/025/047
E039/E420

AUTHOR: Uvarov, V.A.

TITLE: Measurement of stability of coupling of the dynamic components of the primary fields and measuring electromagnets of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 131-133

TEXT: The input signal for the control frequency programming is obtained from induction coils which have a sufficiently stable coupling with the field in the working region. In this article is described the method of making measurements on the stability of coupling between the dynamic component of the main field and the measuring electromagnets of the accelerator. For making the measurements single turn coils were placed on the surface of the main electromagnet poles and a 30 turn coil on the horizontal median plane of the magnet space in a measuring electromagnet. Short term stability of coupling in the dynamic component of the field is measured for various field strengths using 50 cycles. Typical results expressed as deviation from the average are 3×10^{-5} at 60 to 120 Oe and 4×10^{-5} at 7500 Oe. Measurements

Card 1/2

Measurement of stability of ...

on long term stability are also given; for a period of 3 days the maximum deviation as measured from the mean of 10 cycles for the same conditions as before are 2×10^{-4} at 60 to 120 Oe and 10^{-3} at 7500 Oe. The accuracy in the two cases is 10^{-5} and 10^{-4} respectively. It is shown that the stability of coupling between the dynamic components of the fields of these electromagnets satisfies the requirements of the control frequency programming system. There are 2 figures and 2 tables.

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio-Technical Institute GKAE)

SUBMITTED: April 6, 1962

Card 2/2

S/120/62/000/004/026/047
E032/E514

AUTHORS: Vasil'yev, A.A., Kuz'min, A.A. and Uvarov, V.A.

TITLE: Measurement of the frequency of betatron oscillations by the resonance method

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 134-137

TEXT: A description is given of a method of measuring the frequency of betatron oscillations in which the signal induced by the oscillating proton beam in pick-up electrodes is used to excite a resonance circuit. A theoretical analysis of the method is given. It is reported that experiments have shown that when the amplitude of the vertical and radial coherent betatron oscillations excited by a 15 kV voltage pulse is 0.01 cm, the method is capable of yielding an accuracy of about ±0.25%. The 15 kV perturbation of the beam was applied across a plane capacitor with a gap of 11 cm and 20 cm long. It is shown that this perturbation is essential in the case of 7 GeV protons since otherwise the signal could not be detected with the apparatus developed for the 7 GeV machine. There are 2 figures and 2 tables.

~~Card 1/2~~ Radiotechnical Inst. GKAE

UVAROV, V. A.

24690,

16766
S/120/62/000/004/047/047
E039/E420

AUTHORS: Vladimirskiy, V.V., Gol'din, L.L., Pligin, Yu.S., Veselov, M.A., Talyzin, A.N., Tarasov, Ye.K., Koshkarev, D.G., Lapitskiy, Yu.Ya., Barabash, L.Z. Kleopov, I.F., Lebedev, P.I., Kuz'min, A.A., Batalin, V.A., Onosovskiy, K.K., Uvarov, V.A., Vodop'yanov, F.A.

TITLE: Adjustment of the acceleration regime of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 248-255

TEXT: In order to establish the optimum parameters for programming the control frequency the intensity, position, and frequency and amplitude of transverse oscillation of the beam is measured in three stages: (1) during the first revolution, (2) with a circulating beam and (3) with acceleration. For measurements on the first revolution long afterglow scintillation screens are used which are either observed visually or by means of a television camera. The screens are placed in the sections between magnet blocks; 15 in the initial part and 10 in the final part of the chamber. It is shown that the orbit does not

Card 1/2

Adjustment of the acceleration ...

deviate by more than 1.5 cm from the axis during the first revolution. Circulating beams without acceleration are obtained which continue for 20 to 30 revs. The circulating current is determined by means of a flight tube and the transverse oscillation frequency with an electrostatic probe with double vertical and horizontal plates. Scintillation screens in the form of a grid with 85% transmission are used to show the beam position and diameter for 5 to 10 revs. The beam diameter is shown to be about 4 cm under normal conditions. Investigations are carried out on the optimum form of the frequency - time relation for holding the beam in orbit. The width of the trapping region is $\pm$ 3 Kc/s for an initial frequency of 750 Kc/s which agrees well with theoretical estimates. Preliminary adjustment permitted the attainment of 6.2 Gev protons and after adjustment 7.2 Gev protons were obtained on October 25, 1961. The usual intensity on a normal cycle lies in the range 3 to 5 x 10^9. There are 7 figures and 1 table.

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

SUBMITTED: April 11, 1962

Card 2/2

L 43080-65 EWT(m)/ EPA(w)-2/EWA(m)-2 Pab-10/Pt-7 IJP(c) JT/GS

ACCESSION NR: AT5007916 S/0000/64/000/000/0197/0201

AUTHOR: Vladimirskiy, V. V.; Gol'din, L. L.; Koshkarev, D. G.; Tarasov, Ye. K.; Yakovlev, B. M.; Gustov, G. K.; Komar, Ye. G.; Kulikov, V. V.; Malyshev, I. F.; Nonoszon, N. A.; Popkovich, A. V.; Stolov, A. M.; Strel'tsov, N. S.; Titov, V. A.; Vodop'yanov, F. A.; Kuz'min, A. A.; Kuz'min, V. F.; Hints, A. L.; Rubchinskiy, S. M.; Uvarov, V. A.; Zhadanov, V. M.; Filaretov, S. G.; Shirvayev, F. Z.

TITLE: 60-70 Gev Proton Synchrotron

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 197-201

TOPIC TAGS: high energy accelerator, synchrotron

ABSTRACT: A 60-70 Gev proton synchrotron with strong focusing is being constructed not far from Serpukhov, as has been reported earlier (e.g. "Research Institute for Electro-Physical Equipment, Leningrad," in Proceedings of the International Conference on High Energy Accelerators and Instrumentation (CERN, 1959), p. 373). The present report describes parameter changes and improvements in precision structural characteristics of the accelerator, and the present state of construction in mid-1963. The parameters of the magnet are presented in a table. A small change in the original plans permitted an increase in the length of a part of the free

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L 43038-65

ACCESSION NR: AT5007918 0

sections, some of which are utilized for input and exit of beams. The super-period design is described. The lengthened sections were obtained as a consequence of shortening the focusing and defocusing blocks by 112 cm. The focusing properties of the magnetic channel were diminished consequently, but very little; and the limiting energy was lowered by 2-3 Gev. The construction of the magnet is described. Each of the magnetic blocks is divided lengthwise into 5 sub-blocks which are enveloped by the common winding. These sub-blocks consist of laminar two-millimeter silicon steel. These steel sheets were stamped out without subsequent mechanical working, and were subjected to sorting and intermixing in order to smooth out their magnetic characteristics. The sub-blocks are constricted by lateral welded plates without adhesion. Provision was made for windings on the poles in order to correct for pole nonlinearity and for variations in the drop reading. These windings make it possible to introduce artificial quadratic (square) nonlinearity that changes the dependence of the frequency of transverse oscillations during a pulse. In order to correct for straying of the residual field, provision has been made for windings on the yoke in series with the main winding. The sub-blocks must undergo calibration on a magnet stand in order to make correcting systems more precise and to determine the most convenient disposition of the sub-blocks along the ring. The winding of the electromagnet is made of aluminum busbars with hollow cores for cooling water. The length of the busbar is so selected that there would be no

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ACCESSION NR: AT5007918

2

welded joints inside the coils. The winding consists of 4 sections, two of which are disposed on the upper pole and two on the lower. The most important characteristics of the electromagnet and power supply system are described in a table. Also described are the vacuum chamber and accelerating field (obtained by 53 paired resonators with ferrite rings, which operate at the 30-th harmonic of revolution and give accelerating potential of 350 kilovolts). The ring tunnel and the general arrangement of the accelerator are shown in figures and described. The building for the injector and portions of the ring tunnel from the injector to the experimental room have been completed in the main and are ready for installation of equipment. This room, in the form of a single-aisle building without internal supports, permits one to work on beams brought into the inner and outer sides. A 90-meter arch covers this room, whose overall length is 150 meters. Provisions have been made for a second experimental room at the southwest part of the ring. Orig. has 4 figures, 2 tables.

ASSOCIATION: Institute teoreticheskoy i eksperimental'noy fiziki GKAE SSSR (Institute of Theoretical and Experimental Physics, GKAE SSSR), (2) Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Apparatus, GKAE SSSR).

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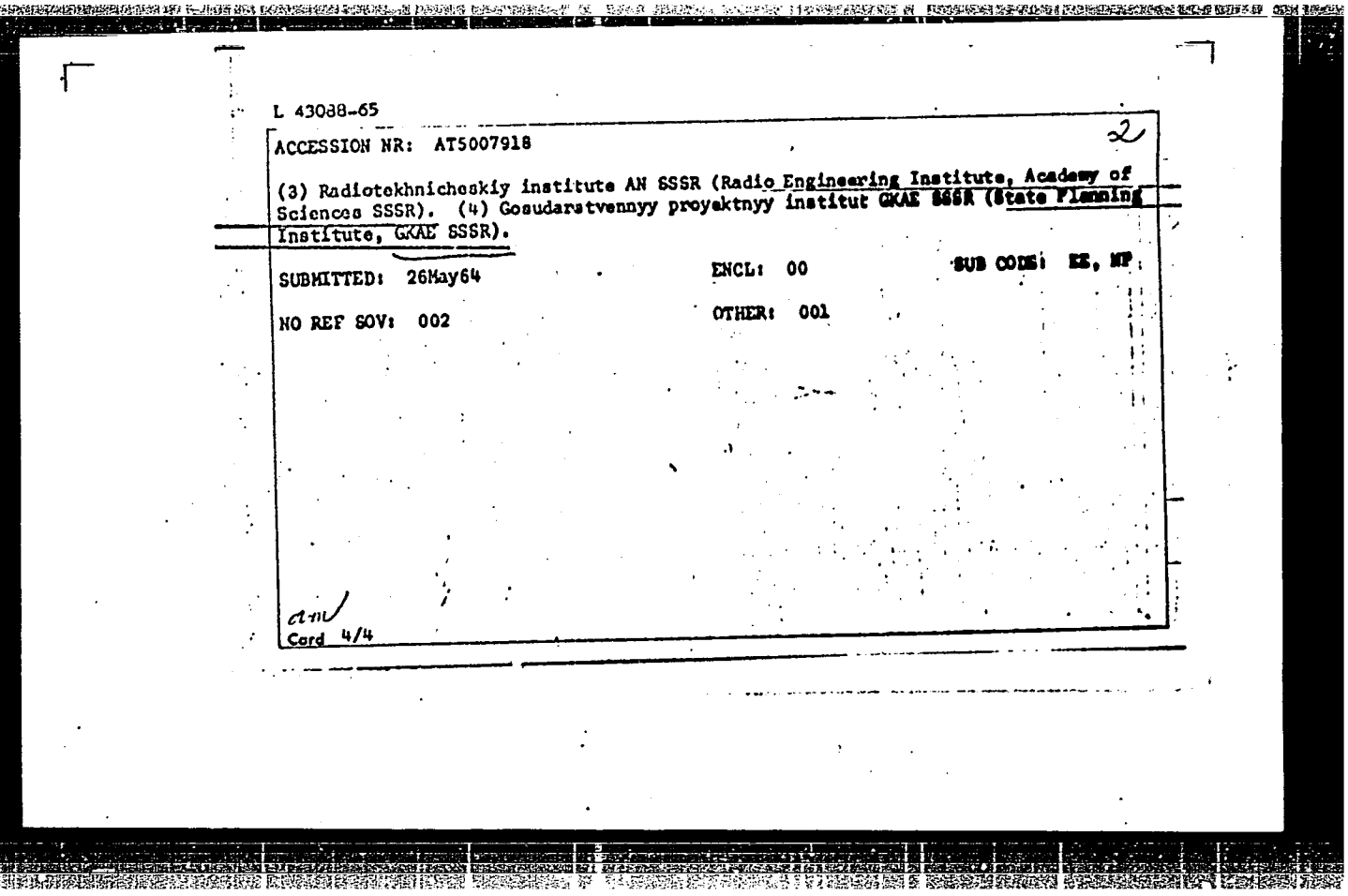

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ACCESSION NR: AT5007918

(3) Radiotekhnicheskiy institute AN SSSR (Radio Engineering Institute, Academy of Sciences SSSR). (4) Gosudarstvennyy proyektnyy institut GKAE SSSR (State Planning Institute, GKAE SSSR).

SUBMITTED: 26May64 ENCL: 00 SUB CODE: EE, MP

NO REF SOV: 002 OTHER: 001

Card 4/4

L 13274-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b)/EWA(h) JD

ACC NR: AP6002907 SOURCE CODE: UR/0286/65/000/024/0073/0073

INVENTOR: Shvarts, V.I.; Tsypkina, Ye. D.; Rogachevskiy, Ya. Ye.; Shakhnovich, V. A.; Uvarov, V. A.; Rovenskiy, I. L.; Balter, M. A.; Likhovskikh, M. N.

ORG: none

TITLE: Cast, heat-resistant, iron-base alloy. Class 40, No. 177078

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 73

TOPIC TAGS: alloy, cast alloy, heat resistant alloy, iron base alloy, chromium containing alloy, nickel containing alloy, tungsten containing alloy, molybdenum containing alloy, niobium containing alloy, manganese containing alloy

ABSTRACT: This Author Certificate introduces a cast, heat-resistant, iron-base alloy. To improve mechanical and technological properties, the alloy composition is as follows: 0.18—0.22% carbon, 19—21% chromium, 24—26% nickel, 4.5—5% tungsten, 0.9—1.1% molybdenum, 0.9—1.1% niobium, 0.1% nitrogen, 0.02% cerium, 0.005% boron, 0.8% max silicon, 1.2—1.5% manganese, 0.03% max each of sulfur and phosphorus. [AZ]

SUB CODE: 11/ SUBM DATE: 10Oct63/ ATD PRESS: 4185

Card 1/1 UDC: 669.15'24'26-194

16(1)

AUTHOR: Uvarov, V.B.

SOV/20-125-2-10/64

TITLE: The Theory of the Second Solution of the Differential Equation for Classical Orthogonal Polynomials (Teoriya vtorogo resheniya differentsial'nogo uravneniya dlya klassicheskikh ortogonal'nykh polinomov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 2, pp 281-284 (USSR)

ABSTRACT: The differential equation for the classical polynomials $P_n(z)$ (e.g. of Jacobi, Laguerre, Hermite) reads $L[P_n(z)] = k_n \varrho(z) P_n(z)$, where $L[P_n(z)] = \frac{d}{dz}\left[(z-a)(z-b)\cdot\varrho(z)\frac{dP_n}{dz}\right]$. Here the weight $\varrho(z)$ and the constant k_n have a different meaning for different polynomials; e.g. $\varrho(z) = e^{-z^2}$, $k_n = -2n$ for Hermitean polynomials. Besides it is agreed that if the consideration relates to the interval (a,b) and if $b = +\infty$, then everywhere only 1 is written instead of $x-b$ (likewise -1 instead of $x-a$ for $a = -\infty$).

Theorem 1: Let $L[P(z)] = k\varrho(z)P(z)$, $\varphi(z) = \int_\alpha^\beta \frac{P(\zeta)\varrho(\zeta)\,d\zeta}{(\zeta-z)^\delta}$; let the integral converge and let

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$$\frac{(\zeta-a)(\zeta-b)\varrho(\zeta)}{(\zeta-z)^{\gamma+1}}\left[(\zeta-z)P'(\zeta) + \gamma P(\zeta)\right]\Big|_{\zeta=\alpha}^{\beta} = 0 .$$

Then $\varphi(z)$ satisfies the equation:

$$(z-a)(z-b)\varphi''(z) + \left\{(\gamma+1)\frac{d}{dz}\left[(z-a)(z-b)\right] - (l_z-l_o)\right\}\varphi(z) +$$

$$+\gamma\left\{\frac{\gamma+1}{2}\frac{d^2}{dz^2}\left[(z-a)(z-b)\right] - l\right\}\varphi(z) = k\varphi(z).$$

Theorem 2: If in theorem 1: $\gamma=1$, $\alpha=a$, $\beta=b$, then

$$Q(z) = \frac{1}{\varrho(z)}\int_a^b \frac{P(\zeta)\varrho(\zeta)d\zeta}{\zeta-z}, \quad z\overline{\in}(a,b)$$

is a second solution of the differential equation for $P(z)$.

Theorem 3: The function $Q_o(z) = \frac{1}{\varrho(z)}\int_a^b \frac{\varrho(\zeta)d\zeta}{\zeta-z}$, $z\overline{\in}(a,b)$ satisfies the equation

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The Theory of the Second Solution of the Differential Equation for Classical Orthogonal Polynomials SOV/20-125-2-10/64

$$(z-a)(z-b)\varrho(z)Q_0'(z) = \text{const} \cdot \left\{ 1 - \frac{1}{2}\frac{d^2}{dz^2}\left[(z-a)(z-b)\right] \right\} \int_a^b \varrho(\zeta)\,d\zeta .$$

From the theorems 2 and 3 the author concludes numerous properties of the second solution $Q(z)$. The author thanks A.N.Tikhonov and A.A.Samarskiy for the assistance. There are 4 references, 2 of which are Soviet, 1 American, and 1 English.

PRESENTED: November 26, 1958, by A.A.Dorodnitsyn, Academician

SUBMITTED: November 15, 1958

Card 3/3

SOV/20-126-1-8/62

16(1)
AUTHOR: Uvarov, V.B.

TITLE: On the Relationship Between Polynomials Which are Orthogonal With Different Weights (O svyazi polinomov, ortogonal'nykh s razlichnymi vesami)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 33 - 36 (USSR

ABSTRACT: Let $\{P_n(x)\}$ and $\{S_n(x)\}$ be two systems of polynomials which are orthogonal on (a,b) :

$$\int_a^b P_n(x)\, P_m(x)\, d\sigma(x) = 0 \quad \text{for} \quad m \neq n \quad \text{and}$$

$$\int_a^b S_n(x)\, S_m(x)\, d\sigma_1(x) = 0 \quad , \quad d\sigma_1(x) = \frac{\prod_{j=1}^{l} (x-\alpha_j)}{\prod_{j=1}^{k} (x-\beta_j)}\, d\sigma(x).$$

If all α_j and β_j are different, then for $n \geq k$ it holds:

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On the Relationship Between Polynomials Which are Orthogonal With Different Weights SOV/20-126-1-8/

$$S_n(x) = \frac{C_n}{\prod_{j=1}^{l}(x-\alpha_j)} \begin{vmatrix} P_{n-k}(\alpha_1) & \dots & P_{n+1}(\alpha_1) \\ \dots & \dots & \dots \\ P_{n-k}(\alpha_l) & \dots & P_{n+1}(\alpha_l) \\ Q_{n-k}(\beta_1) & \dots & Q_{n+1}(\beta_1) \\ \dots & \dots & \dots \\ Q_{n-k}(\beta_k) & \dots & Q_{n+1}(\beta_k) \\ P_{n-k}(x) & \dots & P_{n+1}(x) \end{vmatrix},$$

where C_n is a normalization constant and $Q_n(x) = \int_a^b \frac{P_n(\zeta)\,d\sigma(\zeta)}{\zeta - x}$. A similar formula holds in the case $n<k$. If some α_j, β_j are equal, then $S_n(x)$ is determined at first for different α_j, β_j, and then it is passed over to the

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On the Relationship Between Polynomials Which are Orthogonal With Different Weights

SOV/20-126-1-8/62

limit value. In the case $d\sigma(x) = d\sigma(-x)$, $a = -b$ the symmetry of the polynomials is used in order to obtain two new systems which are orthogonal on the interval $(0,a^2)$ with the weights $d\sigma(\sqrt{x})$ and $x\,d\sigma(\sqrt{x})$ respectively.

The author thanks A.N. Tikhonov and A.A. Samarskiy for their assistance.

There are 2 references, 1 of which is Soviet, and 1 American.

PRESENTED: January 19,1959, by M.V. Keldysh, Academician

SUBMITTED: January 13,1959

Card 3/3

16(1)

AUTHOR: Uvarov, V.B. SOV/20-128-2-7/5

TITLE: Some Cases Where the Characteristic Functions of an Equation are Restored From Spectral Function

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 2, pp 246-249 (USSR)

ABSTRACT: The present paper is a continuation of [Ref 5]. Let $\varsigma(\lambda)$ be the spectral function of

(1) $\varphi'(x,\lambda) + \lambda\varphi(x,\lambda) = q(x)\varphi(x,\lambda)$

for the initial conditions

(2) $\varphi(0,\lambda) = h_1, \quad \varphi'(0,\lambda) = h_2.$

Let the spectral function $\varrho(\lambda)$ and the corresponding eigenfunction $f(x,\lambda)$ be given. Let a new spectral function $\varsigma_{l,k}(\lambda)$ be defined by

(4) $$d\,\varsigma_{l,k}(\lambda) = \frac{\prod_{j=1}^{l}(\lambda - \alpha_j)}{\prod_{j=1}^{k}(\lambda - \beta_j)}\, d\,\varrho(\lambda).$$

The author considers the following problem: Construct the

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Some Cases Where the Characteristic Functions of an Equation are Restored From Spectral Function SOV/20-128-2-7/59

eigenfunction $\phi_{l,k}(x, \lambda)$ with the aid of $\varphi(x, \lambda)$ and $\rho(\lambda)$, which corresponds to the spectral function $\rho_{l,k}(\lambda)$ and find the equation which is satisfied by it. The author introduces the functions

(5) $$\psi(x, \lambda) = \int_{-\infty}^{\infty} \frac{\varphi(x, \mu) d\rho(\mu)}{\mu - \lambda}$$

and

(6) $$\Psi_{l,k}(x, \lambda) = \int_{-\infty}^{\infty} \frac{\Phi_{l,k}(x, \mu) d\rho_{l,k}(\mu)}{\mu - \lambda};$$

for $x \geqslant 0$ he obtains an explicit expression for $\phi_{l,k}(x, \lambda)$ by the functions φ and ψ as well as by their derivatives, and he establishes recurrent relations for $\phi_{l,k}$ and $\Psi_{l,k}$. It is proved: If $\rho_{l,k}(\lambda)$ is not decreasing, then for λ-values $\varphi, \psi, \phi_{l,k}, \Psi_{l,k}$

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Some Cases Where the Characteristic Functions of an Equation are Restored From Special Function SOV/20-128-2-7/5

have no zeros outside of the spectrum.
The author thanks I.M.Gel'fand for the theme, and A.A.Samarskiy for advice.
There are 5 Soviet references.

PRESENTED: May 21, 1959, by M.V.Keldysh, Academician

SUBMITTED: May 19, 1959

Card 3/3

S/558/60/000/006/002/006
E032/E514

16.3400 16,3000

AUTHOR: Uvarov, V. B.

TITLE: On One Class of Integral Representations of Hypergeometric Functions

PERIODICAL: Akademiya nauk SSSR. Vychislitel'nyy tsentr. Vychislitel'naya matematika; sbornik, No.6, 1960, pp. 17-33

TEXT: It is well known that all the hypergeometric functions satisfy the second order differential equation

$$(x-a)(x-b)\frac{d^2F(x)}{dx^2}+(lx-l_0)\frac{dF(x)}{dx}=kF(x). \qquad (1)$$

The above equation for F(x) can be rewritten in the form

$$\frac{d}{dx}\left[(x-c)(x-b)\rho(x)\frac{dF}{dx}\right]=k\rho(x)F(x). \qquad (2)$$

where the function $\rho(x)$ is defined by

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On One Class of Integral Representations of Hypergeometric Functions

$$\frac{d}{dx}[(x-a)(x-b)\rho(x)] = (lx - l_0)\rho(x). \qquad (3)$$

The present author discusses integral representations of the form

$$C_1\varphi_1(x) + C_2\varphi_2(x) = \int_p^q \frac{F(z)\rho(z)}{(z-x)^c}\,dz. \qquad A.$$

where F(z) is a special solution of the hypergeometric differential equation and $\varphi_1(x)$ and $\varphi_2(x)$ are two linearly independent solutions of the hypergeometric equation with different values of the parameters. The basic theorem which is

On One Class of Integral Representations of Hypergeometric Functions

established is the following. Suppose F(x) satisfies the differential equation given by Eq.(2). It is proved that the function

$$\frac{\zeta(x-z)}{z\rho(z)\,d(z)\,F}\int_b^d = (x)\,\delta \qquad (4)$$

will then satisfy the differential equation

$$(x-a)(x-b)\varphi''(x) + \left\{(\zeta+1)\frac{d}{dx}[(x-a)(x-b)] - lx + l_0\right\}\varphi'(x) + \\ + \zeta\left\{\frac{\zeta+1}{2}\frac{d^2}{dx^2}[(x-a)(x-b)] - l\right\}\varphi(x) = k\varphi(x), \qquad (5)$$

provided the integral which defines $\varphi(x)$ converges and

$$\frac{(z-a)(z-b)\rho(z)}{(z-x)^{\zeta}}\left[F'(z) + \frac{\zeta F(z)}{z-x}\right]\Big|_{z=p}^{q} = 0; \qquad (6)$$

Moreover, one of the limits (p or q) can be taken as equal to x

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On One Class of Integral Representations of Hypergeometric Functions

if $\mathrm{Re}\,\zeta < 1$. It follows from this theorem that if $\varphi_1(x)$ and $\varphi_2(x)$ are special solutions of Eq.(5) then

$$\int_p^q \frac{F(z)\rho(z)}{(z-x)^\zeta}\,dz = C_1\varphi_1(x) + C_2\varphi_2(x). \qquad (7)$$

This theorem is said to have been first established by Baranetskiy (Ref.3) in 1873. The discussion is then continued for three types of hypergeometric equations, namely, the equation for the non-degenerate hypergeometric function $F(\alpha,\beta,\gamma,x)$, the equation for the degenerate hypergeometric function $F(\alpha,\gamma,z)$ and the equation for the Hermite function $H_\nu(z)$. Explicit integral representations for the above three cases are quoted. Some of these representations are well known but are included for the sake of completeness. Acknowledgments are expressed to A. A. Samarskiy and A. F. Nikiforov for assistance and interest. There are 1 figure and 3 references: 2 Soviet and 1 non-Soviet.

Card 4/4

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C111/C444

AUTHORS: Uvarov, V. B., Nikiforov, A. F.

TITLE: On an approximation method for the solution of the Schrödinger equation

PERIODICAL: Referativnyy zhurnal, Matematika, no. 3, 1962, 30, abstract 3V161. ("Zh. vychisl. matem. i matem. fiz.", 1961, 1, no. 1, 177-179)

TEXT: One proposes instead of the problem

$$-\frac{1}{2}\frac{d^2R}{dr^2} + V(r)R = ER,\ R(0) = R(\infty) = 0$$

to solve the problem

$$-\frac{1}{2}\frac{d^2\tilde{R}}{dr^2} + \tilde{V}(r)\tilde{R} = \tilde{E}\tilde{R},\ \tilde{R}(0) = \tilde{R}(\infty) = 0$$

where $\tilde{V}(r, \lambda_1, \ldots, \lambda_s)$ is chosen such that the solutions of the equation

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