Table 3

Fractions of interactions with large $p_{\perp\pi}$ and cross sections of 3-particle reactions

Number of charged pions	Number of observed interactions	Cross section, mb	Number of events with $p_{\perp} > 0.7$, GeV/c	With correction for observation probability	Cross section of 3-particle reactions, mb
$3\pi^{\pm}$	105	5.2	13	23	1.1
$4\pi^{\pm}$	117	4.5	23	41	1.6
$5\pi^{\pm}$	33	3.8	10	18	2.1
$6\pi^{\pm}$	20	1.9	9	16	1.5
Total	275	15.4	55	98	6.3

imately 8 mb at an initial energy 20 GeV.

7. For a more definite answer to the question of the nature of the meson clusters investigated in this paper it is absolutely necessary to have comparative data for much higher energies (at least to 70 GeV), since the theory [2] gives grounds for expecting that the masses and decay modes of the fireballs in three-particle reactions will change only weakly with change of initial energy.

An alternate explanation of the observed phenomena is to assume either generation of heavy boson resonances with various masses (with decay into three $\pi^{\pm}$ mesons), or cascade decay of the fireball with a final stage of decay into three particles.

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ELECTROMAGNETIC EXCITATION OF SOUND IN TIN

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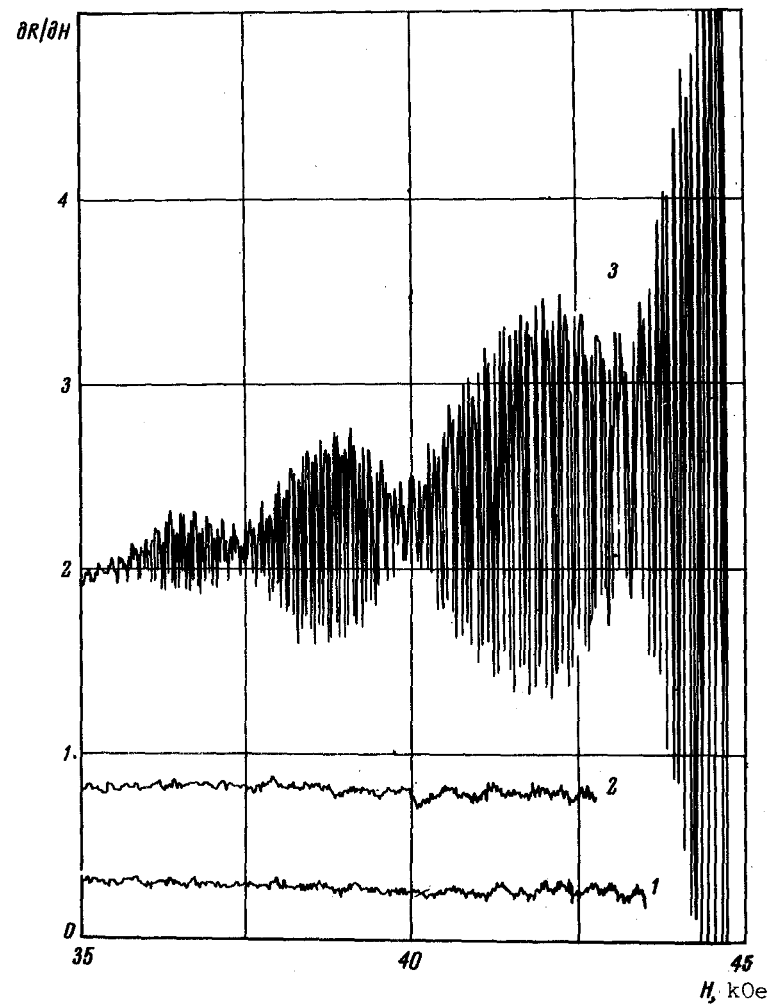
We investigated the surface impedance of single-crystal tin in a magnetic field. The measurements were made at T = 4.2°K in a magnetic field up to 60 kOe, produced by a superconducting solenoid. We recorded the derivative of the real part of the impedance $\partial R/\partial H$ using a radiospectrometer with an autodyne of the Pound-Knight type [1]. Two samples in the form of discs of 18 mm diameters, with thicknesses 0.55 and 0.11 mm, were used. In both cases the [010] crystal axis was perpendicular to the sample plane.

We investigated the dependence of the amplitude of the quantum oscillations of the surface impedance on the frequency of the high-frequency field at $\vec{H} \parallel \vec{n}$, where $\vec{n}$ is the normal



Derivative ∂R/∂H vs. magnetic field and frequency, for a tin sample 0.55 mm thick. The hf current is directed parallel to [001], and the magnetic field is parallel to [010]. T = 4.2°K. Curves 1, 2, and 3 - f = 8.94, 9.15, and 9.03 MHz, respectively.

to the surface of the sample. We observed the following phenomenon: the amplitude of the quantum oscillations increased appreciably in very narrow intervals Δf in the vicinity of discrete frequency values f_n $(\Delta f_n/f_n \sim 10^{-3} - 10^{-4})$. The figure shows plots obtained under identical conditions for three close values of the frequency.

It is seen from the table of the experimentally obtained values of f_n that $f_n = f_0 n$, where n = 1, 3, 5,... This indicates that the observed phenomenon is connected with the formation of standing waves inside the metal. The wave propagation velocity calculated from the thickness of the samples and from the frequencies f_0 is $V_s \approx 1.97 \times 10^5$ cm/sec. This value depends little on the directions of the magnetic field and of the hf fields, and corresponds

d, mm	0.55			1.0		
P, MHz	5.33	9.03	12.46	14.77	22.70	24.74
n, λ/2	3	5	7	15[1)]	23	25
V_s, m/sec	1956	1980	1960	1970	1970	1980

[1)] All frequencies with indices n from 1 to 25 are observed.

to one of the velocities of transverse sound in tin, which was determined in [2] for the [010] direction. It can thus be assumed that a shear sound wave is excited in the tin.

Electromagnetic excitation of sound in a metal was first observed in bismuth. The hsarp increase of the amplitude of the quantum oscillations, apparently likewise connected with excitation of standing sound waves, was observed in aluminum [4]. Unlike in aluminum, however, the helicoidal sound-generation mechanism proposed in [4] is impossible in tin. We propose that the sound wave in tin is excited by the skin current, which produced in a magnetic field a periodic shear stress along the sample surface. The additional contribution made to the surface impedance by such an excitation mechanism was considered in [5, 6]. It is possible that the increase of the amplitude of the observed quantum oscillations is also connected with this excitation mechanism.

It should be noted in conclusion that the additional contribution made to the surface impedance upon production of standing sound waves in tin is so large, that a resonance curve is readily observed on an S-1-1 oscilloscope (we used an NMR procedure with deep frequency modulation). The signal is detected directly from the resonant circuit of the autodyne.

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T-MODELS OF "SPHERE" IN GENERAL RELATIVITY THEORY

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It is assumed that Tolman's solution [1-3] represents all the possible general relativity theory (GRT) nonstatic models of a sphere made of dust without pressure. However, in the integration of Einstein's equations, it is implicitly assumed that the co-moving condition $G_0^1 = 0$ does not reduce to a trivial identity. Therefore, Tolman's solution implies an additional requirement with respect to the initial metric, namely $(\partial R/\partial\chi)_T \neq 0$, and accordingly with respect to the permissible distributions of the relativistic per-unit energy of the "dust," $W = 1 + f > 0$, which determines the ratio of the increment s of the current active and proper masses of the sphere, $m' = W\mathcal{M}'$, and also the geometry of the space-like cross sections V_3 [3].

Actually these limitations do not follow from spherical symmetry or from the field equa equations, and thus sight is lost of a special type of paradoxical configuration of the general-relativity sphere, having a constant active mass $M = r_0/2$ at an arbitrary total rest mass $\mathcal{M}(\chi)$ of the constituent "dust" with $W \equiv 0$, namely T-models, for which the co-moving reference frame is also the synchronous T-system [2, 4]:

$$ds^2 = d\tau^2 - e^{\omega(\chi,\tau)} d\chi^2 - r^2(\tau)\{d\nu^2 + \sin^2\nu\, d\phi^2\}. \tag{1}$$