S/058/60/84097/006/004/040
A005/A001

26.2332
Translation from: Referativnyy zhurnal, Fizika, 1960, No. 6, p. 30, # 13142

AUTHORS: Sinel'nikov, K.K., Zeydlits, P.M., Nekrashevich, A.M., Bolotin, L.I., Shutskever, Ya.S., Akshanov, B.S., Kovpak, N.Ye., Leontovich, K.A., Akhiyezer, A.I., Lifshits, I.M., Faynberg, Ya.B., Rozentsveyg, L.N., Lyubarskiy, G.Ya., Kaganov, M.I., Pargamanik, L.E.

TITLE: A 20.5-Mev Linear Proton Accelerator /9

PERIODICAL: Tr. Sessii AN UkrSSR, po mirn. ispol'zovaniyu atomn. energii. Kiyev, AN UkrSSR, 1958, pp. 5-15

TEXT: The physical substantiation of the parameter choice is presented and the design of a linear proton accelerator with a drift tube at 20.5 Mev energy is described; the accelerator was constructed in the Fiziko-tekhnicheskiy institut AN UkrSSR (Institute of Physical Engineering of the AS UkrSSR). The main-computational data of the accelerator are the following: the operational wave length is λ= 215 cm; the injection energy is 1.7 Mev; the length of the accelerator is 1,446.8 cm; the synchronous phase is 20°; the length of the first half-tube is 4.875 cm; that of the last one is 16.725 cm; the length of the first gap is

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A 20.5-Mev Linear Proton Accelerator

3.380 cm; that of the last one is 11.150 cm; the length of the first drift tube is 0.145 cm; that of the last one is 32.955 cm. Altoghether, the number of drift tubes is 50, that of the half tubes is 2; the acceleration system begins and ends with the latter. At the entrance of every drift tube, focusing grids are fixed consisting of parallel tungsten wires of 0.07 mm thickness; their total geometric transmittance amounts to 30%. The drift tubes are installed within the resonator by means of a suspension system; the resonator is made as a 1,446.8-cm long regular 16-face prism. The resonator is fed from 20 h.f. generators. The Q-factor of the resonator in the loaded state is equal to $6.5.10^4$ in consequence of which the h.f. power needed for accelerating particles to the rated energy amounts to 1.2 Mw. An electrostatic generator operating by pulses with the pulse duration of 500 μ sec at about 1 ma current intensity and 1.7 mv voltage serves as proton injector. The principal circuit and the design of the individual accelerator units are presented.

ASSOCIATION: Fiz.-tekhn. in-t AN UkrSSR (Physico-Engineering Institute of the Ukrainian Academy of Sciences)

A.P. Fateyev

Translator's note: This is the full translation of the original Russian abstract.

84096

S/058/60/000/006/003/040
A005/A001

26.2340

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 6, p. 29, # 13140

AUTHORS: Sinel'nikov, K.D., Zaydlits, P.M., Grishayev, I.A., Kitayevskiy, L.Kh., Akhiyezer, A.I., Faynberg, Ya.B., Selivanov, N.P., Khizhnyak, N.A.

TITLE: An Electron Accelerator With 3.5 Mev Output Energy

PERIODICAL: Tr. Sessii AN UkrSSR po mirn. ispol'zobaniyu atomn. energii. Kiyev, AN UkrSSR, 1958, pp. 16-23

TEXT: The authors describe a linear electron accelerator with a travelling wave of 3.5 Mev energy. A waveguide loaded with disks is used as accelerating system. The necessary law of wave phase velocity variation is brought about by variation of the diameter of the apertures in the disks. The 280-cm long waveguide is divided into three sections. In the first section, the phase velocity is varied from 0.5 to 0.97 c; in the second and third section it is equal to 0.98 and 0.99 c respectively. The electron equilibrium phase increases during the acceleration process; its initial value is equal to 45° and is chosen according to the optimum capture condition. The computational value of the h.f. power at the

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An Electron Accelerator With 3.5 Mev Output Energy

accelerator input is 900 kw; the accelerator field intensity amounts hereat to 16.5 kv/cm. The accelerator output power (about 600 kw) is absorved in a steel load with water cooling; approximately 300 kw are dissipated in the waveguide walls. An additional axisymmetrical magnetic field with an intensity up to 400 Gs is developed by solenoids for focusing the electrons along the waveguide axis. An electron gun with three electrodes serves as electron source; it operates pulsing synchronously with the magnetron generator and provides for a beam of 5-6 mm diameter at the accelerator input. The output parameters of the accelerator measured are; the current is about 20-30 ma in the pulse of 2 μsec duration, the average current is about 20-30 μ a; the beam diameter is 3-4 mm with the divergence angle of 7.10^{-4} - 3.10^{-3} radian; the energy beam half-width is about 8%.

ASSOCIATION: Fiz.-tekhn. in-t AN UkrSSR (Physico-Engineering Institute of the Ukrainian Academy of Sciences)

A.P. Fateyev

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

L 23580-66 EPF(n)-2/EWT(l)/ETC(f)/EWG(m) IJP(c) AT/GS
ACC NR: AT6008838 SOURCE CODE: UR/0000/65/000/000/0005/0018

AUTHOR: Sinel'nikov, K. D.; Khizhnyak, N. A.; Repalov, N. S.; Zeydlits, P. M.; Yamnitskiy, V. A.; Azovskaya, Z. A.

53
B+1

ORG: none

TITLE: Injection of particles into a mirror trap with an increasing field through a magnetic cusp configuration

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 5-18

TOPIC TAGS: ~~mirror~~ magnetic trap, plasma injection, particle trajectory, magnetic mirror

ABSTRACT: The behavior of a plasma in a magnetic mirror trap formed by particles injected through a cusp configuration is studied. The particles selected for investigation are those which at injection have curvature radius of less than 71% of the Larmor radius, i. e. those which proceed without reflection into the magnetic mirror region. The eccentricity of the particle trajectory (passing through the zero field plane) due to the cusp configuration is analyzed. Two competing processes become evident; one tends to establish an E-layer as in the Astron machines and another tends to fill the axial region of the mirror trap. The analysis is further extended to determine the accumulation in the magnetic mirror trap of particles passing through a

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ACC NR: AT6008838

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smooth cusp field having only a zeroth harmonic. The conversion of longitudinal energy into transverse particle energy is determined as a function of the initial radial distance of the trajectory from the magnetic axis. The number of particles trapped indicates that construction of an experimental machine is feasible provided the proper magnetic field configuration is used. It is estimated that a field with high harmonic components would trap particles with broader initial velocity and injection angle parameters. Orig. art. has: 7 figures, 10 formulas.

SUB CODE: 20/ SUBM DATE: 20Oct65/ ORIG REF: 002/ OTH REF: 000

Card 2/2 PB

ZEYTLENOK, G.A.; RUMYANTSEV, V.V.; SMIRNOV, V.L.; FOMIN, L.P.; KHOKHLOV, V.K.; GRISHAYEV, I.A.; ZEYDLITS, P.M.

The rationale of high-energy linear-electron accelerator design. (MIRA 11:6)
Atom. energ. 4 no.5:448-454 My '58.
(Particle accelerators)

ZEYDLITS, P. M.

21(0) PHASE I BOOK EXPLOITATION SOV/2081

International Conference on the Peaceful Uses of Atomic Energy, 2d., Geneva, 1958

Doklady sovetskikh uchenykh; yadernaya fizika (Reports of Soviet Scientists; Nuclear Physics) Moscow, Atomizdat, 1959. 552 p. (Series: Its: Trudy, Vol. 1) 8,000 copies printed.

Eds. (Title page): A.I. Alikhanov, Academician; V.I. Veksler, Academician; and N.A. Vlasov, Candidate of Physical and Mathematical Sciences; Ed. of this volume: S.I. Drozdov and D.F. Zaretskiy, Candidates of Physical and Mathematical Sciences; Ed. (Inside book): G.L. Smolyan; Tech. Ed.: Ye.I. Mazel'.

PURPOSE: This collection of articles is intended for scientific research workers and other persons interested in nuclear physics. The volume contains 43 papers presented by Soviet Scientists at the Second Conference on Peaceful Uses of Atomic Energy, held in Geneva in September 1958.

COVERAGE: It is divided into two parts. Part I contains 17 papers dealing with plasma physics and controlled thermonuclear reactions, and Part II contains 26 papers on nuclear physics, including problems of particle acceleration and of cosmic ray physics. The first paper by L.A. Artsimovich presents a review of Soviet work on controlled thermonuclear reactions. The remaining papers in

Part I deal with particular problems in this field.
papers in Part II deal in detail with various problems in nuclear physics, such as the fission of heavy atoms and their isotopes, and with the study of cosmic radiation by means of artificial earth satellites and rockets, described in a paper by S.N. Vernov. The Russian-language edition of the proceedings of the conference is published in 16 volumes. The first 6 volumes contain all the papers presented by Soviet scientists as follows: Volume (1), Yadernoya fizika (Nuclear Physics); Volume (2), Yadernyye reaktory i yadernaya energetika (Nuclear Reactor and Nuclear Power); Volume (3), Yadernoye goryucheye metally (Nuclear Fuel and Reactor Metals), Volume (4), Khimiya radioelementov i radiatsionnykh prevrashcheniy (Chemistry of Radioelements and of Radiation Transformations); Volume 5, Radiobiologiya i radiatsionnaya meditsina (Radiobiology and Radiation Medicine); Volume (6) Polucheniye i primeneniye izotop (Production and Use of Isotopes). The other 10 volumes contain selected papers presented at the Conference by non-Soviet scientists. In the present volume discrepancies between the English and Russian language) edition of the proceedings have been noted in three articles where the texts are not identical; vis; Andrianov, et al, "High Current Pulsed Discharge"; Akhiyeser, et al, "High Frequency Plasma Oscillation"; and Bogolyubov, "Investigations of the Many-body Problem". The serial numbers of reports 2302 and 2504 are reversed in the English edition. Report 2211, by Sinel'nikov, et al, is numbered 2536 in the English edition.

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Reports of Soviet Scientists; Nuclear (Cont.) SOV/2081

Card 5/13

05444
SOV/120-59-3-15/46

AUTHORS: Kharchenko, I. F., Nikolayev, R. M., Nekrashevich, A.M., and Zeydlits, P. M.

TITLE: A Computer for Studying the Motion of Particles in a Linear Electron Accelerator (Schetno-reshayushcheye ustroystvo dlya issledovaniya dvizheniya chastits v lineynom elektronnom uskoritele)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 3, pp 71-76 (USSR)

ABSTRACT: This mechanical analyzer is supplied with the parameters of the accelerating system and indicates the parameters of the output beam (energy spectrum, phase width of bunch, mean current); it is also used to examine the phase motion of the particle. The z axis lies along the waveguide; ϕ is the phase of a particle relative to the accelerating field, U_0 is the initial energy of that particle, and c is the speed of light; $\beta = z/c$. Eq (1) is simply the kinetic equation; Eq (2) gives the change in phase occurring in a time d and λ is the wavelength in the guide. Eq (3) is the integral of (2) and (4) is found by combining (3) with (1). Eq (5)

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A Computer for Studying the Motion of Particles in a Linear Electron Accelerator

gives the quantity indicated by the computer, which is seen in Fig 1; Fig 2 shows the kinematic system. The equations on p 73 relate to the operations of the various parts. Fig 3 shows the follower system and the multiplying mechanism; Fig 4 gives the circuits, which use microswitches and a reversible asynchronous motor. Fig 5 shows the phase velocity and accelerating field for one section as functions of z for λ_o = 10.7 cm; the calculation took 5 - 7 min. It is stated that the errors do not exceed 3% in phase or 2% in energy. Fig 6 shows the phase oscillations occurring in an accelerator designed to an output of 4 - 5 MeV. There are 6 figures and 3 references, 1 of which is Soviet and 2 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR (Physico-Technical Institute AS Ukr SSR)

SUBMITTED: March 31, 1958

ZEYDLITS, P.M.

PHASE I BOOK EXPLOITATION SOV/5333

Pchelintseva, G. M., ed.

Uskoriteli; sbornik statey (Accelerators; Collection of Articles) Moscow, Atomizdat, 1960. 121 p. Errata slip inserted. 5,000 copies printed.

Scientific Ed.: B.N. Yablokov; Ed.: G.M. Pchelintseva; Tech. Ed.: N.A. Vlasova.

PURPOSE: This collection of articles is intended for scientists and engineers engaged in the construction and operation of particle accelerators.

COVERAGE: These original articles treat specific problems arising in the operation
of present-day accelerators, particularly linear electron accelerators. A new
accelerator put into operation at the Ukrainskiy fiziko-tekhnicheskiy institut
(Ukrainian Physicotechnical Institute) is described, and problems in the dynamics
of particles in linear electron accelerators are discussed. New methods are
discussed for the extraction of particles from accelerators. Problems associated
with the shaping of permanent magnetic fields and the acceleration of multicharge
ions are also treated. The changeover of the series cyclotron to the phasotron
acceleration mode with a view to increasing the energy of accelerated particles
is described, and some problems connected with the bunching of particles are
elaborated. No personalities are mentioned. References accompany each
article.

TABLE OF CONTENTS:

21.2000

77242
SOV/89-8-2-7/30

AUTHORS: Zeydlits, P. M., Bolotin, L. I., Revutskiy, E. I., Suprunenko, V. A.

TITLE: Strong Focusing in a Linear Accelerator

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 2, pp 127-133 (USSR)

ABSTRACT" Application of strong focusing in linear accelerators. The strong focusing method was proposed by Courant, Livingston, Snyder, and Blewett (see refs at end of abstract) in 1952, while Zel'manov sug- ted in 1953 that a lens be put at the origin of the focusing system. This half lens and multiple periodicity proposed by Ya. B. Faynberg, A. I. Akhiyezer, and K. N. Stepanov lead to a substantial reduction of the field gradient needed for focusing. A. A. Sharshanov developed a method for setting up approximate solutions of the equation for particle oscillations in the paraxial region of the accelerating system due to the alternate focusing and defocusing forces of the quadrupole lens:

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$$\frac{d^2x}{d\xi^2} + \Omega^2(\xi)\, x = \varepsilon f(x, \xi), \qquad (1)$$

where $\Omega^2(\xi)$ is quasi-periodic function of alternating sign; ε, a small parameter; $\xi = \frac{z}{\beta\lambda}$, dimensionless longitudinal coordinate; λ, wavelength; $\beta = \frac{v}{c}$, relative velocity. Since older references contained only approximate diagrams of stable regions, the authors calculated regions of stability sufficiently accurate to be useful for practical purposes. They are shown in Figs. 1-3 for various combinations of focusing and defocusing lenses and consequently, various values for Γ_{IF} and γ, computed for the case that:

$$\Omega(\xi) = \begin{cases} i\frac{1}{1-\alpha}Y & \text{- in the defocusing lens} \\ i\,\alpha\,X & \text{- in the accelerating gap} \\ \frac{1}{1-\alpha}Y & \text{- in the focusing lens} \end{cases}$$

while

$$X^2 = \frac{Z\alpha\pi eEG\lambda}{Amc^2\beta}\sin\varphi_s; \qquad (3)$$

In the case of electrostatic lenses:

$$Y^2 = \frac{Z(1-\alpha)^2 eVk\lambda^2}{Amc^2a^2}; \qquad (4a)$$

and in the case of magnetic lenses:

$$Y^2 = \frac{300Z(1-\alpha)^2 eH'\beta\lambda^2}{Amc^2}, \qquad (4b)$$

where H' is gradient of the magnetic field; V, potential differences on lens electrodes; k,

coefficient depending on shape of electrodes; 2a, lens aperture; α, ratio of gap length to length of the period ($\alpha = 0.25$); Z, A are respective charge and mass numbers; φ_s is synchronous phase; E, average over the accelerator length of field strength amplitude of the accelerating field; G, utilization factor of the accelerating field (for $\alpha = 0.25$, maximum value of G = 0.9); IF subscript with Γ refers to the initially focusing planes.

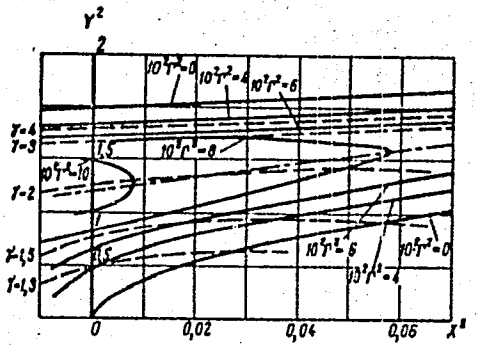

Fig. 1. Stability region for N = 1.

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Strong Focusing in a Linear Accelerator

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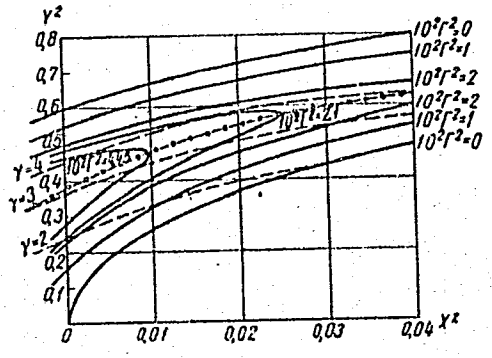

Fig. 2. Stability region for N = 2.

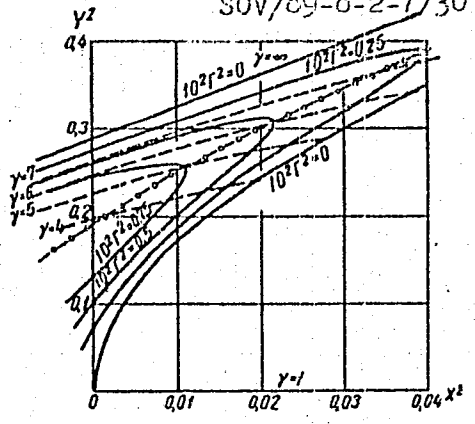

Fig. 3. Stability region for N = 3.

N represents the number of successive lenses of the same sign (multiple periodicity). Choosing the working point in the middle of the stability region, the potential on the lenses decreases as $2^{-(N-1)}$.

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The parameter Γ_{IF} which can be computed numerically and whose values are given in Figs. 1-3, enters into the equation for the amplitude of the periodic solution of Eq. (1) which is here presented for the case of a symmetrical period of variation of the function $\Omega(\xi)$ in initially defocusing planes (ID):

$$x_m = \sqrt{x_0^2 + \left(\frac{x_0'\beta\lambda}{\Gamma_{IF}}\right)^2}\sqrt{\frac{\Gamma_{IF}^{(0)}}{\Gamma_{IF}(\xi)}}, \quad (2)$$

where x_0 and x_0' are, respectively, initial elongation (in cm) and initial angle of the particle trajectory (in radians). Similar equations exist for the initially focusing planes (IF). Amplitude variations with rising N are shown in Figs. 4 and 5.

Strong Focusing in a Linear Accelerator

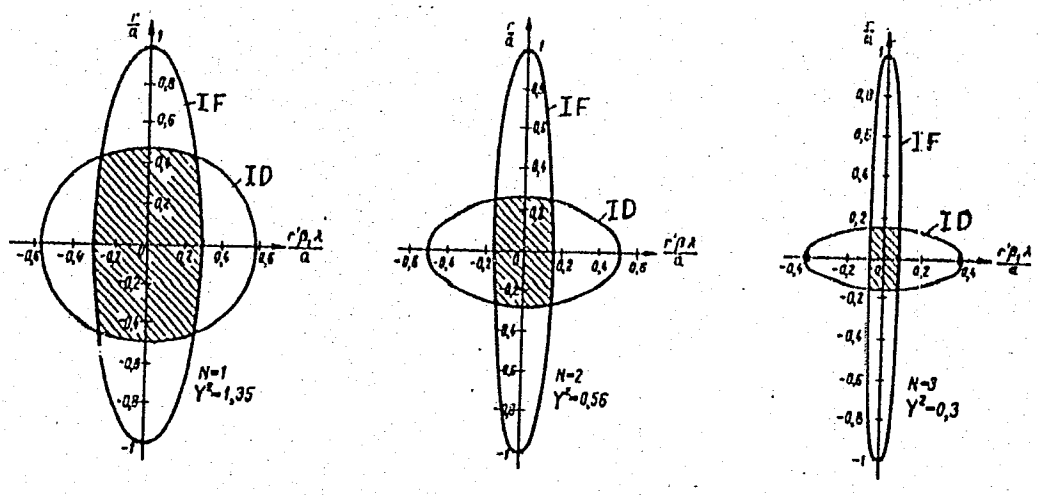

Fig. 4. Regions covered by parameters of entering beam for various values of N at $X^2 = 0.02$.

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Strong Focusing in a Linear Accelerator

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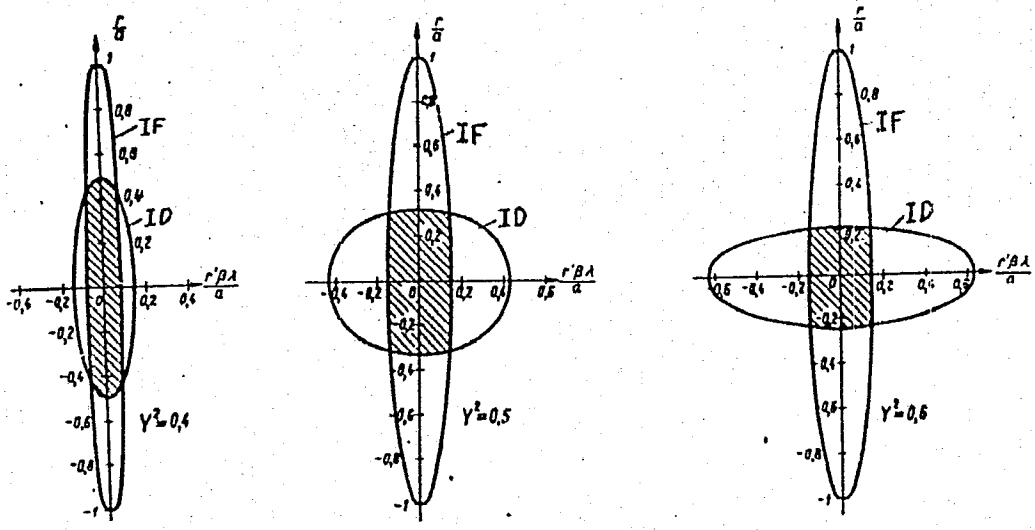

Fig. 5. Regions covered by parameters of entering beam for various lens potentials with N = 2 and X^2 = 0.02.

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As seen in Fig. 5, an increase of the lens potentials sharply reduces the region covered due to a increase of oscillation in the ID region (γ increases sharply). Calculations showed that the amplitude of radial oscillations increases with the increase of β, while $\Gamma_{IF}(\xi)$ in Eq. (2) decreases with an increase of ion velocities, provided the gradient is constant on lenses along the system. Numerical investigations of the ratio of amplitudes at the start and end of acceleration as function of the lens potential showed that the smallest rise in amplitudes is obtained for potentials close to the lower boundary of the stability region. A simultaneous variation of lens potentials with the ion velocities can keep $\Gamma_{IF}(\xi)$ unchanged and, consequently, keeps the amplitude constant. Calculation of a focusing system for a linear accelerator. The authors calculated a focusing system starting with the choice of the number of consecutive lenses of the same sign in drift tubes. From the stability

regions in Figs. 1-3 one determines for a given X^2 the value of Y^2 which for the given lens aperture determines the necessary focusing potential. Strong focusing studies were performed on a 5.5 mev linear proton accelerator with $\lambda = 2.18$ m; E = 20 kv/cm; $\beta_0 = 0.0328$; $\beta_f = 0.1$; $\varphi_s = 16^\circ$; k = 1; $\theta_0 = 0.5$; $X_0 = 0.141$. The choice of 2a = 1.5 cm aperture, N = 2, and $Y^2 = 0.4$ fixes other parameters. Parameters of ellipses on the phase planes (see Fig. 5) are, for the ID plane:

$$\frac{x_m}{a} = \frac{1}{Y} = 0.5; \quad \frac{x'_m}{a} = \frac{Yr}{\beta\lambda} = 2.8 \cdot 10^{-2};$$

and for the IF plane:

$$\frac{x_m}{a} = 1; \quad \frac{x'_m}{a} = \frac{r}{\beta\lambda} = 1.4 \cdot 10^{-2},$$

where x' is angular divergence of the entering beam.

Lens construction. Of the two lenses constructed,

the one with an aperture of 2a = 1.5 and a 15 kv potential is shown in Fig. 6. Electrostatic lens has surfaces of a hyperbolic shape; the magnetic ones are cylindrical. Experimental investigations of the focusing system on the 5.5 mev linear accelerator. Calculations and construction were done at the beginning of 1955. First experimental results were obtained toward the end of 1955. Entering and outgoing beam currents were measured using a Faraday cage. Figure 7 shows some results. The 8 kv maximum agrees satisfactorily with calculations. The 15 mm aperture of the lenses trapped a beam of approximately 6 mm diameter as was calculated. Impulse magnetic lenses for the linear proton accelerator. Magnetic quadrupole lenses could be useful in cases of high-current beams. Calculations showed that for a 30 mev alternating gradient of a magnetic focusing linear proton accelerator with 4 mev injections, one would need a power of 250 kw. Since most linear accelerators work in impulses anyway, one can avoid many technical problems by feeding the lenses discontinuously. Using Eq. (4b),

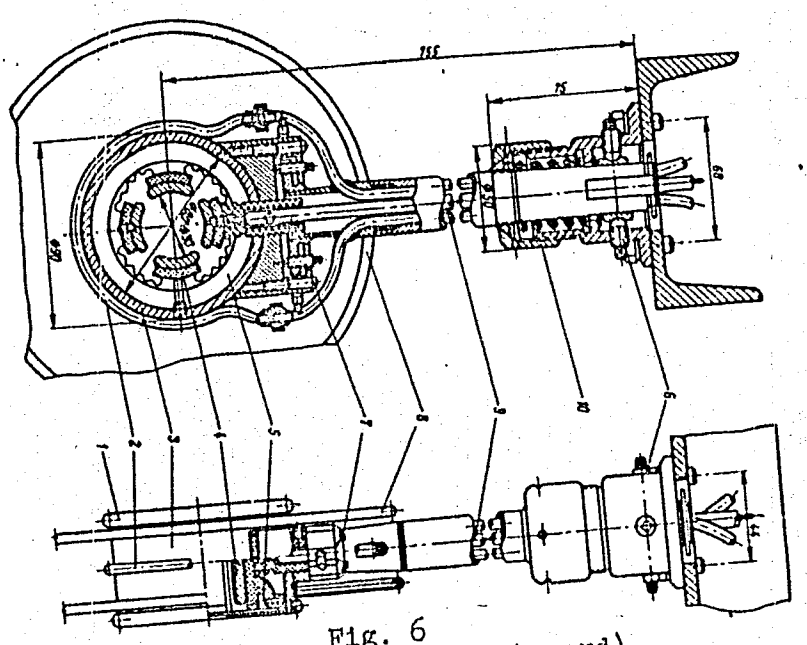

Fig. 6
(Caption on next card)

Caption to Fig. 6

Fig. 6. Construction of electrostatic lenses with the drift tube: (1) diaphragm ring; (2) cooling loop; (3) body of drift tube; (4) lens electrodes; (5) lens insulator; (6,7) adjusting screws; (8) adjustment disk; (9) cables; (10) nut regulating height.

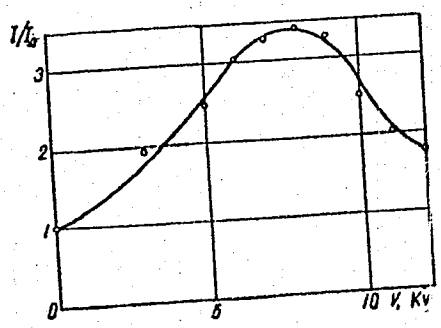

Fig. 7. Current on accelerator exit vs. lens potential.

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the authors obtain for the gradient of the magnetic field in the lens the expression:

$$H' = \frac{Amc^2\beta_0\gamma^2}{Ze300l_n}. \quad (5)$$

They constructed the lens using transformer core material of thickness 0.35 mm. Three windings of PEV-2 wire of 2 mm diameter were covered with a layer of BF-2 glue, placed into the pole grooves, and baked. Such a coil was able to withstand current impulses of the order of 2 ka. For the 5.5 kev proton accelerator the authors needed H' = 1.42·10³ Oe/cm. This required per pole nI = 1,000 ampere turns, i.e., with a three-turn coil they needed approximately 300 a per pole or approximately 600 a per lens, and 12 ka for all the 20 lenses. The Hall effect in bismuth served for measurements of the field gradient. The system performed in a manner completely analogous to the electrostatic system. Professor K. D. Sinel'nikov (Member of the AS UkrSSR) and Ya. B. Faynberg

Strong Focusing in a Linear Accelerator

77242
SOV/89-8-2-7/30

(Candidate of Physico-Mathematical Sciences) showed constant interest and discussed the experiments. There are 7 figures; and 4 references, 1 Soviet, 3 U.S. The U.S. references are: L. Smith, R. Gluckstern, Rev. Scient. Instrum., 26, 220 (1955); T. Blewett, Phys. Rev., 88, 1197 (1952); E. Courant, M. Livingston, H. Snyder, Phys. Rev., 88, 1190 (1952).

SUBMITTED: April 27, 1959

Card 15/15

22875
S/089/61/010/005/003/015
B102/B214

26.2332

AUTHORS: Zeydlits, P. M., Yamnitskiy, V. A.

TITLE: Investigation of accelerating systems operating with H waves

PERIODICAL: Atomnaya energiya, v. 10, no. 5, 1961, 469-477

TEXT: A report on the most important results of the experimental investigations of accelerating systems operating with H waves given here was made already at the conference of the Fiziko-tekhnicheskiy institut AN USSR (Institute of Physics and Technology AS UkrSSR) in November 1959. The investigations showed that in contrast to the earlier view accelerating systems operating with H waves (specially with H_{111} type oscillations) have important advantages in comparison to those operating with E_{010} type oscillations. These consist above all in the simplicity of the H wave cavity resonator and in the fact that the use of H waves reduces high frequency output. Linear accelerators operating with H waves can be used up to particle velocities c without alterations in their fundamental structure, which is not possible by the use of E_{010} waves. Since power

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Investigation of accelerating systems...

consumption and construction work form the main items of the cost of the modern linear resonance amplifier, the H wave accelerator is also cheaper. The reduction of the h-f power is brought about above all by the repeated traversing by the particles through one and the same accelerating potential. In order to find the optimum values of the size, parameters, and construction the change of the operating frequency f and the equivalent shunt $R_{w.e.}$ with α, T, and the area S (see Figs. 6 and 7) was determined for different forms of supports in endovibrators (of the form of Fig. 2b). A comparison of the curves $R_{w.e.} = f(\beta)$ shows that, for drift tubes with comb (Curve 1) $\beta < 1.5$ is economic, for those with round feet (2) $\beta > 0.15$ is economic and for those with small feet (3) $\beta \geq 0.2$-0.25 is economic. $R_{w.e.} = kf^{1/2}C_o^{-3/2}\beta^{-2}$, where C_o is the capacitance of the condenser per unit length of the accelerator. For optimum ratios between the dimensions of the supports $R_{w.e.}$ changes from 600-700 megohms/m to 40-50 megohms/m in the range $0.015 \leqslant \beta \leqslant 0.15$. For lengths of drift tubes required for focusing (60-70 mm) $R_{w.e.}$ = 35-40 megohms/m for β = 0.05-0.35. Experiments were carried out on two models of proton accelerator tubes (E_p = 2-23 Mev,

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Investigation of accelerating systems...

$f = 240$ Mc, $R_{ш.э.} = 46$ megohms/m; and $E_p = 0.1$-2.5 Mev, $f = 200$ Mc, $R_{ш.э.} = 140$ megohms/m) to check the results obtained. It was found that by using endovibrators (Fig. 2g) with H waves wavelengths could be obtained which were 3-5 times as large as those obtained with E_{010} wave. This system is also 2-3 times as economic; the tube is only half as long and the evacuated volume can be reduced to 1/20. This system can be used above all for ion acceleration where essentially larger waves are employed than in the electron acceleration. A. I. Akhiyezer and G. Ya. Lyubarskiy are mentioned. There are 17 figures, 1 table, and 14 references: 8 Soviet-bloc and 6 non-Soviet-bloc. The three most recent references to English-language publications read as follows: J. Blewett, Symposium CERN, 1956; J. Slater. Appl. Phys. 23, 68 (1952); L. Alvarez. Rev. Scient. Instrum., 26, 111 (1955).

SUBMITTED: June 27, 1960

Card 3/6

L 16930-66 EWT(1)/T IJP(c)

ACC NR: AT6002496 SOURCE CODE: UR/3137/64/000/070/0001/0013

AUTHOR: Sinel'nikov, K.D.; Khizhnyak, N.A.; Repalov, N.S.; Zeydlits, P.M.; Yamnitskiy, V.A.; Azoyskaya, Z.A.

63
B+1

ORG: none

21,44155

TITLE: Injection of particles through an acute-angled magnetic trap into a mirror trap with increasing fields of the mirrors

SOURCE: AN UkrSSR, Fiziko-tekhnicheskiy institut. Doklady, no. 70, 1964. Inzhektsiya chastits v zerkal'nuyu lovushku s narastayushchim polem v probkakh cherez magnitnuyu lovushku ostrougol'noy geometrii, 1-13

TOPIC TAGS: magnetic mirror machine, ~~particle trapping~~, magnetic trap, computer calculation, charged particle

ABSTRACT: The authors investigate the passage of charged particles injected through an end slit parallel to the axis of the magnetic field through an acute-angled magnetic trap. A general introduction of magnetic mirror effect is followed by a theoretical study of the effect of acute-angled field geometry on the eccentricity of particles passing through the zero field plane, and the filling of an increasing field mirror trap by particles passing

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L 16930-66

ACC NR: AT6002496 O

through the acute-angled trap. The paper gives 1) the conditions for the passage of particles with large and small displacement of the particle rotation center from the magnetic axis; and 2) the results of the numerical calculations of the trap filling carried out on the UMShN electronic computer. Curves presented depict the conversion of longitudinal into transverse velocity as a function of the injection-to-final-radius ratio, and as a function of the initial radial velocity, and particle trapping during a slow field increase. The results show that the method for particle trapping presented is technologically feasible. Acute-angled traps with higher field harmonics are not studied. Orig. art. has: 21 formulas and 8 figures.

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 002

Card 2/2

L 18840-66 EWT(1) IJP(c) GS

ACC NR: AT5028589 SOURCE CODE: UR/0000/65/000/000/0388/0402

AUTHOR: Sinel'nikov, K. D. (Academician AN UkrSSR); Khizhnyak, N. A.; Repalov, N. S.; Zeydlits, P. M.; Yamnitskiy, V. A.; Azovskaya, Z. A.

ORG: none

TITLE: Investigation of the charged particle motion in picket fence magnetic traps

SOURCE: Konferentsiya po fizike plazmy i problemam upravlyayemogo termoyadernogo sinteza. 4th, Kharkov, 1963. Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza (Physics of plasma and problems of controllable thermonuclear synthesis); doklady konferentsii, no. 4, Kiev, Naukova dumka, 1965, 388-402

TOPIC TAGS: magnetic trap, relativistic particle, plasma charged particle, particle trajectory, particle motion, magnetic field

ABSTRACT: The properties of charged particle motion in magnetic traps of the "picket fence" and "magnetic wall" (with negative field curvature) types are considered and their trajectories determined by numerical integrations. The traps are characterized by axial symmetry and small angles between field lines. The analytical form of the fields is described by the expansion of the scalar magnetic potential

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ACC NR: AT5028589

in Bessel functions, retaining the first term only. Since both curl and divergence of the field within magnetic coils vanish, the magnetic intensity for "picket fence" traps (easily generalized to other geometries) is determined and analytical expressions are derived for two extreme cases of extended and compressed traps. A method for determining the fields in the throat area of the trap of a given radius is also given. Application of the Lagrangian and Hamiltonian of the charged particle motion and the utilization of the cyclic azimuthal coordinate of axisymmetric fields leads to derivation of a potential in which a particle moves and determines the extent of regions of particle confinement. It is found that there always exists a region through which particles can escape. The escape criteria and a classification of transmitted and reflected particles in which the gyroradius of the particles, and hence mass, play a strong role are presented. Additional classification relative to the initial particle parameters is also discussed. In particular, it is shown that the behavior of particles injected in a direction opposite to the system axis is similar to that of those injected parallel to the axis, excepting that the initial radial separation of the former from the axis is greater. Representative trajectories are graphed. The discussion is further generalized to the relativistic particles for which presently realizable magnetic confinement schemes require very strong fields. Orig. art. has: 17 figures, 34 formulas.

SUB CODE: 20/ SUBM DATE: 20May65/ ORIG REF: 002/ OTH REF: 002

Card 2/2 vmb

ACCESSION NR: AT3007907 S/2957/63/000/000/0061/0064

AUTHOR: Amonenko, V. M.; Bolgov, I. S.; Zeydlits, M. P.; Azhazha, V. M.

TITLE: Effect of vacuum melting on properites of EI846, EI852, EI847, and EI437B steels

SOURCE: Primeneniye vakuuma v metallurgii; trudy* Tret'yego soveshchaniya po primeneniyu vakuuma v metallurgii. Moscow, 1963, 61-64.

TOPIC TAGS: vacuum melting, vacuum induction melting, EI846 steel, EI847 steel, EI852 steel, EI437B alloy, EI846 steel vacuum melting, EI847 steel vacuum melting, EI852 steel vacuum melting, EI437B alloy vacuum melting, mechanical property, gas content, nonmetallic inclusion content, ductility, hardness, tensile strength, yield strength, notch toughness

ABSTRACT: Small, 20—25-kg, heats of EI846 [apparently an austenitic chromium nickel steel containing 0.02—0.03% C and 0.1—0.8% B], EI847 [0.5—0.10% C, 14.0—17.0% Cr, 14.0—16.0% Ni, 0.45—0.85% Nb,

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ACCESSION NR: AT3007907

2.5—3.5% Mo], and EI852 [0.50% max C, 1.4—2.1% Si, 12.0—14.0% Cr, 1.0% Ni, 1.2—2.0% Mo] steels and EI437B nickel-base alloy [Nimonic 80A] were melted in a laboratory induction furnace under a vacuum of 0.00005—0.0001 mm Hg. In all four materials vacuum melting greatly reduced the gas content: oxygen, to 0.0007—0.002%; hydrogen, to 0.0001—0.0003%; and nitrogen, to 0.001—0.003%, that is, by 80—90% compared with conventionally melted steels. The size and content of nonmetallic inclusions was also considerably reduced. This resulted in a significant improvement of ductility, especially at 500—800C (see Fig. 1 of the Enclosure). Tensile and yield strengths were not significantly affected by vacuum melting; hardness dropped by 10—20% compared with conventional melting. The beneficial affect of vacuum melting was especially pronounced in EI846 steel. Owing to low carbon and high boron contents, it is difficult to obtain steel of satisfactory quality by conventional arc or induction melting. Satisfactory ductility can be obtained only by keeping the boron content close to the lower limit. In vacuum-melted steel, however, ductility drops with increased boron content, but still remains satisfactory; at 0.8% boron the elongation at 20, 500, and 800C amounted to 30, 18, and 56%. Increase of boron content to

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ACCESSION NR: AT3007907

1.15% did not produce any significant drop of elongation. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 12Jul63 ENCL: 01

SUB CODE: ML NO REF SOV: 002 OTHER: 002

Card 3/4

ACCESSION NR: AT3007907

ENCLOSURE: 01

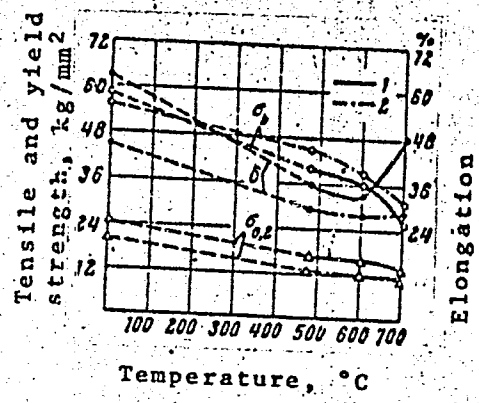

Fig. 1. Mechanical properties of EI846 steel with 0.1% borbn

Melted: 1 - in vacuum; 2 - in air, σ_b - tensile strength; $\sigma_{0,2}$ - yield strength; δ - elongation.

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S/861/62/000/000/005/022
B125/B102

AUTHORS: Sinel'nikov, K. D., Zeydlits, P. M., Nekrashevich, A. M., Shutskever, Ya. S. (Deceased), Akhiyezer, A. I., Faynberg, Ya. B., Lyubarskiy, G. Ya.

TITLE: The physical bases of the injector of the 10-Bev proton synchrotron

SOURCE: Teoriya i raschet lineynykh uskoriteley, sbornik statey. Fiz.-tekhn. inst. AN USSR. Ed. by T. V. Kukoleva. Moscow, Gosatomizdat, 1962, 94 - 108

TEXT: The linear accelerator discussed here is the injector of the proton synchrotron of the OIYaI. It furnishes a strong flux of accelerated particles in short pulses. The pulses are separated by relatively long intervals of time. The resonator, containing screening tubes, excites standing waves. It needs only a relatively small r-f power and it allows of synchronizing several generators feeding the accelerator. Simultaneous phase stability and radial stability of the accelerated bunch is achieved with the screening tubes and nets. The injection energy is 600 kev and the synchronous phase 20°. The generator wave length is 215 cm, the periods of

Card 1/3

The physical bases of the...

the accelerator have the length $L_k = c\beta_k T$, where $T = \lambda/c$, and the mean effective field strength in all the gaps of the resonator is 19.9 kv/cm. The phase focusing effect is accompanied by radial defocusing. The critical phase $\varphi_{s\,max}$ lies between 54° and 71°; in the present case, $\varphi_{s\,max} > 2\varphi_s$. The utilization factor of the current injected should be increased by inserting a clystron-type buncher between injector and injecting accelerator. During one period of the r-f oscillations, the energies absorbed by a particle of phase φ and by the synchronous particle are different. The first term of the final particle energy at the accelerator output is the energy calculated, and the second term is the deviation from it. The relative energy spread is $0.3 \cdot 10^{-2}$ in the case considered here. Supplementary investigations are necessary to determine the spread in energy due to radial oscillations; in particular, the way the accelerating field E_z depends on the radius must be studied. The capture angle calculated for $\varphi_s = 20°$ has a minimum at $\varphi = 30°$. Currents of less than 10 ma have but little effect on capture during acceleration. Furthermore, the effect of the space charge on the radial stability of the accelerator discussed here is insignificant. The angle of

The physical bases of the...

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B125/B102

divergence of the emitted bunch is about 0.15°, while its radius is 3 cm at the most. This paper was written in 1952. There is 1 figure.

Card 3/3

44875

24 6730

S/861/62/000/000/006/022
B125/B102

AUTHORS: Sinel'nikov, K. D., Faynberg, Ya. B., Zeydlits, P. M.

TITLE: A possible modification of the linear and cyclic methods of acceleration

SOURCE: Teoriya i raschet lineynykh uskoriteley, sbornik statey. Fiz.-tekhn. inst. AN USSR. Ed. by T. V. Kukoleva. Moscow, Gosatomizdat, 1962, 109 - 113

TEXT: A type of accelerator combining the advantages of cyclic and linear accelerators is discussed. It is a linear accelerator bent to a nonclosed ring or another non-closed curve. The accelerated particles are kept in their trajectories of constant or variable radius by a magnetic field. Radial and axial stability is attained in the way customary for cyclic accelerators. Phase stability can be achieved using the dependence of the revolution period of the accelerated particles on their frequency. High energies can be attained in systems of large radius and comparatively moderate field strength ($\sim$1 kgauss for 1 Bev). The condition of phase stability is $\Omega_\varphi^2 = eV\omega_H^2 N^2 k/\varepsilon_0$ where Ω_φ is the frequency of the phase

Card 1/3

oscillations and N is the number of the periods of the linear accelerator. The frequency of the generator can be kept constant by varying the structural period of the linear accelerator. The advantages of such accelerators are simplicity of injecting and extracting particles, considerable increase of the beam current, constancy of the generator frequency and of the magnetic field strength. The energy gained per revolution is of the same order of magnitude as the total energy. The magnetic field is a function of radius and angle. When the quasistationarity condition $\Omega_\varphi^2/\omega_H^2 \ll 1$ is fulfilled and when the magnetic field strength and the number N of the periods of the accelerating system vary slowly, $\omega_r = N\omega_H$ is the condition of synchronism between particle and wave. The generator frequency, therefore, is significantly higher than the revolution frequency of the particle. The radial deviations Δr_1 for radial-phase oscillations and Δr_2 for free radial oscillations can be diminished significantly to Δr_1 = 1-6 cm and Δr_2 = 1-5 cm. Rather large variations in momentum and in amplitude of the phase oscillations then correspond to small radial variations. Near the end of acceleration, the amplitude of the radial oscillations decreases by

A possible modification of the...

S/861/62/000/000/006/022
B125/B102

several times because of the considerable increase in magnetic field strength after one revolution. This paper was written in 1955.

Card 3/3

ZEYDLITS, P.M.; YAMNITSKIY, V.A.

Accelerator systems operating on waves analogous to H. Atom. energ. 10 no.5:469-477 My '61. (MIRA 14:5)
(Particle accelerators)

YERU, I.I.; LANGE, A.A.; ZEYDLITS, Ye.M.; STREL'NIKOVA, V.P.

Catalytic hydrogenation of quinoline for the production of the "Kyusol" repellent. Koks i khim. no.10:46-49 '62. (MIRA 16:9)

1. Ukrainskiy uglekhimicheskiy institut.
(Kyusol) (Coke industry--By-products)

ZEEGOFER, O.I.

TIKHOMIROV, Aleksey Aleksandrovich; ZEEGOFER, O.I., inzh., nauchnyy red.; VINOGRADOVA, G.M., red. izd-va; SHERSTNEVA, N.V., tekhn. red.

[Reinforcing elements of hydraulic structures] Armaturnye konstruktsii gidrotekhnicheskikh sooruzhenii. Moskva, Gosstroizdat, 1962. 147 p. (MIRA 15:6)
(Hydraulic structures) (Concrete reinforcement)

BAYBAKOV, Oleg Vladimirovich; ZEYGOFER, Oleg Iosifovich; KISELEV, P.G., red.; ZHIVOTOVSKIY, L.S., red.; VORONIN, K.P., tekhn. red.

[Hydraulics and pumps] Gidravlika i nasosy. Moskva, Gos. energ. izd-vo, 1957. 240 p. (MIRA 11:7)
(Pumping machinery) (Hydraulics)

ZEYEMAN, Miloslav[Seeman, Miloslav], prof. doktor med. nauk; SOKOLOVA, Ye.O.[translator]; TRUTNEV, V.K., zasl. deyatel' nauki, prof.[deceased], red.; LYAPIDEVSKIY, S.S., dots., red.; YAKOBSON, I.S., red.; ROMANOVA, Z.A., tekhn. red.

[Speech disorders in children] Rasstroistva rechi v detskom vozraste. Pod red. i s predisl. V.K.Trutneva i S.S. Liapidevskogo. Moskva, Medgiz, 1962. 298 p. (MIRA 16:6)
Translated from the Czech.
(SPEECH, DISORDERS OF) (CHILDREN--DISEASES)

ZEYEN, K.

Welding electrodes. Tr. from the German. p. 97. Vol. 3, No. 4, 1954. VARILNA TEHNIKA. Ljubljana, Yugoslavia.

SOURCE: East European Accessions List, (EEAL) Library of Congress, Vol. 5, No. 8, August, 1956.

L 00896-66 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5016543 UR/0056/65/048/006/1542/1544

AUTHOR: Lundin, A. G.; Zeyer, E. P.

TITLE: Nature of spontaneous polarization in ferroelectric mercurates

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 6, 1965, 1542-1544

TOPIC TAGS: ferroelectricity, ferroelectric mercurate, spontaneous polarization

ABSTRACT: To determine whether hydrogen plays an essential role in the mechanism of spontaneous polarization of ferroelectric mercurates, the authors studied proton resonance in polycrystalline specimens of ferroelectric tetramethylammonium trihalomercurate ($N(CH_3)_4HgX_3$ where X is Cl, Br, or I) in the temperature interval in which an appreciable change of the rate and of the character of the reorientation of the $[N(CH_3)_4]^+$ ion is observed. The measurements were made with the spectrometer for broad lines described earlier by one of the authors (Lundin, with G. M. Mikhaylov, PTE no. 2, 90, 1960). In addition, the spectrum of $N(CH_3)_4HgCl_3$ was recorded at 4.3K by Yu. S. Karimov at the Institut fizicheskikh problem (Institute of Physical Problems) AN SSSR. The results show that hydrogen does not play an appreciable role in the spontaneous polarization of these ferroelectrics. These results do not contradict those obtained by J. G. White (Acta Cryst. v. 16, 397,

Card 1/2

L 00896-66

ACCESSION NR: AP5016543

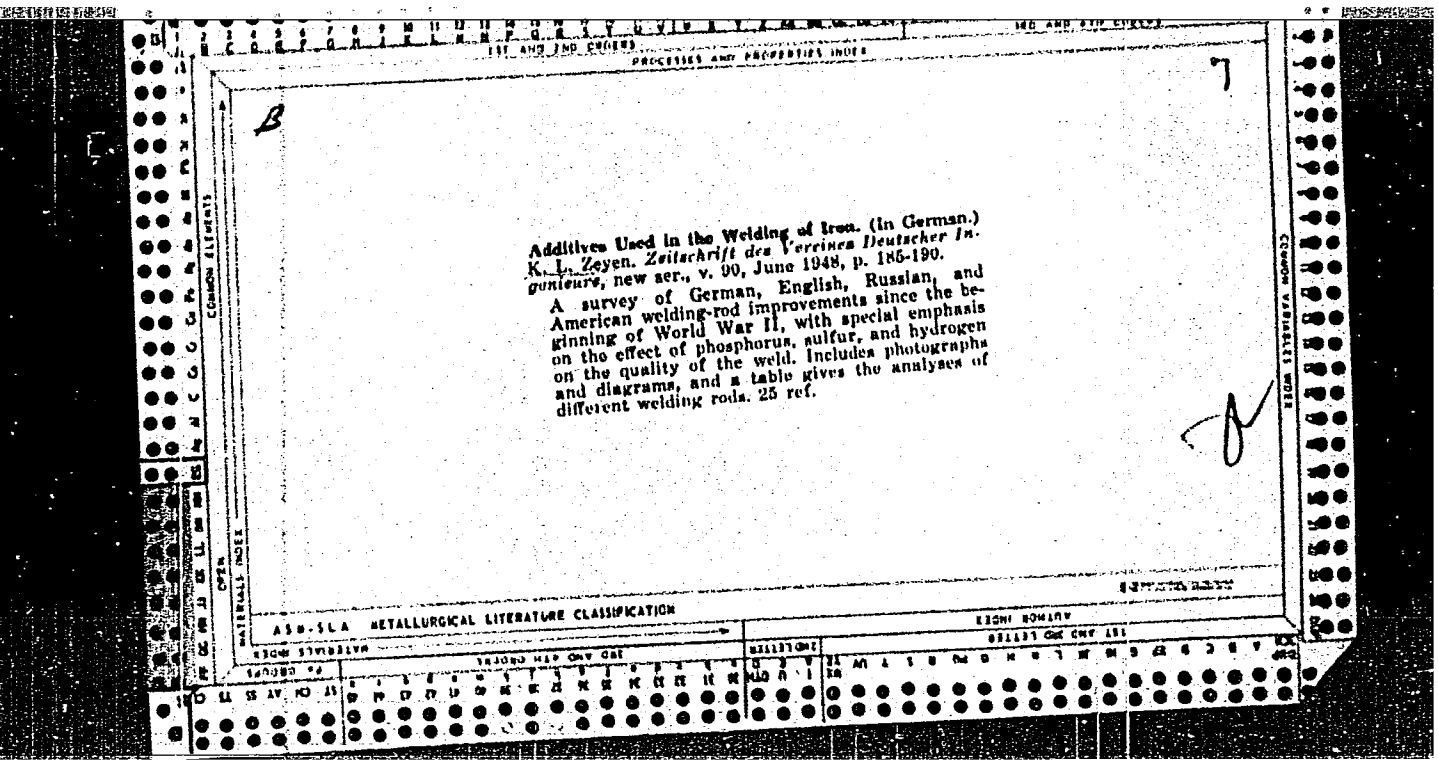
2

1963). Orig. art. bas: 2 figures.

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Physics of the Siberian Department, Academy of Sciences, SSSR)

SUBMITTED: 24Nov64	ENCL: 00	SUB CODE:	SS
NR REF SOV: 001	OTHER: 006		

Card 2/2



Additives Used in the Welding of Iron. (In German.) K. L. Zeyen. *Zeitschrift des Vereines Deutscher Ingenieure*, new ser., v. 90, June 1948, p. 185-190.

A survey of German, English, Russian, and American welding-rod improvements since the beginning of World War II, with special emphasis on the effect of phosphorus, sulfur, and hydrogen on the quality of the weld. Includes photographs and diagrams, and a table gives the analyses of different welding rods. 25 ref.

KOMAROVSKAYA, Anna Stepanovna, kand. tekhn. nauk; ZEYEST, M.B., red.; PITERMAN, Ye.L., red.izd-va; KARLOVA, G.A., tekhn. red.

[Characteristics of the operation of narrow-gauge logging railroads in case of diesel locomotive traction]Osobennosti ekspluatatsii lesovoznykh uzkokoleinykh zheleznykh dorog pri teplovoznoi tiage. Moskva, Goslesbumizdat, 1962. 86 p. (MIRA 16:2)

(Railroads, Narrow-gauge) (Diesel locomotives)
(Lumbering--Transportation)

MILKOVSKIY, Mikhail Antonovich; ZEYEST, M.B., red.; KONARDOVA, T.F., red. izd-va; LOBANKOVA, R.Ye., tekhn. red.

[Master's handbook for 750-mm. logging railroads] Spravochnik mastera lesovoznykh uzkokoleinykh zheleznykh dorog kolei 750 mm. Moskva, Goslesbumizdat, 1961. 144 p. (MIRA 14:11)
(Lumber--Transportation) (Railroads)

MEL'NIKOV, Valentin Ivanovich; BEZBORODOV, Gennadiy Aleksandrovich; ZEYEST, M.B., red.; PLESKO, Ye.P., red. izd-va; PARAKHINA, N.L., tekhn. red.

[Mechanization of the laying of portable narrow-gauge railroad tracks] Mekhanizatsiia stroitel'stva perenosnykh uskokoleinykh putei. Moskva, Goslesbumizdat, 1961. 110 p. (MIRA 14:11)
(Lumbering) (Railroads, Industrial)

BRATIN, Vsevolod Sergeyevich, inzh.; TOROONSKIY, Mikhail Nikolayevich, dotsent, kand.tekhn.nauk; PICHLEVSKIY, S.V., retsenzent; D'YAKOVA, Ye.I., retsenzent; ZELEST, M.B., red.; GORYUNOVA, L.K., red.izd-va; KUZNETSOVA, A.I., tekhn.red.

[Construction of logging roads and artificial structures] Stroitel'stvo lesovoznykh dorog i iskusstvennykh sooruzhenii. Moskva, Goslesbumizdat, 1960. 330 p. (MIRA 14:4)

(Forest roads)

TARANENKO, N.M., inzh.; ZEYF, A.P., inzh.

Evaluation of the degree of nonautonomy of linear control systems of turbines with several steam extractions. Energomashinostroenie 9 no.5:11-15 My '63. (MIRA 16:7)

(Steam turbines)

TARANENKO, N.M., inzh.; ZEYF, A.P., inzh.

Necessary and sufficient conditions for the autonomy of linear systems of steam turbine control with several adjustable steam extractions. Energomashinostroenie 6 no.6:1-5 Je '60. (MIRA 13:8)

(Steam turbines)

SUTULA, V.D.; ZEYF, A.P.

Stud/ of the adsorption of gases in the presence of surface states. Kin.i kat. 3 no.5:698-703 S-O '62. (MIRA 16:1)

1. Institut kataliza Sibirskogo otdeleniya AN SSSR.
(Adsorption) (Chemistry, Physical and theoretical)

L 10224-63 EPA/EWT(m)/BDS--AEDC/AFFTC/ASD/APGC--Paa-4
ACCESSION NR: AP3001028 S/0114/63/000/005/0011/0015

AUTHOR: Taranenko, N. M. (Engineer); Zeyf, A. P. (Engineer) 69

TITLE: Evaluating the degree of independence of the linear control systems intended for multistage-extracting turbines

SOURCE: Energomashinostroyeniye, no. 5, 1963, 11-15

TOPIC TAGS: steam turbine automatic control, KTZ extracting turbine, AP-1.5B extracting turbines

EXTRACT: The article is a continuation of a previous work by the same authors (Energomashinostroyeniye, no 6, 1960). A general linear control system is analyzed mathematically, and its application to a KTZ two-stage-extracting turbine is considered. Transients in a AP-1.5B turbine on a sudden drop of load are studied theoretically. A numerical example with a one-stage-extracting AP-1.5B turbine shows that both static and dynamic conditions of independent control are met only to a certain degree. The article is published "for purposes of discussion", and an editorial note doubts its value. Orig. art. has: 28 formulas and 5 figures.

ASSOCIATION: none

Card 1/2

ZEYF, M.M.; RUDINOVICH, G.G. (Minsk)

Experience of the clothing industry in White Russia in the improvement of the quality of manufactured goods. Shvein.prom., no.4:7-9 Jl-Ag '64. (MIRA 17:10)

ZEYF, M.M. (Minsk)

Experience of the technical information bureau of the "Krupskaia" factory in organizing exchange of advanced practices. Shvein.prom. no.3:37 My-Je '60. (MIRA 13:7)
(Minsk--Clothing industry)

ZEYF, M.M.; GLYATSEVICH, G.V. (Minsk)

Multiple-style section assembly-lines in the "Krupskaia" factory. Shvein.prom. no.6:18-20 N-D '59.
(MIRA 13:4)
(Minsk--Clothing industry--Equipment and supplies)
(Assembly-line methods)

ZEYFER, K.M., inzh.

Anticorrosive steam treatment of parts. Mashinostroitel' no.11:31-32 N '59. (MIRA 13:3)
(Corrosion and anticorrosives)

ZEYFER, K.M., inzh.

Device for fastening wedges for scraping. Mashinostroitel' no.9:28 S '59. (MIRA 13:2)

(Machine-shop practice)

ZEYFER, K.M., inzh.

Practical method for multiplying pencil drafts. Vest.mash. 39 no.3:82 Mr '59. (MIRA 12:4)
(Copying processes)

AUTHOR: Zeyfer, K.M., Engineer SOV/122-59-3-29/42

TITLE: A Practical Method for the Duplicating of Pencil Drawings (Praktichnyy metod razmnozheniya chertezhey vypolnennykh v karandashe)

PERIODICAL: Vestnik Mashinostroyeniya, 1959, Nr 3, p 82 (USSR)

ABSTRACT: A light sensitive paper produced by the Moscow Technical Paper Factory "Soyuz" is announced which serves for direct drawing in pencil on the side opposite the emulsion coat. After exposure to a source of light facing the pencil side and development in ammonia vapour, a tracing type drawing with increased contrast is obtained, from which ordinary prints can be taken. The emulsion coat retains its sensitivity on the drawing board in daylight or electric light for a period of up to 4 days. It is stated that ink tracings can be almost entirely dispensed with.

Card 1/1

ZEYFER, K.M., inzh.

Sprayers for painting parts with kuzbass varnish. Mashinostroitel' no.6:32 Je '58. (MIRA 11:6)
(Spray painting)

AUTHOR: Zeyfer, K.M., Engineer 117-58-6-21/36

TITLE: A Pulverizer for Painting Details With Kuzbass-type Varnish (Pul'verizator dlya okraski detaley Kuzbass-lakom)

PERIODICAL: Mashinostroitel', 1958, Nr 6, p 32 (USSR)

ABSTRACT: The present pulverizers type O-19, KR-20, etc. often get clogged-up when used with spray-type varnishes. A new device is proposed in the article. Compressed air in one pipe (Figure) causes a vacuum in another pipe. The varnish moves upward from the container and is sprayed. A blocking device is fitted to the apparatus for regulating the flow of compressed air. The container holds 3 liter of varnish. The new pulverizer is simple and reliable. There is 1 figure.

AVAILABLE: Library of Congress

Card 1/1 1. Pulveriser-Spray painting

ZEYFER K M

ZEYFER, K.M., inzh.

New design of nozzles for sandblasting apparatuses. Mashinostroitel' no.1:25 Ja '58. (MIRA 11:1)

(Sandblast)

AUTHOR: Zeyfer, K.M., Engineer SOV/117-58-12-24/36

TITLE: An Atomizer With a Nozzle for Painting Parts (Pul'verizator s nasadkoy dlya okraski izdeliy)

PERIODICAL: Mashinostroitel', 1958, Nr 12, p 32 (USSR)

ABSTRACT: To improve working conditions, the author developed and tested a supplementary attachment for atomizers, i.e. a special nozzle of a simple design, letting out the varnish in a flat narrow jet, thus reducing sharply the spraying cone and its harmful effect on workers. There is 1 set of diagrams.

Card 1/1

CZECHOSLOVAKIA/Soil Science - Soil Biology. J.

Abs Jour : Ref Zhur - Biol., No 4, 1958, 15297

Author : J. Bernat, J. Zeyfert
Inst : -
Title : The Biological Activity of Soil. (Biologicheskaya aktivnost' pochv).

Orig Pub : Biologia, 1955, 10, No 3, 285-293

Abstract : The various methods of determining the amounts of CO_2 emitted by the soil are described.

Card 1/1

ZEYFERT, A. I.

"New Cutting Tools: Screw Taps and Dies," Stanki i Instrument, 10, Nos. 10-11, 1939.

[redacted] Report U-1505, 4 Oct 1951.

ZEYFERT, G. S.

"Physics of Rockets," UFN, 34, No. 4, 1948.

IVANOV, A.Ye., kand. sel'skokhoz. nauk; MEYFERT, O.A.

Winter rye in sandy soils of the arid southeast. Zemledelie 26 no.2:77-80 F '64. (MIRA 17:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut agrolesomelioratsii.

KABO, L.D.; LITVIN, N.A., kand. sel'skokhoz. nauk; BELOUS, N.V.; VASILENKO, L.D.; ZEYFERT, O.A.; KOVALEV, F.V.; TURULEV, V.K., aspirant

Sorgo as a valuable crop. Zemledelie 27 no.4:52-61 Ap '65. (MIRA 18:4)

1. Nachal'nik Upravleniya zernovykh i kormovykh kul'tur Ministerstva proizvodstva i zagotovok sel'skokhozyaystvennykh produktov Uzbekskoy SSR (for Kabo). 2. Ukrainskiy nauchno-issledovatel'skiy institut oroshayemogo zemledeliya (for Litvin, Belous, Vasilenko). 3. Vsesoyuznyy nauchno-issledovatel'skiy institut agrolesomelioratsii (for Zeyfert). 4. Donskoy sel'skokhozyaystvennyy institut (for Kovalev, Turulev).

UNGEFUR, V.G.; ZEYFERT, V.G.; ORLOV, V.F.

Investigating the cutting of coal with planetary cutter disks. Nauch. trudy KNIUI no.13:38-43 '64 (MIRA 18:1)

Characteristics of the geometry of cutting with planetary cutter disks of mining machinery depending on the adjustment of the disk and the feed ratio. Ibid.:97-107

Prerequisites and characteristics of experimental testing methods of cutting coal with planetary cutter disks of mining machinery. Ibid.:107-117

Extreme conditions for cutting coal with planetary cutter disks of mining machinery. Ibid.:136-145

Optimal relation of the cross section parameters of a coal cut in steady conditions for cutting. Ibid.:145-154

Indices of coal grades in cutting under standard conditions. Ibid.:154-163

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Some problems in coal grades of quality during staggered cutting with planetary cutter disks. Ibid.:173-180

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Efficient design of cutter-loader working parts for operations in the Karaganda Basin. Nauch. trudy KNIUI no.2:90-104 '58. (MIRA 13:8)
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Studying processes of the mechanical breaking of coal. Nauch. trudy KNIUI no. 11:15-20 '62. (MIRA 17:7)

YUDIN, N.P.; SULIMOV, K.G.; ZEYFERT, V.P.

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Reproduction of the trajectory of one cutter of planetary cutter disks of mining machinery in setting up coal cutting tests in a mine. Nauch. trudy KNIUI no.13:118-130 '64

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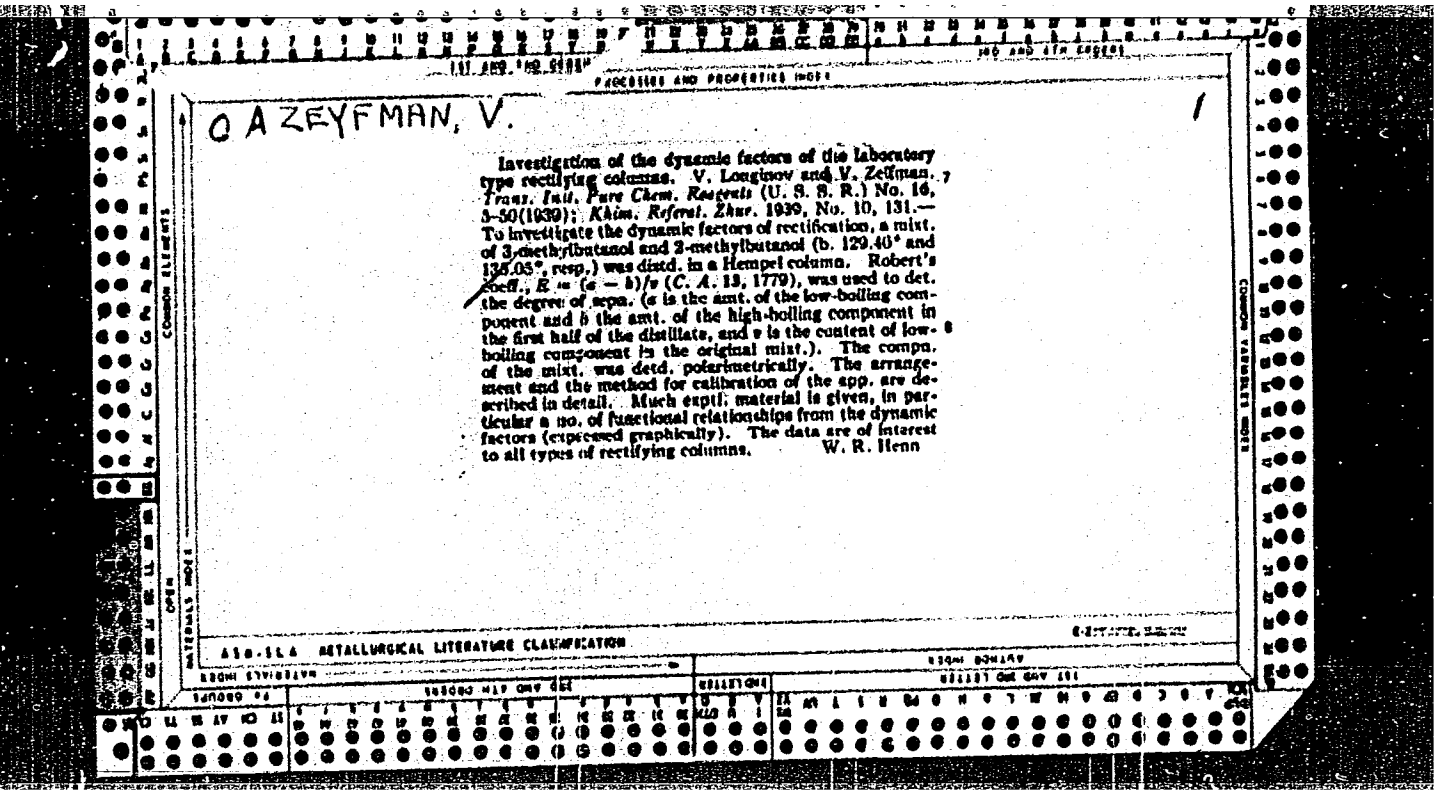

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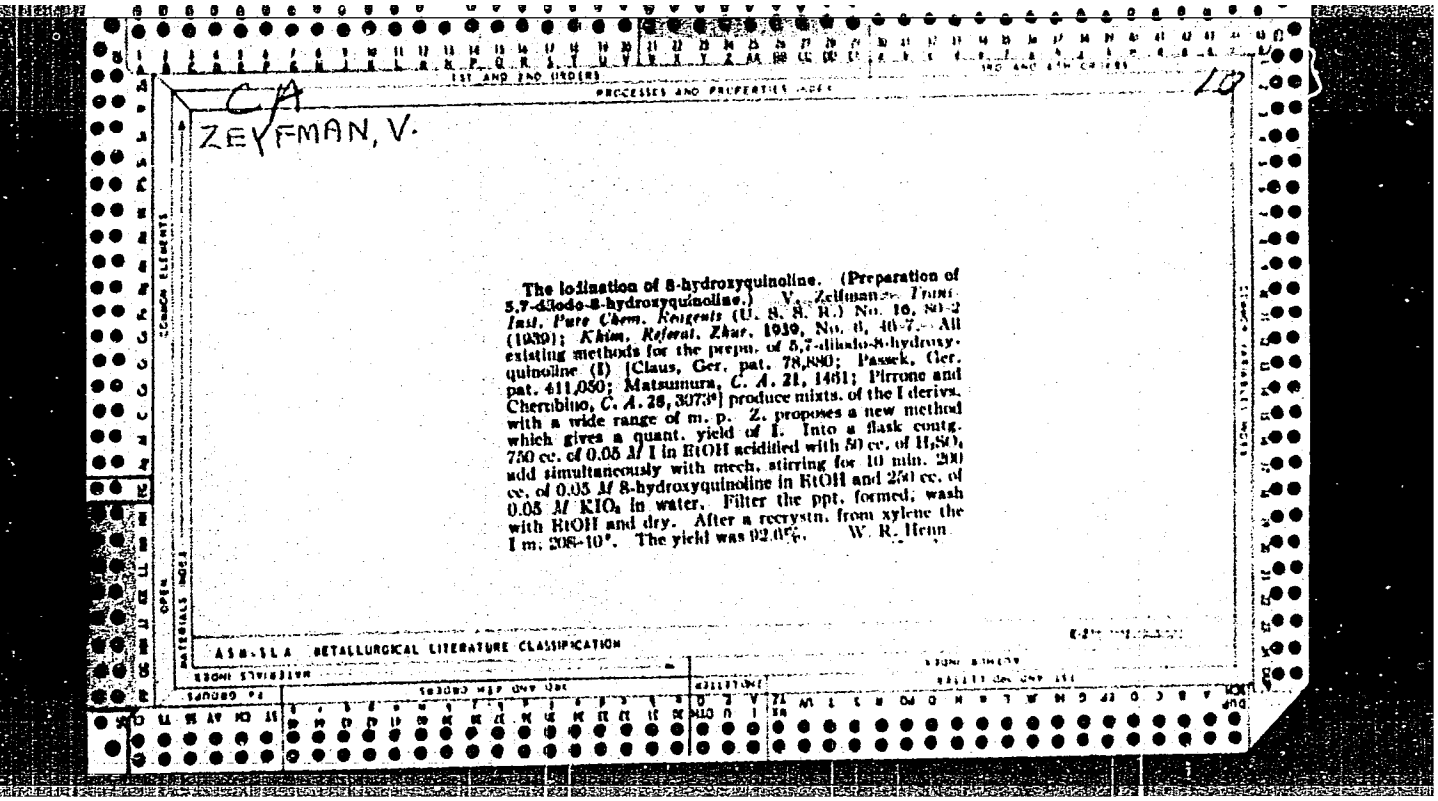
Investigation of the dynamic factors of the laboratory type rectifying columns. V. Longinov and V. Zeifman. *Trans. Inst. Pure Chem. Reagents* (U. S. S. R.) No. 16, 5-50(1939); *Khim. Referat. Zhur.* 1939, No. 10, 131.— To investigate the dynamic factors of rectification, a mixt. of 3-methylbutanol and 2-methylbutanol (b. 129.40° and 135.05°, resp.) was distd. in a Hempel column. Robert's coeff., $R = (a - b)/v$ (*C. A.* 13, 1779), was used to det. the degree of sepn. (*a* is the amt. of the low-boiling component and *b* the amt. of the high-boiling component in the first half of the distillate, and *v* is the content of low-boiling component in the original mixt.). The compn. of the mixt. was detd. polarimetrically. The arrangement and the method for calibration of the app. are described in detail. Much exptl. material is given, in particular a no. of functional relationships from the dynamic factors (expressed graphically). The data are of interest to all types of rectifying columns. W. R. Henn



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The iodination of 8-hydroxyquinoline. (Preparation of 5,7-diiodo-8-hydroxyquinoline.) V. Zeifman. *Trans. Inst. Pure Chem. Reagents* (U. S. S. R.) No. 16, 80–2 (1939); *Khim. Referat. Zhur.* 1939, No. 6, 46–7.—All existing methods for the prepn. of 5,7-diiodo-8-hydroxyquinoline (I) [Claus, Ger. pat. 78,880; Passek, Ger. pat. 411,050; Matsumura, *C. A.* **21**, 1461; Pirrone and Cherubino, *C. A.* **28**, 3073⁹] produce mixts. of the I derivs. with a wide range of m. p. Z. proposes a new method which gives a quant. yield of I. Into a flask contg. 750 cc. of 0.05 *M* I in EtOH acidified with 50 cc. of H_2SO_4 add simultaneously with mech. stirring for 10 min. 200 cc. of 0.05 *M* 8-hydroxyquinoline in EtOH and 250 cc. of 0.05 *M* KIO_3 in water. Filter the ppt. formed, wash with EtOH and dry. After a recrystn. from xylene the I m. 208–10°. The yield was 92.0%. W. R. Henn

ZEYFMAN, V.I.

Methods for industrially producing solasodine. Report No.1: Obtaining glycoalkaloids commercially. Med. prom. 14 no.8:24-29 Ag '60. (MIRA 13:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut im. S. Ordzhonikidze.
(ALKALOIDS)

ZEYFMAN, Yu.V.; GAMBARYAN, N.P.; KNUNYANTS, I.L., akademik

Hexafluoroacetone imines. Dokl. AN SSSR 153 no.6:1334-1337 D '63. (MIRA 17:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

KNUNYANTS, I.L.; KHRLAKYAN, S.P.; ZEYFMAN, Yu.V.; SHOKINA, V.V.

Fluorinated diiodoalkanes and dielefins. Izv.AN SSSR.Ser.khim. no.2:384-386 F '64. (MIRA 17:3)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

ZEYFMAN, Yu.V.; GAMBARYAN, N.P.

Condensation of hexaflouroacetone with cyanohydrins of aromatic aldehydes. Izv.AN SSSR.Ser.khim. no.9:1622-1630 S '64. (MIRA 17:10)

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ZEYFMAN, Yu.V.; GAMBARYAN, N.P.

Condensation of hexafluoroacetone with cyanohydrin. Izv.AN SSSR.SER. khim. no.9:1687-1689 S '64. (MIRA 17:10)

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ZEYFMAN, Yu.V.; GAMBARYAN, N.P.; KNUNYANTS, I.L.

Hexafluoroacetone N-benzoyl amine. Izv. AN SSSR. Ser. khim. no.11:2046-2048 '65. (MIRA 18:11)

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UNANYAN, M.P.; KONDRAT'YEVA, G.V.; LOCHMELIS, A.Ya.; ZAV'YALOV, S.I.; ZEYFMAN, Yu.V.; GAMBARYAN, N.P.; MINASYAN, R.B.; KNUNYANTS, K.L.; KOCHARYAN, S.T.; ROKHLIN, Ye.M.; KAVERZNEVA, Ye.D.; KORSHAK, V.V.; ROGOZHIN, S.V.; DAVANKOV, V.A.; TSEYTLIN, G.M.; PAVLOV, A.I.; ZAKHARKIN, L.I.; OKHLOBYSTIN, O.Yu.; SEMIN, G.K.; BABUSHKINA, T.A.; BLIEVICH, K.A.

Letters to the editor. Izv. AN SSSR. Ser. khim. no.1:1909-1914 '65. (MIRA 18:1)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR (for Unanyan, Kondrat'yeva, Lochmelis, Zav'yalov, Kaverzneva). 2. Institut elementoorganicheskikh soyedineniy AN SSSR (for Zeyfman, Gambaryan, Minasyan, Knunyants, Kocharyan, Rokhlin, Korshak, Rogozhin, Davankov, Zakharkin, Okhlobystin, Semin, Babushkina, Bilevich).

L 05165-67 EWT(m)/EWP(j) WW/JW/RM

ACC NR: AP7000735 SOURCE CODE: UR/0062/66/000/006/1108/1110

KNUNYANTS, I. L., ZEYFMAN, Yu. V., GAMBARYAN, N. P., Institute of Heteroorganic Compounds, Academy of Sciences USSR (Institut elementoorganicheskikh soyedineniy AN SSSR) 26 B

"2-Acetoxy-2-acetylaminohexafluoropropane and Its Reactions"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, 1966, pp 1108-1110

Abstract: 2-Acetoxy-2-acetylaminohexafluoropropane was produced by reaction of hexafluoroacetoneimine with acetic anhydride in the presence of catalytic amounts of sulfuric acid. It was also produced by acetylation of the geminal hydroxyamide with acetic anhydride. Reactions of 2-acetoxy-2-acetylaminohexafluoropropane were studied: it reacts readily with nucleophilic reagents with a replacement of the acetoxy group. The reaction with acetamide yields 2,2-bis-(acetamido) hexafluoropropane; the reaction with ketene leads to a dihydrooxazione, hydrolysis of which yields beta-acetylamino-beta, beta-bis-(trifluoromethyl) propionic acid, and then hexafluoro-beta-valine. Orig. art. has: 5 formulas. [JPRS: 37,023]

TOPIC TAGS: fluorinated organic compound, hydrolysis, acetic anhydride

SUB CODE: 07 / SUBM DATE: 06Dec65 / ORIG REF: 004 / OTH REF: 010

Card 1/1 vmb UDC: 542.91 + 546.16

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GAMBARYAN, N.P.; ROKHLINA, Yel.M.; ZEYFMAN, Yu.V.

Reaction of fluorinated ketones with olefins. Izv. AN SSSR. Ser. khim. no.8:1466-1469 '65. (MIRA 18:9)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

ZEYFMAN, Yu.V.; GAIBARYAN, N.P.; KNUNYANTS, I.L.

Reaction of hexafluoroacetone imine with butadiene and isobutylene. Izv. AN SSSR. Ser. khim. no.8:1472-1474 '65. (MIRA 18:9)

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ZEYFMAN, Yu.V.; GAMBARYAN, N.P.; KNUNYANTS, I.L.

Semicarbazone of hexafluoroacetone. Zhur. VKHO 10 no.2:235-236 '65. (MIRA 18:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

ZEYFMAN, Yu.V.; GAMBARYAN, N.P.; KNUNYANTS, I.L.

Imines of perfluoro ketones. Izv. AN SSSR. Ser. khim. no.3:450-456
Izv. AN SSSR. Ser. khim. no.3:450-456 '65. (MIRA 18:5)

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GAMBARYAN, N.P.; ROKHLIN, Ye.M.; ZEYFMAN, Yu.V.; KNUNYANTS, I.L.

Bis (trifloromethyl) ketene anil. Izv. AN SSS. Ser. khim. no.4: 749-750 '65. (MIRA 18:5)

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MINASYAN, R.N.; ROKHLIN, Ye.M.; GAMBARYAN, N.P.; ZEYFMAN, Yu.V.; KNUNYANTS, I.L.

Bis (trifluoromethyl) cyclodiazomethane. Izv. AN SSSR. Ser. khim. no.4:761 '65. (MIRA 18:5)

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ROKHLIN, Ye.M.; ZEYFMAN, Yu.V.; CHEBURKOV, Yu.A.; GAMBARYAN, N.P.; KNUNYANTS, I.L., akademik

Reaction of hexafluoroacetone with triethyl phosphite. Dokl. AN SSSR 151 no.6:1356-1358 Ap '65. (MIRA 18:5)

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