for assuming that a noticeable number of hypothetical ρ^0 mesons is emitted, in addition to π^0 mesons, in the annihilation of the antiproton by the proton.[4]

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RESULTS OF A MODEL OF THE p-p INTERACTION AT 10 Bev

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EARLIER we developed an idea for a model of the process of multiple production.[1,2] To check the efficiency of the proposed model we made up a table of 200 random stars formed in p-p interactions at 10 Bev.[3] The table included the processes of multiple production of from 1 to 6 mesons according to statistical theory with the assumption of the existence of isobars. We are now publishing some results on the formation of stars from the table.

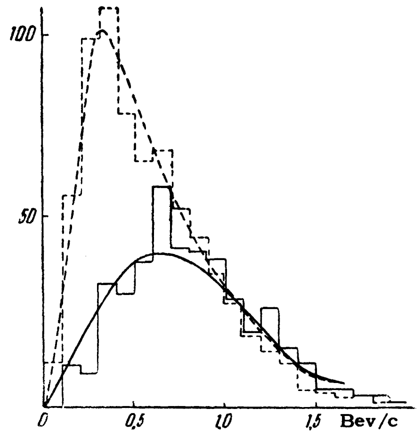

FIG. 1. Solid lines denote nucleons, broken lines denote mesons.

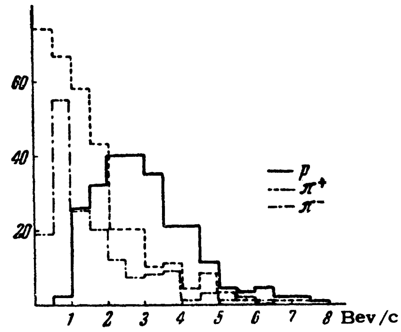

FIG. 2

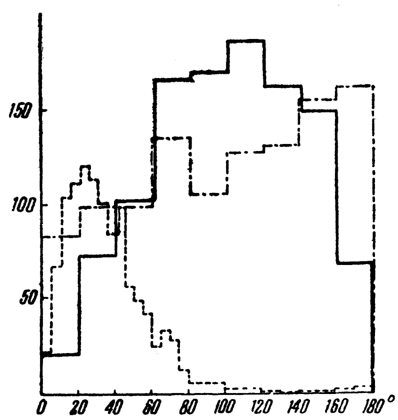

FIG. 3. Dot-and-dash lines show the spectrum of angles between projections of rays onto the plane normal to the axis of interaction; solid line shows the spectrum of angles between rays in the c.m. system; dotted line shows the same in the laboratory system.

Figure 1 shows the obtained momentum spectrum of nucleons and mesons in the c.m. system (for comparison the smooth curve shows the same spectrum calculated in the usual way).[4] Figure 2 shows the momentum spectra of protons, π^+ and π^- mesons in the laboratory system.

The table of random stars allowed us to obtain theoretical values of the quantities for which calculation using the usual methods is difficult. Figure 3 shows the distribution of angular divergence between the charged particles in the stars in both systems (in plotting the distribution we included all $m(m-1)/2$ angles between m rays of the star). We also obtained the angular distribution between projections of rays onto a plane normal to the axis of interaction (Figure 3). This distribution is convenient because it does not change under a transformation from one system to the other. We note that with peripheral interactions, the angles $\sim 0°$ and $\sim 180°$ must occur more often than in the distribution obtained in reference 5.

Gramenitskiĭ and others[6] measured the correlation coefficients between the directions of rays and the number of narrow pairs in nuclear disintegrations. Using the table of random stars it is possible to obtain the theoretical values of these quantities. The number of pairs with angle $\leq 2°$ (see Fig. 3) was equal to four in 200 stars. This is close to the quantity obtained in reference 6. The Q values (see reference 6, Table I, last line) connected with the correlation coefficients were, respectively, 0.32 ± 0.06, and 0.00 ± 0.07. A more detailed analysis of the correlations showed that as the number of rays in the stars increased, the statistical dependence between the directions of the rays becomes more obvious. This is connected with an increase of the limits placed on the directions of the particles by the law of conservation of momentum.

These results from the formation of the table of random stars testifies to the usefulness of this method for analyzing various details of the process of multiple production.

The author is grateful to M. I. Podgoretskiĭ for his interest in the work and his important advice.

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TEMPERATURE DEPENDENCE OF FERROMAGNETIC RESONANCE IN YTTRIUM FERRITE-GARNETS

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THERE have hitherto been few data on the temperature dependence of ferromagnetic resonance in ferrites. Meanwhile, the study of this dependence has acquired considerable importance, because it is here that the relation between the resonance characteristics and the magnetic properties of a ferrite is manifested most clearly. The present communication presents the results of a study of the temperature dependence of the width of the ferromagnetic resonance absorption line, the g-factor, and the resonance field in polycrystalline yttrium ferrite-garnets, in which the Fe^{3+} ions have been partly replaced by Al^{3+} and Cr^{3+} ions. At the same time, measurements of the temperature dependence of the spontaneous magnetization were made by a method described earlier.[1]

Figure 1 shows the temperature dependence of the absorption line width (solid curves) and of the specific spontaneous magnetization (dashed curves) of yttrium ferrite-garnets of the following compositions: $3Y_2O_3 \cdot 5Fe_2O_3$ (1); $3Y_2O_3 \cdot 4Fe_2O_3 \cdot Al_2O_3$ (3); $3Y_2O_3 \cdot 4.5Fe_2O_3 \cdot 0.5Cr_2O_3$ (2). Because of the small density of the specimens, the width of the resonance line was quite large; this permitted a clearer exhibition of its change on heating. It is clear from Fig. 1 that the decrease of spontaneous magnetization on approach to the Curie point occurs more abruptly than does the decrease of ΔH. It should furthermore be noted that the decrease of σ_S and of ΔH proceeds more rapidly in the case of the stoichiometric ferrite $3Y_2O_3 \cdot 5Fe_2O_3$ than it does for the "substituted" ferrites. The greater the Al^{3+} and Cr^{3+} content, the more slanting the ΔH and σ_S

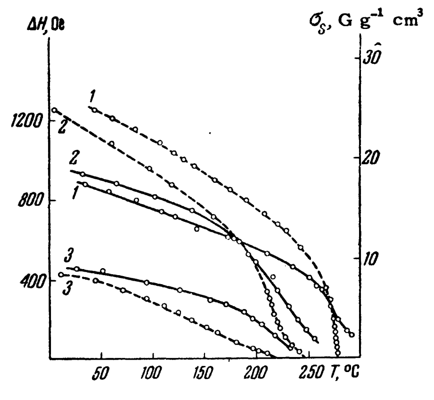

FIG. 1. Temperature dependence of the width ΔH of the ferromagnetic resonance absorption line (solid curves) and of the specific spontaneous magnetization σ, (dashed curves): 1) for $3Y_2O_3 \cdot 5Fe_2O_3$; 2) for $3Y_2O_3 \cdot 4.5Fe_2O_3 \cdot 0.5Cr_2O_3$; 3) for $3Y_2O_3 \cdot 4Fe_2O_3 \cdot Al_2O_3$.