particles. It turns out that the reactions $\Sigma^{+}\rightarrow\Lambda_{0}+e^{+}+\nu$ and $\Sigma^{-}\rightarrow\Lambda_{0}+e^{-}+\tilde{\nu}$ can occur only at the expense of A-coupling, and the results of the experiments suggested in reference 6 must be negative. In conclusion, the author thanks I. M. Shmushkevich and S. S. Gershteyn for discussions. There are 9 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physico-Technical Institute of the Academy of Sciences, USSR)

SUBMITTED: September 2, 1958

SOV/56-36-4-48/70

21(8)
AUTHOR: Shekhter, V. M.

TITLE: On the β-Decay of Strange Particles (O β-raspade strannykh chastits)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 1299-1301 (USSR)

ABSTRACT: A decay of hyperons into nucleons and leptons (of the kind $\Lambda^0 \to p + e^- + \tilde{\nu}$) has hitherto not been observed, which is in contradiction to the assumption that the constant F of four-fermion interaction, which is responsible for this kind of process, is the same as in the ordinary β-decay or in muon decay ($G = 1.41 \cdot 10^{-49}$ erg. cm^3). A decrease of F may occur as a result of either its renormalization due to strong interaction in hyperon decay, or because of the difference in the non-renormalized constants. In both cases estimation of F is of interest. This is possible by estimating the probability of K_{e3}- and $K_{\mu 3}$-decays, which is brought about by means of the matrix element

$$(\bar{u}_\mu + \bar{u}_e, \left[if(\hat{p}_K + \hat{p}_\pi) + ig(\hat{p}_K - \hat{p}_\pi)\right](1 + \gamma_5)u_\nu)/\sqrt{4E_K E_\pi}$$

Card 1/3

(phenomenologically), where f and g_2 denote the real functions of the invariant $Q^2 = -(p_K - p_\pi)^2 = m_K^2 + m_\pi^2 - 2m_K E_\pi$. Herefrom the probability $dW(E_\pi)$ is derived; E_π denotes the pion energy in the rest system; in K_{e3}-decay $m_e = 0$ is assumed. In order to obtain W, one integrates over E_π from $m_{\mu,e}$ to $(m_K^2 - m_\pi^2 - m_{\mu,e}^2)/2m_K$. In this way the probabilities for the following hyperon decays are calculated:

Decay	W	Wτ
$\Lambda^0 \rightarrow p + e^- + \tilde{\nu}$	$5.8 \cdot 10^5$	$1.6 \cdot 10^{-4}$
$\Lambda^0 \rightarrow p + \mu^- + \tilde{\nu}$	$9.4 \cdot 10^4$	$2.6 \cdot 10^{-5}$
$\Sigma^- \rightarrow n + e^- + \tilde{\nu}$	$3.4 \cdot 10^6$	$5.7 \cdot 10^{-4}$
$\Sigma^- \rightarrow n + \mu^- + \tilde{\nu}$	$1.5 \cdot 10^6$	$2.5 \cdot 10^{-4}$
$\Xi^- \rightarrow \Lambda^0 + e^- + \tilde{\nu}$	$1.2 \cdot 10^6$	$1.2 \cdot 10^{-3}$
$\Xi^- \rightarrow \Lambda^0 + \mu^- + \tilde{\nu}$	$3.2 \cdot 10^5$	$3.2 \cdot 10^{-4}$

On the β-Decay of Strange Particles SOV/56-36-4-48/70

Decay	W	W_τ
$\Xi^- \rightarrow \Sigma^0 + e^- + \tilde{\nu}$	$1.4.10^5$	$1.4.10^{-4}$
$\Xi^- \rightarrow \Sigma^0 + \mu^- + \tilde{\nu}$	$2.1.10^3$	$2.1.10^{-6}$

These probabilities were computed on the assumption that only V-A interaction occurs and that F = 0.1 G. The results obtained by means of exact formulas (see e.g. reference 10) with F = G practically coincide with those obtained by the approximated formula (which, e.g. for $\Lambda^0 \rightarrow p + \mu^- + \tilde{\nu}$ decay, has the form $W = \frac{F^2}{15\pi^3}(m_\Lambda - m_p)^5 (m_p/m_\Lambda)^{3/2} \Phi\left[\left(\frac{m_\mu}{m_\Lambda - m_p}\right)^2\right]$

There are 1 table and 10 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physico-technical Institute of the Academy of Sciences, USSR)

SUBMITTED: December 7, 1958

Card 3/3

ShEKhTER, V. V., Cand Phys-Math Sci — (diss) "Light Particle Decay Decomposition of Hyperons," Moscow, 1960, 9 pp, 170 copies, (Institute of Theoretical and Experimental Physics, AS USSR)

(KL, 46/60, 123)

SHEKHTER, V.M.

Interference of form factors in leptonic decay of hyperons. Zhur.eksp. i teor.fiz. 38 no.2:537-540 F '60. (MIRA 14:5)

1. Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR.
(Mesons--Decay)

BELOV, V.P.; MINGALEV, B.S.; SHEKHTER, V.M.

Possibility of determining form factors in the leptonic decay of hyperons. Zhur.eksp.i teor.fiz. 38 no.2:541-552 F '60. (MIRA 14:5)

1. Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR.
(Mesons---Decay)

83749

S/056/60/038/004/042/048
B006/B056

24.6900

AUTHOR: Shekhter, V. M.

TITLE: The $e^- + p \rightarrow \Lambda + \nu$ Process

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1343 - 1345

TEXT: The $\Lambda \rightarrow p + e^- + \tilde{\nu}$ decay has hitherto been observed experimentally only twice, whereas theoretically, according to the universal VA-interaction, the frequency of its observation ought to be about 20 times as great. As the investigation of this process is rendered extremely difficult by the rarity of its occurrence, the author suggests that instead, the reverse process $e^- + p \rightarrow \Lambda + \nu$ (1) be investigated. In the laboratory system, the threshold of this reaction is at 194 Mev, and up to the Λ-photoproduction threshold (912 Mev), Λ-hyperons are produced only according to (1) (or according to the mode $e^- + p \rightarrow \Sigma^0 + \nu$; $\Sigma^0 \rightarrow \Lambda + \gamma$). A general formula is obtained for $d\sigma$, which can be considerably simplified for a "pure" VA-interaction. This general formula represents $d\sigma$ as a function of the form factors C_V, C_A, B_V, and B_A, as

Card 1/3

The $e^- + p \rightarrow \Lambda + \nu$ Process

S/056/60/038/004/042/048
B006/B056

well as of E and Q^2 and of the particle masses (neglecting the electron mass). Q is the transferred momentum ($Q^2 = -(p_p - p)^2$), E is the energy of the incident electron. If special assumptions are made with respect to Q^2 and E, one obtains $d\sigma = (d(-Q^2)/2\pi)(C_V^2 - C_A^2)$ and with $C_V^2 + C_A^2 \equiv F^2 \approx \text{const}$ ($0 \leq -Q^2 \leq Q_o^2$; $Q_o^2 \sim m_K^2$) one obtains

$\sigma = \frac{F^2}{2\pi} Q_o^2 \sim \frac{F^2}{2\pi} m_K^2 \sim (F/G)^2 \cdot 2 \cdot 10^{-39}$ cm^2 ($G = 1.41 \cdot 10^{-49}$ erg$\cdot$cm^3 is the Feynman-Gell-Mann constant); numerically, one obtains $\sigma \approx 0.35 \cdot 10^{-40}$ cm^2. Thus, the probability of reaction (1) for an electron which covers 10 cm in liquid H_2 having a density of $\sim 10^{22}$ atoms/cm^3 is found to be 10^{-17}.

The author thanks I. M. Shmushkevich for pointing out the possibility of investigating reaction (1) and for discussions. There are 6 references: 3 Soviet, 2 US, and 1 Italian.

Card 2/3

83749

The $e^- + p \rightarrow \Lambda + ?$ Process

S/056/60/038/004/042/048
B006/B056

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Institute of Physics and Technology of the Academy of Sciences USSR)

SUBMITTED: January 27, 1960

X

Card 3/3

SHEKHTER, V.M.

Symmetry properties of strong interaction. Zhur.eksp.i teor.fiz. 41 no.3:810-820 S '61. (MIRA 14:10)
(Nuclear reactions)

S/056/61/041/006/026/054
B102/B138

AUTHORS: Gribov, V. N., Kolkunov, V. A., Okun', L. B., Shekhter, V. M.

TITLE: Covariant deduction of the Weizsäcker-Williams formula

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 1839-1841

TEXT: A covariant deduction of the Weizsäcker-Williams formula (G. Weizsäcker. Zs. Phys., 88, 612, 1934; E. Williams. Phys. Rev. 45, 729, 1934) is given in explicit form. The process illustrated by the graph in Fig. 1 is reduced to the photoprocess (Fig. 2) in order to calculate its cross section. k and p are the momenta of the colliding charged particles, k' and p' those of the particles produced ($k^2=\mu^2$, $p^2=m^2$; $p'^2=p^2=m^2$; q - momentum of the virtual photon). The cross section of the photoprocess is given as $\sigma^e_{ph}=-e^2_{\mu\nu}T^o_{\mu\mu}$, for a non-polarized photon $\sigma_{ph}=\frac{1}{2}\sigma_{\mu\nu}T^o_{\mu\nu}=\frac{1}{2}T^o_{\mu\mu}$;

$T^o_{\mu\nu}=T_{\mu\nu}|_{q^2=0}$. In most general representation

Card 1/

Covariant deduction of the ...

$$T_{\mu\nu} = a\left(\frac{q^2}{kq} k_\mu k_\nu + kq \cdot \delta_{\mu\nu} - k_\mu q_\nu - k_\nu q_\mu\right) + b\,(q^2\delta_{\mu\nu} - q_\mu q_\nu). \quad (5)$$

holds, satisfying the conditions of gradient invariance. With $\sigma_{ph} = a(kq)$, the process of Fig. 1 is given by

$$d\sigma_{BB} = -\left[\frac{kq}{\sqrt{(kp)^2 - k^2p^2}}\right] \cdot e^2Z^2 \frac{1}{q^4}(2p-q)_\mu (2p-q)_\nu T_{\mu\nu} \frac{dp'}{(2\pi)^3 2E'}. \quad (7).$$

The factor in brackets is the ratio of the invariant fluxes in the reactions k+q=k' and k+p=k'+p', Ze(2p-q) is the photon vertex part of the spin-free nucleus p. With the variables q^2, $^2=(k+q)^2$ and (is the angle between $\vec{p}'$ and $\vec{k}$ in the laboratory system),

$dp'/2E' = d\,^2 d(-q^2) d\,/8\sqrt{(kp)^2 - k^2p^2}$. With $2pq=q^2$, integration of (7) with respect to Ψ yields

$$d\sigma_{BB} = \frac{Z^2\alpha}{\pi}\sigma_\Phi\left(1 - \frac{k^2p^2}{(kp)^2}\right)^{-1}\left\{\left[1 + \frac{(kq)^2p^2}{(kp)^2q^2} - \frac{(kq)}{(kp)}\right] + \frac{b}{a}\frac{(p^2 - q^2/4)(kq)}{(pk)^2}\right\}\frac{dq^2\,d\omega^2}{q^2\,2kq}. \quad (10).$$

Card 2/4

Isotopic structure in weak interactions ...

currents between the states N and B; C_i and C_i' - general beta-decay constants, $\gamma_5 = \gamma_0\gamma_1\gamma_2\gamma_3$. If the baryon-meson current is a component of the isotopic vector, in the case of CP invariance the matrix element for b) is given: $M_1 = \sum_i \Gamma_i(\bar{u}_1 O_i \eta_i (C_i - C_i'\gamma_5)u_\nu^-$, where $\eta_i = 1$ for i = A, S, P, and $\eta_i = -1$ for i = V, T. If the lepton mass is negligible, a) and b) cannot contain an interference of the V, A, and S, P, and T variants. M remains unchanged when apart from the spinor transformation $u_\nu(p_\nu) \to v_1^c(-p_1) = C\bar{u}_1(p_1)$, $u_1(p_1) \to v_\nu^c(-p_\nu) = C\bar{u}_\nu(p_\nu)$ (equivalent to the substitution $p_\nu \leftrightarrow -p_1$) the substitution (10) is carried out: C_V', C_A', C_S', C_P', C_P' change in sign, whereas C_V, C_A', C_T, C_T' retain it. It follows therefrom that the cross section has the form $a(sq_1)(sq_2) + b + d(sq_3)$, where q_1, q_2, and q_3 are four-vectors, $s^2 = -(p_\nu - p_1)^2 + 2(m_1^2 + m_\nu^2) \approx -(p_\nu - p_1)^2$,

Card 2/5

Isotopic structure in weak interactions...

$$a, b \sim C_V^2 + C_V'^2,\ C_A^2 + C_A'^2,\ C_V C_A' + C_V' C_A,\quad (12)$$
$$C_S^2 + C_S'^2,\ C_P^2 + C_P'^2,\ C_S C_P + C_S' C_P',\ C_T^2 + C_T'^2,$$
$$C_S C_S',\ C_P C_P',\ C_S C_P' + C_S' C_P,\ C_T C_T',$$

$$d \sim C_V C_A + C_V' C_A',\ C_V C_V',\ C_A C_A',\quad (13)$$
$$C_S C_T + C_S' C_T',\ C_P C_T + C_P' C_T',$$
$$C_S C_T' + C_S' C_T,\ C_P C_T' + C_P' C_T.$$

This means that V, A-interference can appear only in pseudoscalar quantities. In the presence of S, P, T variants, the situation in the scalar part of the cross section is the same as in the "pure" V,A case, i. e., a and b have the same value for the reactions a) and b), and d has a different sign. Insofar, assumptions concerning the localizability, CP invariance, and the problem of the isovectorial baryon-meson current can be verified by relevant experimental comparisons, irrespective of the variants of interaction. The case of cross symmetry is discussed with the aid of the reactions a) $\nu + N_1 \to N_2 + A + l^-$ and β) $\bar{\nu} + N_1 \to N_2 + \bar{A} + l^+$, where N_1 and

Card 5/5

N_2 are nucleons in the initial and final states, and A is a system of any number of π and K mesons. The cross section of β) goes over into the cross section of α) through the transformation (10) and $p_1 \to q_2$, $p_2 \to q_1$, $p_A \to -q_A$, $p_\nu \to -q_\nu$, $p_l \to -q_l$, where p_i is the particle momentum of α) and q_i that of β). The authors think that the experimental verification of the cross symmetry is extremely difficult. The paper is concluded by the presentation of isotopic relations between the amplitudes of various absorption processes of neutrinos or antineutrinos by nucleons. Ya. I. Azimov (ZhETF, 41, 6, 1961, p. 1879) is mentioned and thanked for discussions. There are 1 table and 7 references: 2 Soviet and 5 non-Soviet. The four most recent references to English-language publications read as follows: R. P. Feynman. M. Gell-Mann. Phys. Rev., 109, 193, 1958. E. C. G. Sudarshan, R. E. Marshak. Phys. Rev., 109, 1860, 1958; T. D. Lee, C. N. Yang. Phys. Rev. Lett., 4, 307, 1960; R. E. Behrends, A. Sirlin. Phys. Rev., 121, 324, 1961; S. Weinberg. Phys. Rev., 112, 1375, 1958; 115, 481, 1959.

Card 4/5

S/056/61/041/006/044/054
Isotopic structure in weak interactions ... B109/B102

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physicotechnical Institute of the Academy of Sciences USSR)

SUBMITTED: July 18, 1961

Card 5/5

S/056/62/043/001/030/056
B104/B102

AUTHOR: Shekhter, V. M.

TITLE: Experimental verification of unitary symmetry in strong interactions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 205 - 215

TEXT: The experimental verification of unitary 3-fold and 8-fold symmetry in strong interactions in the Sakata model is discussed (M. Gell-Mann. Symmetries of Barions and Mesons (preprint); The Eightfold Way (preprint)). The 27 amplitudes of meson + nucleon ⟶ meson + baryon processes, which are independent from the standpoint of isotopic invariance, are written down; likewise, the 21 amplitudes of the baryon + nucleon ⟶ baryon + baryon processes. For the unitary 3-symmetry,

$$\omega_4=\omega_1,\quad \omega_5=\omega_2,\ \omega_6=\omega_3,\quad \omega_7=(\omega_1-\omega_2)/\sqrt{2},\quad \omega_8=(\omega_1+\omega_2-2\omega_3)/\sqrt{6},$$
$$\omega_9=\omega_{12}=\sqrt{2}\,\omega_{13}=\omega_1-\omega_3,\ \omega_{10}=\omega_{11}=\omega_2-\omega_3,$$
$$\omega_{14}=(\omega_1+\omega_3-2\omega_2)/\sqrt{6}. \qquad (3)$$

Card 1/2

Experimental verification of...

is valid for the first case, and $\Omega_1 = \Omega_{18}$ (4) in the second. In the case of 8-symmetry, only five of the 27 amplitudes of the first process, and only three of the 21 amplitudes of the second process, are independent. Up to date, no experimental data are available on the cross sections of strong-interaction processes. Therefore, it cannot be decided which of the above results is of physical importance. Data are available on the cross sections of elastic and nonelastic processes of a few Bev, which occur in collisions of mesons or baryons; data are also available on total meson-nucleon and baryon-nucleon cross sections. These data must deviate from the results obtained here; the extent of these deviations is discussed. There is 1 table.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut (Leningrad Physicotechnical Institute)

SUBMITTED: February 9, 1962 (initially),
March 6, 1962 (after revision)

39497
S/056/62/043/002/040/053
B125/B102

24.6610

AUTHORS: Bukhvostov, A. P., Frenkel', V. Ya., Shekhter, V. M.

TITLE: Disintegration of a photon into two photons in the nuclear Coulomb field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 2(8), 1962, 655 - 660

TEXT: Integrating the differential cross section for the disintegration of an incident low-energy photon into two photons in the nuclear Coulomb field over the angle φ between the planes $(\vec{k}\vec{k}_1)$ and $(\vec{k}\vec{k}_2)$ gives rise to

$$d\sigma = Z^2\alpha^6 \frac{\omega\omega_1^2\omega_2^2}{4\pi^2(45m^4)^2}(278Y_1 - 157Y_2)\,d\omega_1 dx_1 dx_2; \quad (4)$$

Card 1/5

Disintegration of a photon into...

$$Y_1 = -x_1 - x_2 - \frac{1}{2}\left(\frac{\omega_1}{\omega_2}x_1^2 + \frac{\omega_2}{\omega_1}x_2^2\right) + \left[\left(x_1 + \frac{\omega}{\omega_1}x_2\right)\left(x_2 + \frac{\omega}{\omega_2}x_1\right) + \right.$$
$$\left. + \frac{\omega}{\omega_1^2\omega_2^2}(\omega_1 x_1 + \omega_2 x_2)(\omega_1^2 x_1^2 + \omega_2^2 x_2^2)\right]\omega^{-1/2} -$$
$$- \frac{\omega^2}{2\omega_1^4\omega_2^4}(\omega_1^2 x_1^2 + \omega_1\omega_2 x_1 x_2 + \omega_2^2 x_2^2)^2(\omega_1^2 x_1 + \omega_2^2 x_2 + \omega_1\omega_2 x_1 x_2)\omega^{-5/2}, \qquad (5).$$
$$Y_2 = \frac{\omega_1}{\omega_2}x_1 + \frac{\omega_2}{\omega_1}x_2 - \left[\left(\frac{\omega_1}{\omega_2}x_1 - \frac{\omega_2}{\omega_1}x_2\right)^2 + \frac{\omega}{\omega_1\omega_2}x_1 x_2(\omega_1 x_1 + \omega_2 x_2)\right]\omega^{-1/2},$$
$$\omega = \left(\frac{\omega_1}{\omega_2}x_1 - \frac{\omega_2}{\omega_1}x_2\right)^2 + 2\frac{\omega}{\omega_1\omega_2}x_1 x_2(\omega_1 x_1 + \omega_2 x_2).$$

The equation

$$\frac{d\sigma}{dx_1} = \frac{139Z^2\alpha^5}{60\pi^2}\frac{\omega^6}{(45m^4)^2}. \qquad (7)$$

results after integrating the differential cross section over x_2 with $x_1 = 0$ and integrating again over ω_1. $x_1 = 1 - \vec{k}\vec{k}_1/\omega\omega_1$; $x_2 = 1 - \vec{k}\vec{k}_2/\omega\omega_2$; $x = 1 - \vec{k}_1\vec{k}_2/\omega_1\omega_2$. $\vec{k}$ and ω are respectively the

Card 2/5

Disintegration of a photon into...

momentum and energy of the incident photon; $\vec{k}_1$, $\vec{k}_2$ and ω_1, ω_2 are respectively the momenta and energies of the final photons. Numerical integration, absolutely necessary for $x_{1,2}$, gives the angular distribution of one of the final photons with a fixed energy ω_1 when the direction of the other photons after impact is arbitrary (curves 1 to 4 in the Fig.). For small angles, the maximum for $\omega_1 \approx \omega_2$ corresponds to the maximum cross section for small q^2 ($q^2 = (\vec{k}_1+\vec{k}_2-\vec{k})^2$). This maximum shows up even more clearly when the momenta of both protons are fixed in direction. Integrating the differential cross section over the energy of the final proton results in the broken curve (5) and integrating this curve over the angle yields

$$\sigma = 12{,}2\, Z^2\alpha^5\omega^6/4\pi^2\,(4{,}5\, m^4)^2 = 4{,}65\cdot 10^{-36}\, Z^2\,(\omega/m)^6\ cm^2. \quad (8).$$

When Z = 80 and $\omega \approx m$ (m = electron mass), the cross section $\sigma \sim 3\cdot 10^{-32}\,cm^2$ is of the same order of magnitude as the photon-photon scattering cross

Card 3/5 4

section. The above results hold for negligible screening of the nuclear Coulomb field. When $\omega/m \approx 1/137$, the cross section

$$\sigma = \frac{641}{3^{10}5^3\pi^2} Z^2\alpha^5 (\omega a)^4 \frac{\omega^6}{m^8}. \qquad (11),$$

obtained by allowing for screening, is equal to $0.41\ 10^{-49} Z^2 cm^2$. When $\omega \leqslant 2m$, (8) is 2.5 times larger than the total cross section

$$\sigma \approx \frac{7 \cdot 139\,(64 \ln 2 - 23)}{45^3 \cdot 2^9 \cdot \pi^2} Z^2\alpha^5 \frac{\omega^6}{m^8},$$

calculated by the Weizsäcker-Williams method. For high energies one obtains $\sigma = \varkappa(2Z^2\alpha^5/\pi m^2)(\ln(\omega/m) - 1)$. There is 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

SUBMITTED: March 13, 1962

Card 4/4

μ^+-molecules

S/056/62/043/003/033/063
B108/B102

ν is calculated for the reaction $\mu + H_2 \longrightarrow \mu H + H$, using a formula for the reaction rate $K = \nu/n_{H_2}$ similar to that for the reaction $D + H_2 \longrightarrow DH + H$ (S. Glesston, K. Leydler, G. Eyring. Teoriya absolyutnykh skorostey reaktsii - Theory of absolute reaction rates - IIL, 1948). ν depends on temperature. The formation of μ^+-molecules at temperatures below $800^\circ K$ is insignificant. At $800^\circ K$, $\nu = 3 \cdot 10^5$, and it increases rapidly with temperature. ν increases linearly with pressure, but this increase is not as sharp as that with temperature. μ^+-molecules can so far be identified only from their vibrational and rotational spectra. There are 1 figure and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

SUBMITTED: March 21, 1962

Card 2/2

S/056/63/044/001/060/067
B102/B186

AUTHORS: Azimov, Ya. I., Ansel'm, A. A., Shekhter, V. M.

TITLE: Weak-coupling motion of Regge poles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 361 - 370

TEXT: The Regge pole trajectories are determined for the case of scattering from a Yukawa potential or a superposition of such potentials. This is done on the basis of perturbation theory applied to the exact radial wave function

$$\psi_l(r)=j_l(kr)+\frac{1}{k\cos\pi l}\int_0^r [j_l(kr)\,j_{-l-1}(kr')-j_{-l-1}(kr)\,j_l(kr')]\,U(r')\,\psi_l(r')\,dr', \quad (1).$$

$$j_l(x)=\sqrt{\pi x/2}\,J_{l+1/2}(x), \qquad U(r)=2mV(r)=2mar^{-1}e^{-\mu r},$$

Within the framework of this theory (1) can be integrated so that in lowest-order approximation the pole trajectory equation is obtained as

Card 1/5

Weak-coupling motion of Regge poles

$$\frac{\alpha m}{k} Q_l\left(1+\frac{\mu^2}{2k^2}\right) = ie^{i\pi l}\frac{\alpha m}{k} R_l\left(1+\frac{\mu^2}{2k^2}\right) + ie^{i\pi l}\cos \pi l; \quad (4)$$

$$Q_l\left(1+\frac{\mu^2}{2k^2}\right) = 2\int_0^\infty j_l^2(kr)\frac{e^{-\mu r}}{r}dr,$$

$$R_l\left(1+\frac{\mu^2}{2k^2}\right) = 2\int_0^\infty j_l(kr)\, j_{-l-1}(kr)\frac{e^{-\mu r}}{r}dr. \quad (5)$$

$Q_l(z)$ is a second-order Legendre function. In the complex plane l, the function Q_l has poles at integral negative points so that R_l are integral functions. Near such negative points $l = -n-1$ where the second-order Legendre function has simple poles with residua equal to the Legendre polynomials P_n, (4) assumes the form

$$\frac{\alpha m}{k}\frac{P_n(1+\mu^2/2k^2)}{l+n+1} = i, \quad (6)$$

and the trajectories are given by

$$l_n = -n-1+\frac{\alpha m}{ik}P_n\left(1+\frac{\mu^2}{2k^2}\right), \qquad k = i\varkappa, \quad \varkappa > 0. \quad (7).$$

Card 2/5

Weak-coupling motion of Regge poles

(7) is valid if $l_n \approx -n-1$, and of course also if the distances between the poles are small; it loses validity if k^2 is very small. Far from the Q_1 poles (4) assumes the form

$$\frac{\alpha m}{k}\left(-\frac{le^{-i\pi l}}{\sin \pi l}\right)\frac{\sqrt{\pi}\,\Gamma(-l-1/2)}{\Gamma(-l)}\left(\frac{k^2}{\mu^2}\right)^{l+1}=1. \qquad (8)$$

which is not applicable near halfintegral negative points. For $|k^2/\mu^2| \ll 1$ and the pole being far enough away from the real axis, $i\pi(1+1/2)$ $-(1+1/2)\tau + \ln 2\,\xi_1 = -2\pi i p$, where p is a positive integer and $\tau = \ln(\mu^2/\varkappa^2)$; $k^2 = -\varkappa^2 < 0$

$$\xi_1 = -\frac{\alpha m}{\mu}\frac{\sqrt{\pi}\,\Gamma(-1-1/2)}{\Gamma(-1)} \qquad (9).$$

In this case the pole trajectory is almost circular:

$$(\mathrm{Re}\, l + p + 1/2)^2 + (\mathrm{Im}\, l - (2\pi)^{-1}\ln 2\xi_l)^2 = p^2 + (2\pi)^{-2}\ln^2 2\xi_l. \qquad (11)$$

Card 3/5

which holds for the case of attraction. In the case of repulsion $p \to p+1/2$ and $\xi_1 \to -\xi_1$. On the approximate assumption $\xi_1 = \text{const}$ the trajectories are straight lines if $k^2 > 0$: $2\pi p(\text{Re } l + 1/2) = \ln 2\xi_1 \cdot \text{Im } l$ (attraction). In the case of $k^2/\mu^2 \gg 1$

$$\ln(-\alpha m\sqrt{2\pi}/\mu) + {}^1/_2 \ln(\mu/k) - {}^1/_2 \ln(-l) - (l + {}^1/_2)\,\mu/k = -2\pi i p. \quad (15),$$

so that for the pole trajectories

$$\text{Im } l = 2\pi p \frac{k}{\mu}, \qquad \text{Re } l = \frac{k}{\mu} \ln\left|\frac{\alpha m}{\mu}\sqrt{\frac{2\pi}{l}}\frac{k}{\mu}\right|. \quad (16)$$

is asymptotically valid. (15)(16) hold for attraction, for repulsion $p \to p+1/2$ and $\alpha \to -\alpha$. Thus the pole motion is characterized by an oscillation of the poles about integral negative points at energies corresponding to the left cut of the partial amplitude (cf. Fig. 1), by collision and exit of the poles into the complex plane even at negative energies, and by condensation of the poles near $l = -1/2$ at threshold energies and open trajectories. There are 2 figures.

Card 4/5

Weak-coupling motion of Regge poles

S/056/63/044/001/060/067
B102/B186

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR)

SUBMITTED: August 24, 1962

Fig. 1. Pole trajectories for $k^2 < 0$ and attraction.

Fig. 2. Pole trajectories for $k^2 > 0$; arrow; motion from $k^2 = 0$ to ∞. solid lines: attraction, dashed lines: repulsion.

Fig. 1

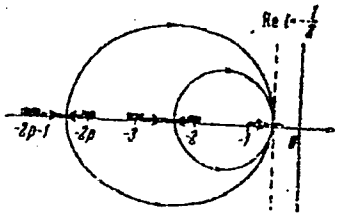
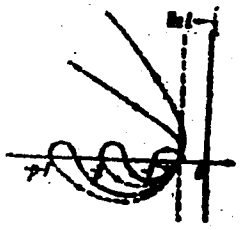


Fig. 2



Card 5/5

AZIMOV, Ya.I.; ANSEL'M, A.A.; SHEKHTER, V.M.

Analytic properties of Regge pole trajectories. Zhur. eksp. i teor. fiz. 44 no.3:1078-1092 Mr '63. (MIRA 16:3)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR.
(Quantum theory) (Trajectories)

ACCESSION NR: AP4042398 S/0056/64/047/001/0262/0269

AUTHOR: Shekhter, V. M.

TITLE: Effect of form factors on the relative probability for lepton decays of hyperons

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 1, 1964, 262-269

TOPIC TAGS: lepton, hyperon, particle interaction, muon, electron, probability, baryon, strange particle

ABSTRACT: It is shown that the ratio of the total probabilities of muon and electron decay of hyperons, W_μ/W_e, is sensitive to the contribution of certain form factors. In the absence of form factors, the theory predicts this ratio with accuracy of approximately 1%, independently of the values of the weak-interaction constants. If the form factors are small, the theory likewise predicts a definite value of this ratio. Any deviations of this ratio from the

ACCESSION NR: AP4042398

"theoretical" value characterizes the role of the form factors of the decay interaction and is not likely to exceed 30%. The results are valid if the decay interaction is the same for electrons and for muons, in decays with change of strangeness, and if the baryon current is a component of the isotopic vector in the case of strangeness conservation. It is also assumed that the decay interaction includes only the V and A variants. Comparison with experiment yields for the ratio of the probabilities of the decays $\Sigma^- \rightarrow \Lambda + e^- + \nu$ and $\Sigma^+ \rightarrow \Lambda + e^+ + \nu$ a theoretically predicted value of 1.67 ± 0.06. "The author is grateful to L. B. Okun' for collaboration at the initial stage of the work and for useful discussion." Orig. art. has: 18 formulas and 3 tables.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences, SSSR)

SUBMITTED: 22Jan64 ENCL: 00

ACCESSION NR: AP4042398

SUB CODE: NP NR REF SOV: 002 OTHER: 009

3/3

L 16509-65 EWT(1) IJP(c)/SSD/AFWL S/0056/64/047/005/1855/1867
ACCESSION NR: AP5000344

AUTHORS: Belov, V. P.; Shekhter, V. M. B

TITLE: Trajectories of Regge poles for the nonrelativistic two-channel problem

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 5, 1964, 1855-1867

TOPIC TAGS: Regge pole, angular momentum, elementary particle interaction, potential scattering, nonrelativistic particle

ABSTRACT: Continuing earlier work by one of the authors (Shekhter, with Ya. I. Azimov and A. A. Ansel'm, ZhETF v. 44, 361 and 1078, 1963) on the determination of the explicit form of Regge-pole trajectories, the authors extend the analysis to a more complicated case, when the reaction can proceed via several channels. The specific problem considered is the behavior of Regge pole for scatter-

Card 1/3

ing by Yukawa potentials when the reaction has two possible channels. The analysis is carried out by the same method as in the earlier work. The equation for the pole trajectories is first obtained in the case of weak coupling, followed by an examination of the behavior of trajectories at not too small negative values of k_1^2 and k_2^2. Further motion of the poles at small k_1^2 or k_2^2 is described, as well as the behavior of the trajectories for positive values of k (k = momentum). The analytic properties of the trajectories are then described and the occurrence of so-called M-poles is discussed. It is shown that at high energies two trajectories, corresponding to number of channels, arrive at each integer negative point. The variation of the trajectories with energy is essentially the same as for the single-channel problem. The increase in the number of trajectories causes also an increase in the number of their collisions, i.e., the number of branch points in the complex energy plane. It is concluded that all the earlier results can be easily extended to

L 16509-65
ACCESSION NR: AP5000344

the case of many channels. Orig. art. has: 2 figures and 14 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences SSSR)

SUBMITTED: 11May64 ENCL: 00

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

Card 3/3

SHEKH[illegible], V.M.; [illegible]FFE, [illegible], [illegible] fiz.-matem. nauk, otv. red.

[Resonance states of elementary particles] Rezonansnye sostoianiia elementarnykh chastits. Moskva, AN SSSR, 1965. 186 p. (MIRA 18:11)

BILOV, V.F.; SHEKHTER, V.M.

Ξ 1820, resonance and unitary symmetry. Izd. fiz. 2 no.4: 757-761 O '65. (MIRA 18:11)

1. Fiziko-tekhnicheskiy institut im. A.F. Ioffe AN SSSR.

L 61067-65 EWT(m) Pab DIAAP

ACCESSION NR: AP5013907 UR/0056/65/048/005/1459/1478

AUTHOR: Shekhter, V. M. 12

TITLE: Baroinvariance of strong interactions 19 B7

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 5, 1965, 1459-1478

TOPIC TAGS: strong interaction, invariance property, baroinvariance, parity conservation, particle decay, lepton decay, hadron decay, meson decay

ABSTRACT: With an aim at finding a broader symmetry of strong interactions, the author discusses a possibility of extending unitary symmetry by introducing a barospin, the third component of which is equal to half the baryon charge. This barospin is defined and the properties of baroscalar and barovector currents are discussed. It is assumed that strong interactions are approximately invariant against rotations in barospin space and, in particular, invariance against rotation by 180° about a second axis in barospace leads to conservation of A-parity in $\gamma_5 R$ invariance in strong interactions. The latter makes it possible to explain the smallness of the electrical form factor of the neutron, although its magnetic form factor is of the same order as that of the proton. The known mesons and meson resonances are then classified with respect to barospin and A-parity. Questions of resonances in many-baryon systems are discussed, and it is shown that the extension of baroinvari-

Card 1/2

L 61067-65
ACCESSION NR: AP5013907

5

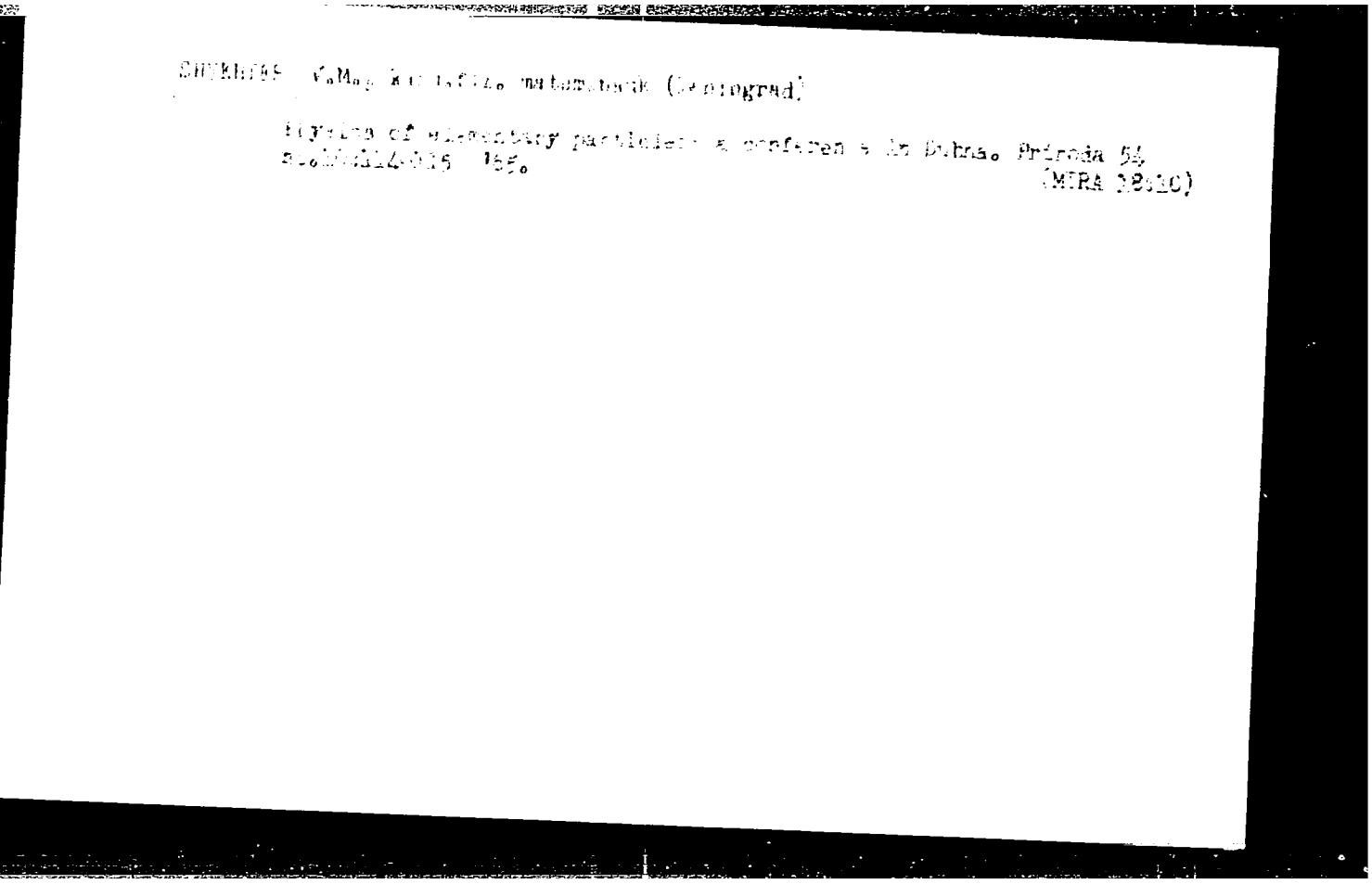
ance to weak interactions leads to the result that for lepton decays the vector hadron current should be a component of the F-octet, while the axial current should belong to the D-octet. Lepton, hadron, and photon decays of hyperons and mesons are examined in light of the theory developed, and the experimental situation is then summarized. It is shown that good agreement with experiment can be obtained for hadron decays by foregoing the universality of the lepton and non-lepton weak interactions. Baroinvariance leads to the appearance of resonances or even long-lived hadrons with fully defined quantum numbers in many-baryon systems. In particular, a pseudoscalar octet should exist in a two-baryon system. "The author is grateful to Ya. I. Azimov, B. V. Geshkenbeyn, V. N. Gribov, and L. B. Okun' for a useful discussion." Orig. art. has: 54 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences SSSR)

SUBMITTED: 14Dec64 ENCL: 00 SUB CODE: NP

NR REF SOV: 003 OTHER: 044

Card 2/2



L 12008-66 EWT(m)/T/EWA(m)-2

ACC NR: AP6001778 SOURCE CODE: UR/0386/65/002/010/0486/0489

AUTHOR: Shekhter, V. M.

ORG: Physicotechnical Institute im. A. F. Ioffe, Academy of Sciences SSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR)

TITLE: Lepton decay of vector mesons

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 10, 1965, 486-489

TOPIC TAGS: vector meson, lepton, strong nuclear interaction, mass energy equivalence

ABSTRACT: Making use of the fact that the matrix element for the probability of the decay of a vector meson (ρ^0, ω, or φ) into an e^+e^- or $\mu^+\mu^-$ pair is determined by the same diagram as its proper energy, the author determines the nonrenormalized mass of vector mesons under stronger assumptions than used by Dao Vong Dyk and Nguyen Van Hien (Yadernaya fizika v. 2, 529, 1965), which make it possible to estimate the probability of the lepton decay of ρ^0, ω, and φ. It is assumed, first, that strong interaction have (with good approximation) unitary symmetry, and that the vector mesons interact with conserving currents. It is assumed further that the bulk of the vector-meson mass is due to the strong interaction and not to the

Card 1/2

L 12008-66

ACC NR: AP6001778

Vector meson	Relative probability of lepton decay x 10^4		
	$\sin\theta = \sqrt{1/3}$	$\sin\theta = 0$	Experiment
ω	0,89	0	$1,0^{+1,2}_{-0,8}$
φ	6,5	10	6 ± 3
ρ^0	0,64		$0,5^{+0,6}_{-0,3}$

bare mass. This makes it possible to write expressions for the probabilities of the decay of ρ^0, ω, and φ into a pair of leptons. The relative probabilities of the decay of a vector meson into an l^+l^- pair, calculated with the aid of these expressions, are listed in the table. Comparison with experimental data shows no contradictions within a range of large experimental errors, although it is too early to speak of agreement between theory and experiment, or of preferred values of the mixing parameter. Author thanks V. N. Gribov and I. T. Dyatlov for a useful discussion. Orig. art. has: 6 formulas and 1 table.

SUB CODE: 20/ SUBM DATE: 020ct65/ ORIG REF: 001/ OTH REF: 004

Card 2/2 HW

L 22534-66 EWT(m) DIAAP
ACC NR: AP6006796 SOURCE CODE: UR/0386/66/003/001/0021/0026

AUTHOR: Shekhter, V. M.

ORG: Physicotechnical Institute im. A. F. Ioffe, Academy of Sciences, SSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR)

TITLE: Broken unitary symmetry and possible $\Omega^-(1875)$ resonance

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 1, 1966, 21-26

TOPIC TAGS: hyperon, pion, proton, nuclear resonance, strong nuclear interaction

ABSTRACT: From the recently reported resonance with mass 1710 Mev (T. G. Schumann, Phys. Rev. Lett. v. 15, 531, 1965), observed in the $p\pi^+\pi^0$ system, it is deduced that the decuplet which contains this resonance should also contain a resonance with strangeness -3, namely $\Omega^-(1875)$. It can be observed as a resonance in the reactions of the type $K^- + p \to \Xi^- + \bar{K}^0 + K^0$ and $\Xi^0 + K^- + K^0 + K^+$. The author estimates the width of this resonance and finds it to be approximately 13 Mev, using relations that are valid when account is taken (to first order) of the interaction that breaks unitary symmetry. It is pointed out that the experimental values of the partial widths and the accuracy of the approximation used is not

Card 1/2

good enough to be able to regard the result as anything but an order of magnitude estimate. The energy released in the decay $\Omega^-(1875) \rightarrow \Xi + \bar{K}$ is quite small, so that a much smaller width could also be reasonable. It is shown in the conclusion that if the assumed existence of the other members of the same decuplet is verified, then other relations of broken unitary symmetry can likewise be verified experimentally. However, the results would still be highly sensitive to even small changes in the experimental parameters. Orig. art. has: 10 formulas.

SUB CODE: 20/ SUBM DATE: 12Nov65/ ORIG REF: 001/ OTH REF: 008

ACC NR: AP7013699 SOURCE CODE: UR/0367/67/005/002/0387/0398

AUTHOR: Gribov, V. N.; Ioffe, B. L.; Shekhter, V. M.

ORG: Physics-Engineering Institute im. A. F. Ioffe, AN SSSR (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: Isovector current conservation and relations for electromagnetic amplitudes

SOURCE: Yadernaya fizika, v. 5, no. 2, 1967, 387-398

TOPIC TAGS: lepton, vector meson, nucleon, particle scatter, particle interaction, scattering amplitude, electromagnetic property, hadron

SUB CODE: 20

ABSTRACT: A relation between the amplitude for the scattering of a lepton pair (or a hypothetical vector meson) on a nucleon and nucleon vertex is derived, assuming the conservation of the vector current with isospin 1 in the strong interactions. The meaning of such an equality is clarified by considering Feynman graphs. The Cabibbo-Radicati sum rule for the electromagnetic characteristics of hadrons is obtained in the zero momentum transfer limit if a dispersion relation with respect to the energy without subtraction

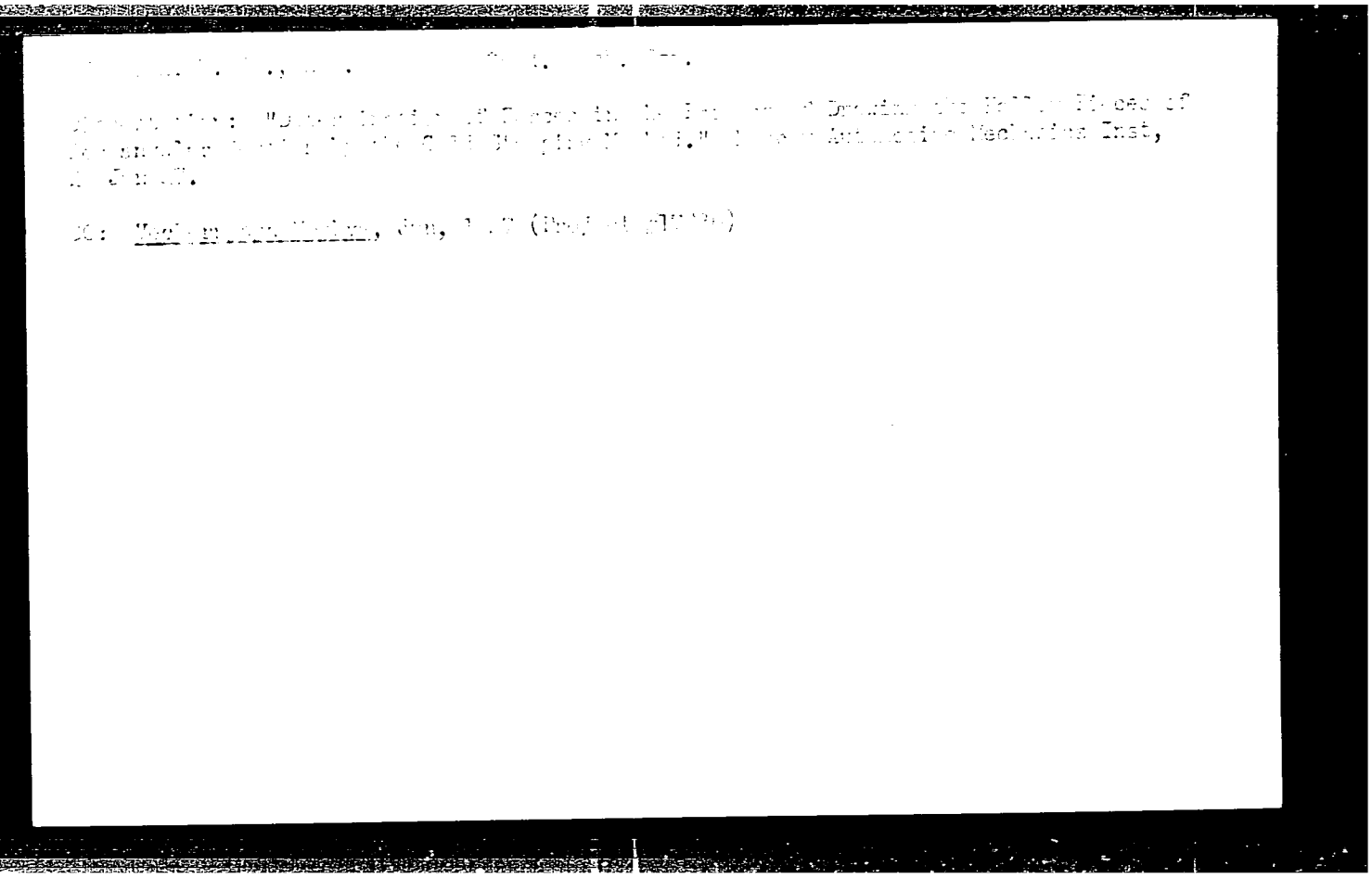
Card 1/2

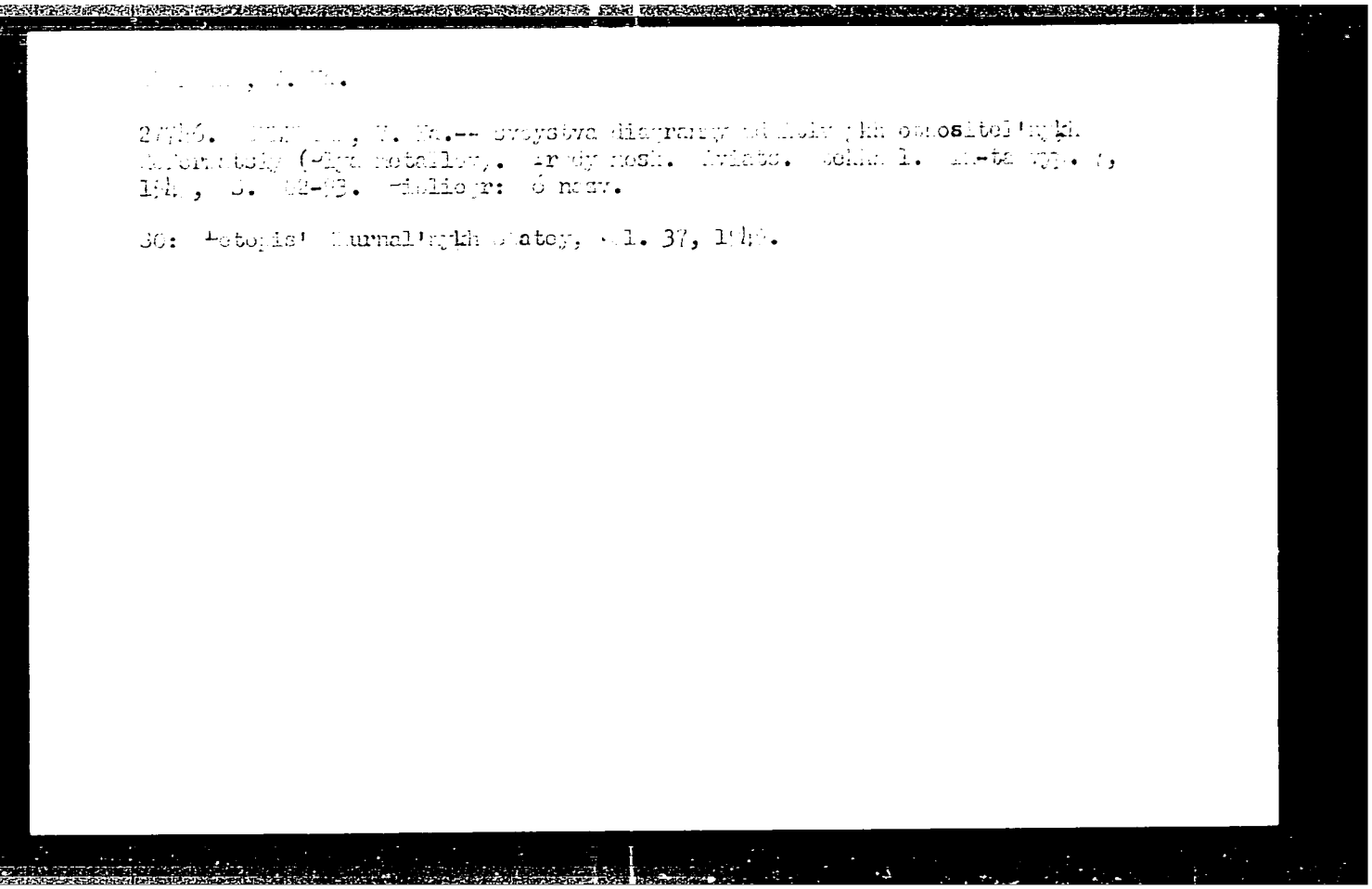
0933 2155

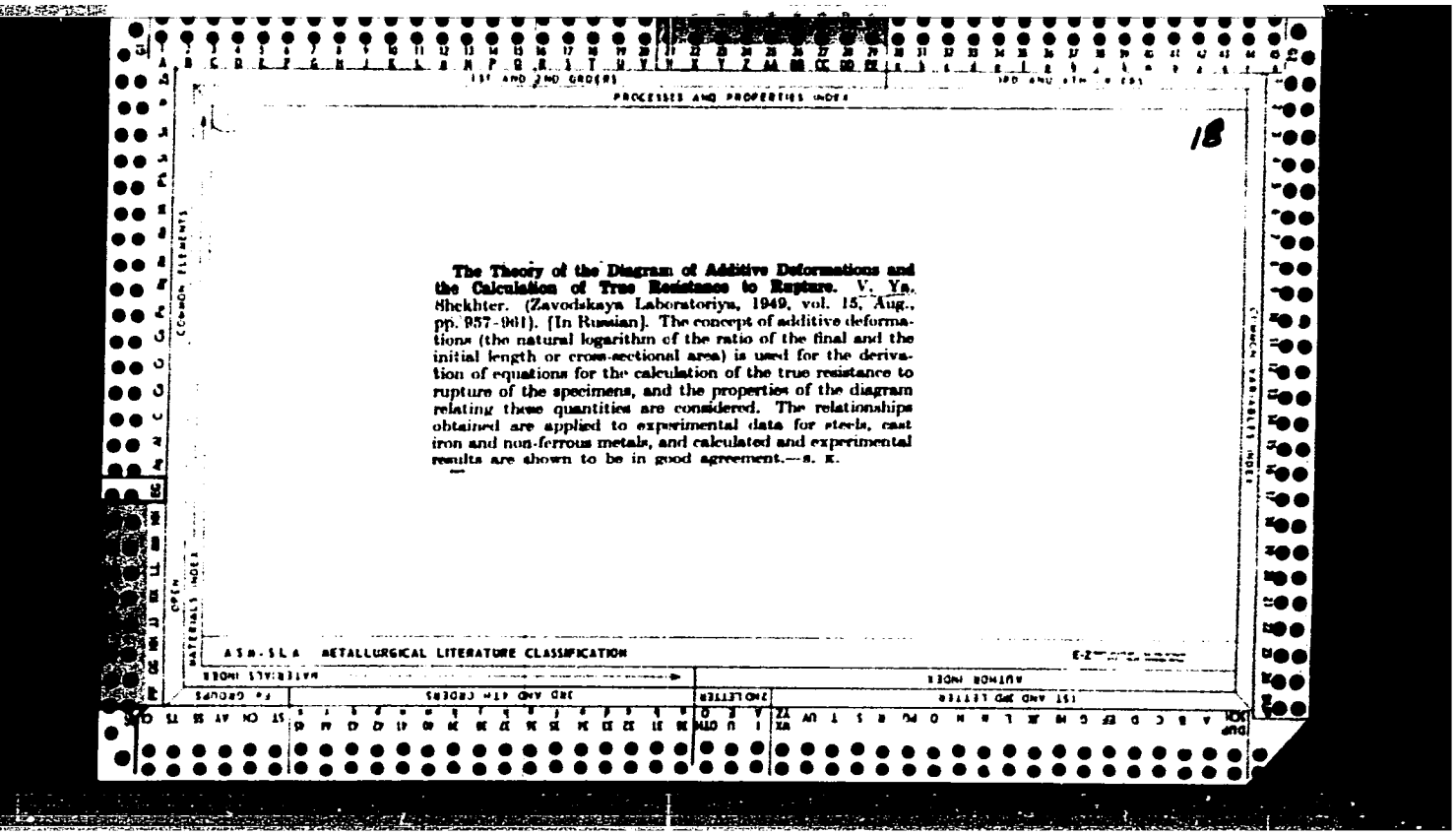
ACC NR: AP7013699

can be written for one of the invariant functions of the amplitude. Arguments are given indicating that such an assumption may be wrong, even if the dispersion integral converges. An experimentally verifiable relation is found between the $\nu + N \rightarrow N + l + \gamma$ reaction amplitude and the nucleon form factor. The authors thank I. Ya. Pomeranchuk (deceased), K. A. Ter-Martirosyan, I. Yu. Kobzarev, L. B. Okun' and I. T. Dyatlov for useful discussions. Orig. art. has: 6 figures and 49 formulas. [Based on authors' Eng. Abst.] [JPRS: 40,570]

Card 2/2







PROCESSES AND PROPERTIES INDEX

18

The Theory of the Diagram of Additive Deformations and the Calculation of True Resistance to Rupture. V. Ya. Shekhter. (Zavodskaya Laboratoriya, 1949, vol. 15, Aug., pp. 957-961). [In Russian]. The concept of additive deformations (the natural logarithm of the ratio of the final and the initial length or cross-sectional area) is used for the derivation of equations for the calculation of the true resistance to rupture of the specimens, and the properties of the diagram relating these quantities are considered. The relationships obtained are applied to experimental data for steels, cast iron and non-ferrous metals, and calculated and experimental results are shown to be in good agreement.—S. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SHEVTSOV, V. IA.

V.Ia. Shevtsov. Map diagram of plasticity in additive deformations. P. 1281

So: Factory Laboratory, No. 10, 1959

MALOV, Aleksey Nikolayevich; KOPANEVICH, Ye.G., kand.tekhn.nauk, retsenzent; SHEKHTER, V.Ya., kand.tekhn.nauk, red.; BELYAYEVA, L.A., izdatel'skiy red.; ROZHIN, V.P., tekhn.red.

[Technology of cold pressing and forging] Tekhnologiia kholodnoi shtampovki. Izd. 2-oe, perer. Moskva, Gos. izd-vo obor. promyshl., 1958. 374 p. (MIRA 11:5)
(Sheet-metal work) (Forging)

DORIN, Vasiliy Ivanovich; SHEKHTER, V.Ya., kand.tekhn.nauk, red.; KUZNETSOVA, A.G., izdat.red.; ROZHIN, V.P., tekhn.red.

[Precision cold pressing and forging of parts for optical instruments] Tochnaia shtampovka detalei optiko-mekhanicheskikh priborov. Moskva, Gos. izd-vo obor.promyshl., 1958. 458 p. (MIRA 12:2)
(Optical instruments) (Sheet-metal work)

113-58-6-12/16

AUTHOR: Shekhter, V. Ya., Candidate of Technical Sciences

TITLE: Forging of Body Parts from Aluminum Alloys (Shtampovka kuzovnykh detaley iz alyuminiyevykh splavov)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 6, pp 34-37 (USSR)

ABSTRACT: The author describes various aluminum alloys used for the bodies of automobiles. Tables 1 and 2 show alloys used in the USSR. Of these, the avial and duraluminum are thermically strengthened and their mechanical properties are given for the annealed as well as for hardened state after the natural aging period. The strength of other alloys can be increased only by riveting and they are either annealed, semi-cold hardened or cold-hardened. The comparison of different makes of alloys in the USSR and abroad showed that for automobile bodies the aluminum-magnesium alloy is the most suitable, which possesses a high degree of toughness even when annealed. The author deals with the forging processes of bodies and body parts, and establishes the conditions in which the best results will be obtained. There are 4 tables, 3 photos and 1 graph.

ASSOCIATION: NIITAvtoprom

Card 1/1 1. Automobile industry--USSR 2. Aluminum alloys--Forging 3. Aluminum alloys--Properties

PYT'YEV, Petr Yakovlevich; KOROBOV, V.K., kand.tekhn.nauk, retsenzent; SHEKHTER, V.Ya., kand.tekhn.nauk, red.; TUBYANSKAYA, F.G., izdat.red.; GARNUKHINA, L.A., tekhn.red.

[Dies for drop hammers with low-lead or lead-free punches] Shtampy dlia padaiushchikh molotov s malosvintsovymi i bessvintsovymi puansonami. Moskva, Gos.izd-vo obor.promyshl., 1959. 38 p. (MIRA 12:10)
(Dies (Metalworking)) (Metals, Substitutes for)

28(1) PHASE I BOOK EXPLOITATION SOV/2156

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov. 2nd, 1956.

Avtomatizatsiya mashinostroitel'nykh protsessov; /trudy soveshchaniya/ tom. 1-i. Goryachaya obrabotka metallov (Automation of Machine-Building Processes; Proceedings of the Conference on Over-All Mechanization and Automation of Technological Process, Vol 1: Hot Metal-Forming) Moscow, 1959. 394 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V.I. Dikushin, Academician; Compiler: V.M. Raskatov; Ed. of Publishing House: V.A. Kotov; Tech. Ed.: I.P. Kuz'min.

PURPOSE: The book is intended for mechanical engineers and metallurgists.

COVERAGE: The transactions of the Second Conference on the Over-All Mechanization and Automation of Industrial Processes, September 25-29, 1956, have been published in three volumes. This book, Vol. I, contains articles under the general title, Hot Working of Metals. The investigations described in the book were conducted by the Sections for Automation and Hot Working of Metals, under the direction of the following scientists: casting - P.N. Aksenov, D.P. Ivanov and G.M. Orlov; forming - A.I. Tselikov, A.D. Tomlenov and V.T. Meshcheriki; welding - G.A. Nikolayev, B.I. Prolov and G.A. Muslov. There are 103 references: 142 Soviet, 34 English, 6 German, and 1 French.

TABLE OF CONTENTS:

Card 6/8

1.9600

S/123/60/000/019/001/008
A005/A001

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1960, No. 19, p. 15, # 103565

AUTHOR: Shekhter, V. Ya. Cand Tech Sci

TITLE: Application of the Theory of True Stress Curves to Various Temperature Conditions of Strain

PERIODICAL: V sb.: Protsessy shtampovki i ikh tekhnol. parametry. Moscow, Mashgiz, 1959, pp. 146-154

TEXT: A new correlation between true stresses and strains is presented w which makes it possible to extend the theory of true stress curves to all pictures of strain, which are caused by the various temperature conditions of deformation. The behavior of the curves of true stresses is shown for various temperature conditions, as well as the specific properties of the end section of the contraction-versus-true stress graph.

K V. P.

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

Card 1/1

SHEKHTER, V. Ya

PHASE I BOOK EXPLOITATION SOV/3937

Filippov, Viktor Vasil'yevich, Viktor Yakovlevich Shekhter, and Vladimir Ivanovich Olenev

Mekhanizatsiya i avtomatizatsiya listovoy shtampovki (Mechanization and Automation of Cold Stamping) Moscow, Mashgiz, 1960. 184 p. Errata slip inserted. 5,000 copies printed.

Ed.: Yu. V. Beyer, Engineer; Tech. Ed.: Z. I. Chernova; Managing Ed. for Literature on Heavy Machine Building (Mashgiz): S. Ya. Golovin, Engineer.

PURPOSE: The book is intended for technical personnel and may also be used by students of tekhnikums and schools of higher technical education.

COVERAGE: The book deals with experience acquired in the mechanization and automation of cold-stamping processes. The problems of automation and mechanization in the stamping of both small and large pieces are discussed in detail. A special section deals with the determination of the technical and economic effectiveness of mechanization and automation. Data was provided by the Gor'kovskiy avtozavod (Gor'kiy Automobile Plant), the Moskovskiy avtozavod imeni Likhacheva

Card 1/3

(Moscow Automobile Plant imeni Likhachev), the Nauchno-issledovatel'skiy institut tekhnologii avtomobil'noy promyshlennosti (Scientific Research Institute of Technology for the Automobile Industry), and non-Soviet publications. No personalities are mentioned. There are 100 references: 76 Soviet, 20 English, and 4 German.

TABLE OF CONTENTS:

GROMOVA, Antonina Nikiforovna; ZAV'YALOVA, Valentina Ivanovna; KOROBOV, Vladimir Konstantinovich; BOITSOV, V.V., prof., red.; BEKIN, S.S., inzh., retsenzent; SHEKHTER, Y.Ya., kand.tekhn.nauk, red.; SHEYN-FAYN, L.I., izdat.red.; PUKHLIKOVA, N.A., tekhn.red.

[Manufacturing parts of sheets and sections in lot production] Izgotovlenie detalei iz listov i profilei pri seriinom proizvodstve. Pod obshchei red. V.V.Boitsova. Moskva, Gos.nauchno-tekhn.izd-vo Oborongiz, 1960. 343 p. (MIRA 13:7)
(Metalwork)

FILIPPOV, Viktor Vasil'yevich; SHEKHTER, Viktor Yakovlevich; OLENEV, Vladimir Ivanovich; BEYYER, Yu.V., inzh., red.; CHERNOVA, Z.I., tekhn.red.

[Mechanization and automatization of the die stamping of sheet metal] Mikhanizatsiia i avtomatizatsiia listovoi shtampovki. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 184 p. (MIRA 13:3)

(Sheet-metal work--Equipment and supplies)
(Automatic control)

GUS'KOV, A.V.; SHEKHTER, V.Ya.; BYSHOVA, N.S.

Standard technological processes for the manufacture of body components in serial and small scale serial production. Avt. prom. no.5:28-37 My '60. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut tekhnologii avtomobil'noy promyshlennosti.
(Automobiles—Design and construction)

GROSHIKOV, Nikolay Iosifovich, inzh.; ZASLAVSKIY, Yuriy L'vovich, inzh.; GORBENKO, Nikolay Iosifovich, inzh.; GORBUNOV, M.N., kand. tekhn. nauk, dotsent, retsenzent; SHEKHTER, V.Ya., kand. tekhn. nauk, red.; MOROZOVA, P.B., red. izd-va; ROZHIN, V.P., tekhn. red.

[Preparing and stamping operations in the manufacture of airplanes] Zagotovitel'no-shtampovochnye raboty v samoletostroenii. Moskva, Gos. nauchno-tekhn. izd-vo Oborongiz, 1961. 555 p. (MIRA 14:10)
(Sheet-metal work) (Airplane industry)

FILIPPOV, Viktor Vasil'yevich; SHEKHTER, Viktor Yakovlevich; OLENEV, Vladimir Ivanovich; ROMANOVSKIY, V.P., kand. tekhn. nauk, red.; LISITSYN, V.D., kand. tekhn. nauk, red.; KUREPINA, G.N., red. izd-va; BARDINA, A.A., tekhn. red.

[Fully and semiautomated sheet metal working lines] Avtomaticheskie i avtomatizirovannye kholodnoshtampovochnye linii. Pod obshchei red. V.P. Romanovskogo. Moskva, Mashgiz, 1962. 81 p. (Bibliotechka shtampovshchika, no.1) (MIRA 15:9)
(Automation) (Assembly line methods) (Sheet-metal work)

TOMAROV, Moisey Markovich; MAKSIMOV, F.G., retsenzent; SHEKHTER, V.Ya., kand. tekhn. nauk, red.; BELYAYEVA, L.A., red. izd-va; KARPOV, I.I., tekhn. red.

[Safety measures in sheet-metal work]Tekhnika bezopasnosti pri kholodnoi shtampovke listovogo metalla. 2 izd., perer. i dop. Moskva, Oborongiz, 1962. 442 p. (MIRA 16:1)
(Sheet-metal work--Safety measures)

NORITSYN, I.A.; SHEKHTER, V.Ya.; STEPANYAN, R.L.

Manufacture of generator poles by cold peripheral upsetting.
Kuz-shtam. proizv 4 no.6:1-4 Je '62. (MIRA 15:6)
(Forging)

S/182/62/000/012/003/005
D040/D112

AUTHOR: Shekhter, V.Ya.

TITLE: The maximum deformation rate in deep drawing of sheet metal

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no.12, 1962, 16-18

TEXT: The process of drawing a cylindrical part from a flat round blank in a die with a clamp is analyzed mathematically and graphically with reference to previous works of the author. The path of any annular element in the blank is subdivided into three parts: (1) the flat surface of the lower die; (2) the rounded edge of the latter; (3) the vertical section (gap between upper and lower die). The deformation rate is calculated on the assumption that the material is incompressible, the strained state is flat, and the gap between the punch and the die on both sides equals the initial metal thickness. The maximum deformation rate on the die edge is found, as shown in Fig.3, where the solid line shows the deformation distribution in the case of a rounded edge, and the dotted line the distribution in the case when the edge is not rounded. There are 3 figures.

Card 1/2

The maximum deformation rate ....

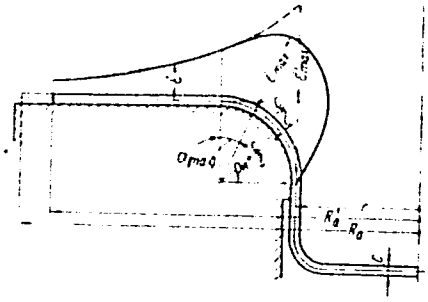


Fig. 3. Distribution of the deformation rates of annular elements in the blank at different positions on the flat and rounded parts of the lower die.

Card 2/2

NORITSYN, I.A.; SHEKHTER, V.Ya.; BAZYK, A.S.

Manufacture of flanged bushing type parts by closed-die forging. Kuz.-shtam. proizv. 5 no.10:4-6 O '63. (MIRA 16:11)

NORITSYN, I.A., prof., doktor tekhn. nauk; SHEKHTER, V.Ya., dots., kand. tekhn. nauk; ROVINSKIY, G.N., inzh.; BUNDIN, A.T., kand. tekhn. nauk, retsenzent

[Fundamentals of the design of sheet-metal stamping shops] Osnovy proektirovaniia tsekhov listovoi shtampovki. Moskva, "Mashinostroenie," 1964. 306 p. (MIRA 17:4)

SHEVELEV, Viktor Vasil'yevich; SHEKHTER, V.Ya., kand. tekhn.nauk, retsenzent; BUMSHTEYN, S.I., inzh., red.; AGEYCHEVA, N.S., red.izd-va; VLADIMIROVA, M.S., tekhn.red.

[Fundamentals of the design of universal dies] Konstruktsii i osnovy proektirovaniia universal'nykh shtampov. Moskva, Mashinostroenie, 1964. 327 p. (MIRA 17:2)

MIKHALENKO, F.F., kand. tekhn. nauk; GRIKKE, A.Kh., kand. [illegible] nauk; DEMIDENKO, Ye.I., kand. tekhn. nauk; [illegible], V.P., kand. tekhn. nauk, retsenzent

[Automatic cold stamping of small parts on high-speed presses] Avtomaticheskaia kholodnaia shtampovka melkikh detalei na bystrokhodnykh pressakh. Moskva, Mashinostroenie, 1965. 255 p. (MIRA 18:3)

L 36130-66 EWT(m)/EWP(t)/ETI/EWP(k)/EWP(z)/EWP(b) IJP(c) JD/HW

ACC NR: AP6016578 (N) SOURCE CODE: UR/0182/66/000/005/0015/0016

AUTHOR: Shekhter, V. Ya.

ORG: none

TITLE: Deformation during inverted extrusion

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 5, 1966, 15-16

TOPIC TAGS: inverted extrusion, metal deformation, die, punch

ABSTRACT: There exist only extremely scanty published data on the spread of deformation through the bottom of a forging during extrusion. In this connection, the author undertook to determine the deformation characteristics during cold inverted extrusion on taking into account the concomitant bottom upset of the forging and the decrease in the cross sectional area of the forging. On this basis a formula for determining the overall degree of deformation due to inverted cold extrusion is derived:

$$\epsilon = \ln\left[\frac{F}{F-f}\left(\frac{H'}{h'}\right)^{\frac{f}{F}}\right].$$

Card 1/2

UDC: 621.777.24

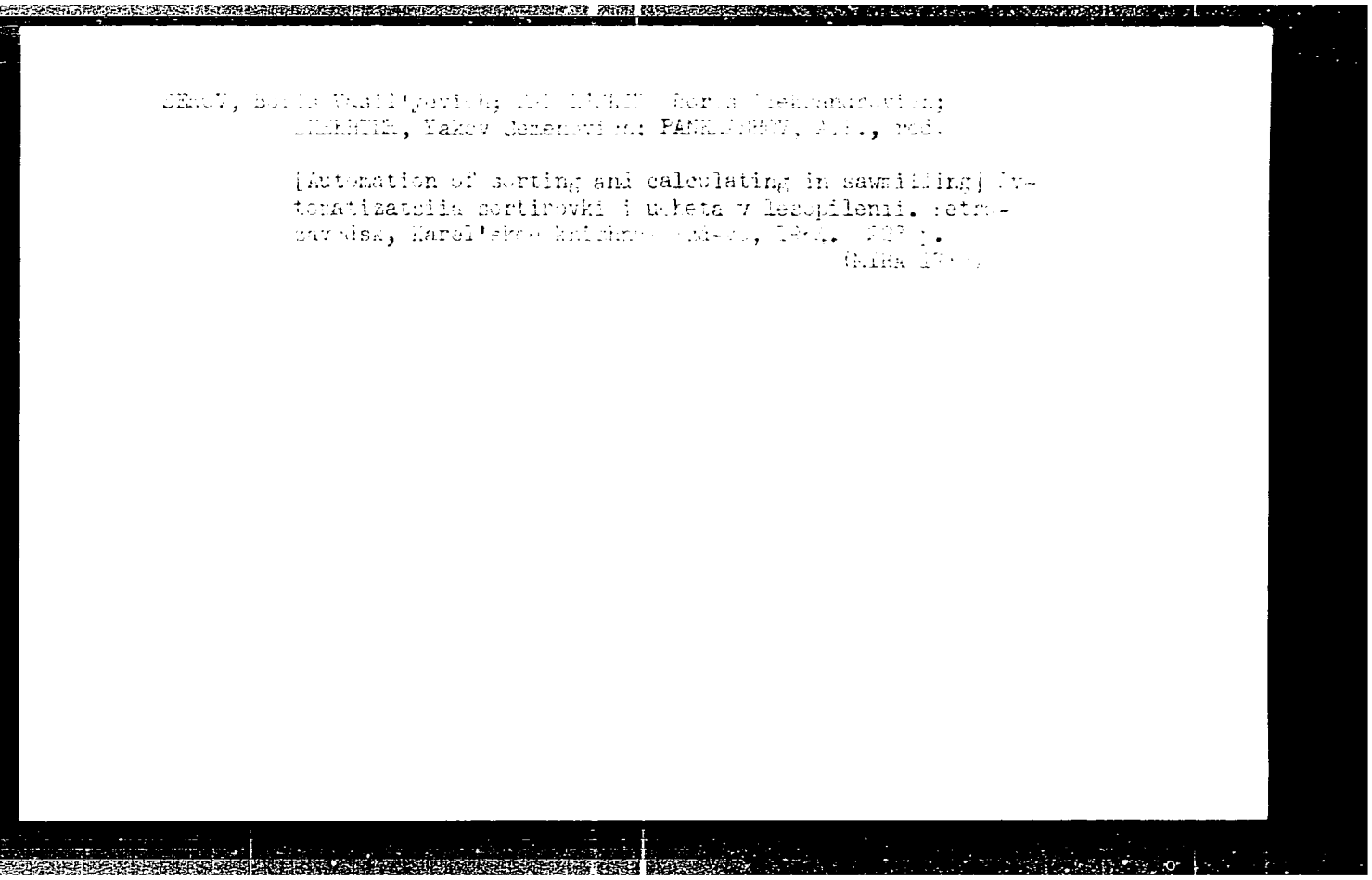
Card 2/2

SEROV, B.V., inzh.; SHEKHTER, Ya.S., inzh.

Automatic accounting for raw materials at sawmills. Mekh.i avtom. proizv. 17 no. 3:30-31 Mr '63. (MIRA 17:9)

SHEKHTER, Ya.S., inzh.

Automatic measurement during longitudinal conveying. Mekh. i avtom. proizv. 19 no.5:33-34 My '65. (MIRA 18:11)



[illegible], Boris Vasil'yevich; [illegible] Boris Semenovich;
[illegible], Yakov Semenovich; PANKRUSHOV, A.I., red.

[Automation of sorting and calculating in sawmilling] Avtomatizatsiia sortirovki i ucheta v lesopilenii. Petrozavodsk, Karel'skoe knizhnoe izd-vo, 196[illegible]. 92 p.
(MIRA 17:[illegible])

L 26517-66 EWA(h)/EWT(1)/EWT(m)/ETC(m)-6/T WW/DJ

ACC NR: AP6011517 SOURCE CODE: UR/0382/66/000/001/0103/0108

AUTHOR: Branover, G. G.; Liyelausis, O. A.; Shekhter, Ye. Yu.

ORG: none

TITLE: Hydraulic principles of determining the parameters of liquid-metal metering devices with constant input pressure

SOURCE: Magnitnaya gidrodinamika, no. 1, 1966, 103-108

TOPIC TAGS: flow meter, liquid metal, flow measurement, liquid metal pump, mhd flow

ABSTRACT: The authors investigate non-stationary hydraulic processes occurring in a liquid-metal meter with electromagnetic induction pump at constant input pressure. The purpose of the investigation is to permit efficient design of such devices. The operation of the meter is divided into five states (filling of the working channel of the pump, raising the metal vertically, motion of the metal horizontally, flow of metal with the pump turned on, flow of metal by inertia after the pump is turned off). The differential equations of flow are written out for each of these stages, and analytic solutions are obtained for the last two stages of the flow. It is shown that by preparing a set of curves representing numerical solutions of these equations it becomes possible to choose the proper diameter of the metal pipe and the operating pressure, as well as to estimate the hydraulic resistance and other losses. Formulas which make it possible to estimate the structural parameters for known pump characteristics are also presented. Orig. art. has: 5 figures and 6 formulas.

SUB CODE: 20/ SUBM DATE: 03Jun65/ ORIG REF: 003

Card 1/1 UDC: 538.4

L 14381-66 EWT(m)/T DJ

ACC NR: AP6022405 (A) SOURCE CODE: UR/0317/66/000/002/0046/0049

55
51
B

AUTHOR: Goryacheva, V.; Kalashnikov, V.; Shekhter, Yu.

ORG: none

TITLE: New lubricants and additives

SOURCE: Tekhnika i vooruzheniye, no. 2, 1966, 46-49

TOPIC TAGS: liquid metal lubricant, lubricant additive

ABSTRACT: Soviet industry has recently developed and is producing serially the following inhibiting liquid lubricants: 1) NG-203 (A, B, C—which differ in viscosity and inhibitor content). The inhibitor is a concentrate of calcium sulfonate. Brands B and C which are the more liquid serve to lubricate the internal parts of machines, machine tools and instruments. Brand A is recommended for the external surfaces; 2) NG-204 and NG-204u are used for equipment exposed to precipitation. NG-204 is recommended for surfaces of complex shape, NG-204u for external surfaces (casings,

Card 1/2

L 44381-6

ACC NR: AP6022405

4

housings); 3) K-15, K-17 and K-19. The components, state at various temperatures, viscosity, and other characteristics of all the lubricants are given in two tables. The "Neftegar" Plant in Moscow has developed the anticorrosion additive inhibitor "AKOR-1" which improves the protective properties of motor oils. Orig. art. has: 2 tables. [DW]

SUB CODE: 11/ SUBM DATE: none/

hs

Card 2/2

38636

S/081/62/000/009/058/075
B166/B144

11.9700

AUTHORS: Kolesnikov, V. P., Shekhter, Yu. N., Yevstratova, N. I., Gol'berg, A. L., Prygayeva, Ye. D.

TITLE: Production of sulfonate additives by sulfurizing mineral oils with SO_3 in liquid SO_2

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 9, 1962, 525, abstract 9M270 (Novosti neft. i gaz. tekhn. Neftepererabotka i neftekhimiya, no. 6, 1961, 11 - 16)

TEXT: A production process for obtaining oil-soluble sulfonates by sulfurizing mineral oils with SO_3 in liquid SO_2 is worked out. This offers substantial advantages over sulfurization with oleum or gaseous SO_3. The optimum conditions for sulfurizing AS-5 (AS-5), D-8 (D-8), AS-9,5 (AS-9,5) and AS-20 (AS-20) oils are selected. The sulfonates of various metals were obtained. It is established that the basic Ca salts of the sulfoacids obtained by sulfurizing oils which have been produced by the selective refining of eastern petroleums show good detergent and dispersive properties.

Card 1/2

Production of sulfonate ... S/011/61/000/009/ [illegible]/[illegible]
B1[illegible]/B14[illegible]

A detergent and dispersive additive, [illegible] -102 ([illegible]-102), was produced as a concentrate of Ca sulfonate, based on sulfurized AS-9,5 oil produced by the Novokuybyshev NPZ (14% by weight SO_3 to oil). Tests of the additive, carried out under laboratory and service conditions, established its high detergent and dispersive properties and showed the necessity of combining it with an efficient antioxidant. The method of sulfurizing oils with SO_3 in liquid SO_2 to obtain oil-soluble sulfonates is recommended for wide introduction into industry. [Abstracter's note: Complete translation.]

Card 2/2

SHEKHTER, Yuliy Naumovich; LEVINA, Ye.S., red.

[Protection of metals against corrosion; inhibitors, oils and greases] Zashchita metallov ot korrozii; ingibitory, masla i smazki. Moskva, Khimiia, 1964. 120 p. (MIRA 17:12)

KREYN, S.E.; KALASHNIKOV, V.P.; SHEKHTER, Yu.N.; YEVSTRATOVA, N.I.; DOL'BERG, A.L.

Production of clear sulfonate additives. Khim.i tekh.topl.i masel 7 no.2:19-24 F '62. (MIRA 15:1)

1. Moskovskiy zavod "Neftegaz".
(Lubrication and lubricants—Additives)

42712
S/081/62/000/020/025/040
B168/B101

AUTHORS: Goryacheva, V. I., Kalashnikov, V. P., Ladyzhenskaya, I. V., Lyakhovich, R. S., Sidorenko, T. N., Shekhter, Yu. N.

TITLE: An additive for oils based on products of heat-contact cracking of kerosine

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 20, 1962, 450-451, abstract 20M203 (Novosti neft. i gaz. tekhn. Neftepererabotka i nefteknimiya, no. 3, 1962, 3-5)

TEXT: At the "Neftegaz" works in Moscow an antiwear sulfur additive (НГ -103 NG-103]) and an antioxydant additive containing sulfur and phosphorus (НГ -105 [NG-105], -105a NG-105a], НГ -105б [NG-105b]) for engine oils were developed from the products of heat-contact cracking of kerosine. Products from the cracking of paraffin, distillation residues and kerosine were used for synthesizing the sulfur additive; the 130-250°C cracked kerosine fraction was found to be the best raw material for producing the additive. Sulfuration was carried out in an experimental unit by adding the cracked stock to melted sulfur (15% on cracked stock)

Card 1/3

An additive for oils based on ... S/081/62/000/020/025/040
B168/B101

under intense agitation; the temperature was held at 135-150°C, and the reaction time was 2-3 hr. The resulting sulfurated product was held for 8 hr at 150-160°C after which it was washed in a column, at first with a solution of Na_2S and then with NaOH. After passing the copper-plate test the product was charged into a vacuum column and the hydrocarbons which had not taken part in the reaction were distilled off from it at a residual pressure of 5-10 mm Hg; the product was subsequently taken to an ultracentrifuge. The yield of additive was 25-30% of the raw material. Comparative tests on the additive NG-103 showed that as regards antiwear properties it is not inferior to ЭЗ-5 (EZ-5), ОТ-1 (OT-1) or ЛЗ/9 (LZ⁶/9) which are made from scarce raw materials, and that it has advantages over them (cheap source material, simple production method, no unpleasant odor). The antioxydant additive was produced from a 75-250°C cracked kerosine fraction with a molecular weight of 198 and a Francis bromine number of 40. In order to produce a stable oil-soluble additive the olefinic hydrocarbons of the cracked stock were first polymerized in the presence of 2 wt.% $AlCl_3$ (on raw material) at 60°C. The mixture obtained

Card 2/3

An additive for oils based on ... S/081/62/000/020/025/040
B168/B101

was heated to 100°C and received gradual additions of P_2S_5 (15 wt.% on raw material) with agitation. Upon completion of phosphorosulfuration the temperature of the mixture was raised to 140°C and held there for 7-8 hr. The product was then treated with 5% H_2SO_4 and washed with water. The hydrocarbons which had not undergone reaction were distilled off from the purified product at a pressure of 5-6 mm Hg. The acid additive (NG-105) was neutralized with CaO (NG-105b) or ZnO (NG-105a) and was centrifugalized. The additives so produced were dark brown in colour and had the usual odor of cracked stock; in a thin film they were transparent. The additive yield is 25% of the initial cracked stock. [Abstracter's note: Complete translation.

X

Card 3/3

KALASHNIKOV, V.P.; SHEKHTER, Yu.N.; DOL'BERG, A.L.

Petroleum products nitration unit. Neftepер. i neftekhim. no.2: 7-10 '64. (MIRA 17:8)

1. Moskovskiy zavod "Neftegaz".

SHEKHTER, Yu.N.; KALASHNIKOVA, V.P.; YEVSTRATOVA, N.I.

New lubricating and cooling fluids. Stan. i instr. 35 no.6: 34-37 Je '64 (MIRA 17:8)

SHEKHTER, Yu.N.; DUNAYEV, V.V.

Overalkalization steam refining, and centifugation in the production of oil soluble sulfonates. Khim.i tekh.topl.i masel 7 no.4:29-33 Ap '62. (MIRA 15:4)

1. Moskovskiy zavod "Neftegaz".
(Lubrication and lubricants--Additives) (Sulfonic acids)

SHEKHTER, Yu.N.; KALASHNIKOV, V.P.; GORYACHEVA, V.I.

Nitration of mineral oils. Khim.i tekh.topl. i masel 7 no.11:40-45 N '62. (MIRA 15:12)

1. Moskovskiy zavod "Neftegaz."
(Mineral oils) (Nitration)

YEVSTRATOVA, N. I.; KALASHNIKOV, V. B.; LAPIN, V. N.; SHEKHTER, Yu. N.

Obtaining thiosalts from the tar of Kasphpir shales. Trudy VNIIT no. 11:144-154 '62. (MIRA 17:5)

SHEKHTER, Yu.N.; KHOROSHILOVA, L.D.

Motor oils and preservative oils. Khim. i tekh. topl. i masel 8 no.9:42-46 S '63. (MIRA 16:11)

1. Moskovskiy zavod "Neftegaz".

KREYN, S.E.; VIPPER, A.B.; SHEKHTER, Yu.N.

Solubilization of the contamination products of motor oils by the cleaning action of metal sulfonates. Khim.i tekh.topl.i masel 8 no.11:52-57 N '63. (MIRA 16:12)

L 19726-65 EWT(m)/EPF(c)/T Pr-4 BSD/ASD(m)-3/ASD(p)-3 DJ
ACCESSION NR: AP4049871 S/0318/64/000/002/0007/0010

AUTHOR: Kalashnikov, V. P.; Shekhter, Yu. N.; Dol'berg, A. L.

TITLE: Installation for the nitration of petroleum products

SOURCE: Neftepererabotka i neftekhimiya, no. 2, 1964, 7-10

TOPIC TAGS: petroleum nitration, protective lubricant, oil inhibitor, corrosion inhibitor/ lubricant NG-204, oil additive NG-106

ABSTRACT: The authors propose a method of manufacturing a low-solubility, nitrated corrosion inhibitor by nitrating oils from selective refining of eastern crudes (AS-6, AS-9.5, DS-8, DS-11). The final products are protective lubricant NG-204 and additive NG-106 for motor and transmission oils. After laboratory research it was found that oil and nitric acid (or a mixture of sulfuric and nitric acid) require a contact time of 3 hrs. at no less than 70C. Using a 1:1 proportion of oil and nitrating agent, the yield of nitrocompounds amounts to 25-30%. After the above research, a pilot plant installation was designed (there is a complete description and flow diagram in the article) and put in operation. The products were successfully tested by adding them to high-sulfur diesel fuels. Tables indicate that all nitrated products provide good protection of ferrous and nonferrous

Card 1/2

L 19726-65
ACCESSION NR: AP4049871

metals. In addition, NG-106, as tested by the Neftegaz plant, is effective as a dispersing and detergent agent, making it useful as an oil additive. Production yields are given for both nitrated oil and protective lubricant NG-204 (Petrolatum and pyropolymers added). Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Moskovskiy zavod "Neftegaz" (Moscow "Neftegaz" Plant)

SUBMITTED: 00 ENCL: 00 SUB CODE: FP

NO REF SOV: 007 OTHER: 002

Card 2/2

L 25273-65 EWT(m)/EPF(c)/T Pr-4 WE S/0065/64/000/012/0047/0051

ACCESSION NR: AP5001489

28
27
B

AUTHOR: Shekhter, Yu. N.; Yevstratova, N. I.; Cherepenina, V. N.

TITLE: Corrosion inhibiting additives to sulfur containing fuels

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 12, 1964, 47-51

TOPIC TAGS: metal corrosion, corrosion inhibitor, fuel, fuel additive, gasoline additive, sulfur containing fuel

ABSTRACT: In order to stabilize fuels antioxidants are added to them. These antioxidants prevent the formation of oxidation products in gasolines. These substances are not corrosion inhibitors, i.e. they do not protect the metal from destruction in the presence of water. The corrosion of metal is developed not only because of the action of dispersed water, but also because of increased aggresiveness of mercaptans, disulfides and sulfides. Consequently, along with antioxidants it is necessary to add corrosion inhibitors to fuel. It was established that combinations of the majority of oil soluble corrosion inhibitors are more

Card 1/2

effective than any single one of them. Thus, a mixture of three substances, containing sulfo groups, nitro groups and amino groups surpass, in terms of protective efficiency, sulfonates, nitrooils or amine containing corrosion inhibitors. As a result of the conducted work on the selection of composition two combination additives were selected: KP-1 and KP-2. KP additives are produced by mixing acid sulfo and nitro products. The production technology of mixed additives is simpler and the quality of products is better. Data were obtained which show that during combustion of sulfur containing diesel fuels the maximum corrosion of steel occurs both at low(100 C) and high (500 C or higher) temperatures. Under these conditions during combustion of fuel without additive the whole surface of the tested steel plate is subjected to corrosion, the plate darkens and corrosion spots occur on it. During combustion of fuel with KP additives the surface of the plates remains as clean and shiny as before the test. Orig. art. has: 2 tables

ASSOCIATION: Moskovskiy zavod "Neftegaz" (Moscow Plant "Neftegaz")

SUBMITTED: 00 ENCL: 00 SUB CODE: MT, GC
NR REF SOV: 010 OTHER: 005

L 41855-65 EWT(m)/EPF(c)/EWA(d)/EWP(t)/EWP(b) JD/WB

ACCESSION NR AM5004507 BOOK EXPLOITATION S/21 B+1

Shekhter, Yuliy Naumovich

Protection of metals against corrosion; inhibitors, oils and lubricants (Zashchita metallov ot korrozii; ingibitory, masla i smazki), Moscow, Izd-vo "Khimiya", 1964, 120 p. illus., biblio. Errata slip inserted. 5,200 copies printed.

TOPIC TAGS: metal corrosion, corrosion protection, oil, lubricant corrosion, corrosion inhibitor, protective coating

PURPOSE AND COVERAGE: This book describes methods of protecting various articles against corrosion by using inhibitors and their thickened solutions, wrapping paper, low-solubility corrosion inhibitors, protective thick and liquid inhibiting lubricants. The book shows how to reduce or eliminate corrosion of engines and engine parts, reservoirs and tankers, oil refinery equipment and metal machined at plants by using inhibiting fuels, oils, and emulsions. It describes the use of inhibiting oil lubricants to protect machine tools, automobiles, agricultural machinery, spare parts at fabrication plants as well as in their use, storage, and transportation (including countries with a tropical climate). The methods and results of tests of protective materials

Card 1/2

L 41855-65
ACCESSION NR AM5004507

under laboratory and industrial conditions are described. The book is intended for a broad audience of engineers and technicians concerned with problems of protecting metals and equipment against corrosion in all branches of the economy and also for engineers and technicians concerned with the synthesis and production of inhibitors and protective coatings.

TABLE OF CONTENTS [abridged]:

SUBMITTED: 29Aug64 SUB CODE: MM, GC

NO REF SOV: 039 OTHER: 018

Card 2/2

L 44179-65 EPF(c)/EWT(m)/T/EWP(b)/EWP(t) IJP(c) DJ/JD

ACCESSION NR: AP5011689 UR/0065/65/000/005/0038/0040

AUTHOR: Kalashnikov, V. P.; Yermilov, A. S.; Shekhter, Yu. N.; Volobuyev, N. K.; Chernikov, N. V.; Vladimirskaya, M. A.

TITLE: Experimental unit for producing finely divided molybdenum disulfide

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 5, 1965, 38-40

TOPIC TAGS: molybdenum disulfide, lubricant, additive, ultrasound, comminution, classification/DMVS 1

ABSTRACT: The feasibility was shown of producing large quantities of a grade of finely divided MoS_2 suitable for lubricant additive purposes. A newly built experimental unit was used which performs comminution and subsequent classification of MoS_2 in the form of an aqueous ethanol suspension in an ultrasonic size-reduction machine and an ultrasonic classifier (Fig. 1 and 2 of the Enclosure). It is noted that conventional mills are unsuitable for producing MoS_2 of the desired purity and particle size. The source of ultrasound in both cases is a magnetostriction transducer. The classifier screen is cotton cloth. The end product particle size is less than 1 micron. On the basis of this ultrasonic equipment, a flow sheet is proposed for a semi-works plant designed to produce MoS_2 as a suspension in aqueous alcohol, a product designated DMVS-1. Orig. art. has: 4 figures. [SM]

Card 1/1 Submitted 00