sumed that these transitions are accounted for by a simple collective model (in this case, the formula of Nilsson is approximate), we find that the 208-kev transition is considerably accelerated (by a factor of 800) in comparison with the transition which would take place between the single-particle level (321 kev) and the pure rotational level (113 kev). This difference can be the result of the interaction between the individual and collective motions in the nucleus.

On the other hand, if we assume that the 208-kev transition is in agreement with the simple collective model and with Nilsson's formula ($f_{H_{298}} = 0.6$), then the 396- (Lu^{175}), 321- (Hf^{177}), and 147-kev (Lu^{177}) E1 transitions are retarded by secondary effects.

In conclusion, I wish to express my gratitude to A. I. Alikhanyan for his interest in this work.

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MEASUREMENT OF THE RELATIVE NUCLEAR ACTIVITY OF π MESONS NEAR THEIR PLACE OF GENERATION

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IN the work of the Irish group[1] on π mesons produced in $K_{\pi 2}$ decay, an anomalously large inelastic interaction cross section was observed, equal approximately to 2 or 3 times the geometric cross section. For ordinary π mesons of the same energy, this cross section is close to geometric.

As possible causes for the obtained discrepancy, the authors indicated two possibilities: either particles different from the ordinary π mesons are produced in the K decay there, or the difference is connected with the fact that the nuclear activity of the π mesons in the given work was studied close to the place of their generation, at distances of up to 4 cm.

Analyzing these possibilities, we found that the first cause can account for the discrepancy only if there is an unknown particle among the products of the inelastic interaction of these mesons with emulsion nuclei. In the opposite case, it follows from the principle of detailed balance that, in nuclear collisions, there should be generated mainly mesons which interact just as strongly as those produced in the K decay.

Contradicting the possibility of the second explanation of the observed discrepancy are the experiments on the comparison of the cross sections for the direct and inverse reactions $p + p \rightleftharpoons \pi^+ + d$. If the anomalously nuclear-active mesons of mass close to the mass of the π meson were then to decay into the less active ordinary π mesons, then the results obtained in the above experiment would contradict the assumption that the same reaction was investigated in the direct and inverse directions.

It is desirable that the question on the production of mesons having an anomalously large nuclear activity close to the point of generation be elucidated in the general case of nucleon collisions, and not only in the case of the emission of mesons along with the production of a deuteron in the final state.

In this connection, we carried out measurements to compare the nuclear activity of mesons produced at an angle of 90° on carbon nuclei by 660-Mev protons at distances of 2 − 4, 10 − 20, 21 − 23, and 105 − 115 cm from the place of generation. The measurements were made by an electronic method with the aid of scintillation counters. The usual methods of measurement were not used for this purpose, since a beam of mesons cannot be formed at a distance of several centimeters from the target. This difficulty was overcome by the employment of the method of similar geometry. In the measurements we used telescopes consisting of three scintillation counters, the dimensions of which differed exactly by a factor of five. Brass filters in the telescopes contained uniform quantities of matter per cm^2, but differed in geometrical size also by a factor of five.

In the experiment we determined the relative change in counts of both telescopes due to the addition of brass filters 17 g/cm² thick. The filters were placed either in front of the first counters or behind the second counters of the telescopes. Aside from these filters, brass filters of thickness 8.5 g/cm² were permanently installed in front of the last counters.

Thus, we investigated in this experiment the nuclear absorption of mesons, the mean energy of which changed from 100 to 70 Mev as they passed through the filters. (This energy interval corresponds to the energy of mesons emitted in $K_{\pi 2}$ decay.)

These experiments showed only a slight change in the nuclear activity of the mesons, which could be explained by the decay of π mesons into μ mesons at a distance of one meter. Apart from the decrease in the nuclear activity, the errors of measurement allow a change of not more than 15% of the geometric cross section in the cross section for the nuclear absorption of mesons at a distance of 3 to 110 cm.

Hence, it should be assumed that the results obtained in the study of the nuclear activity of π mesons from the $K_{\pi 2}$ decay are apparently due to errors in measurements.

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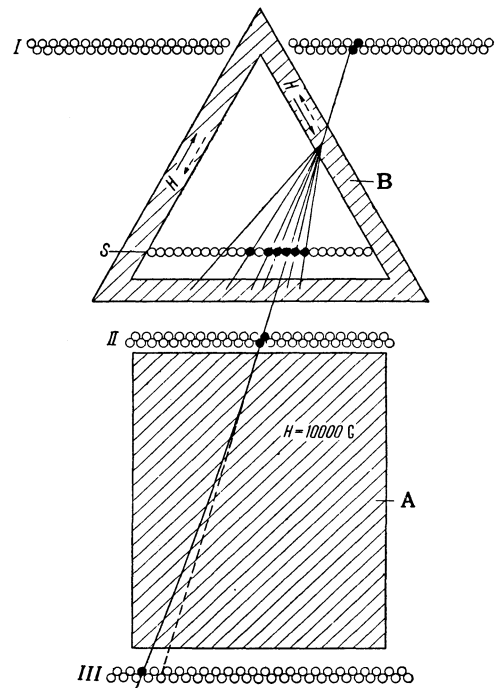# MEASURING OF THE CHIRALITY OF THE MU MESON

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IT is known that the decay of the μ meson is characterized, in particular, by the chirality of the μ meson, i.e., by the direction of the spin of the μ meson relative to its momentum. In the universal (V-A) theory of weak interaction, the direction of the spin of the μ meson is opposite

I, II, and III are rows of hodoscopic counters for the determination of the trajectory of the μ meson. S is a row of counters for the registration of the showers. A is the iron yoke of a permanent magnet for the determination of the sign of the μ mesons from the deflection in a magnetic field. B is the iron core of an electromagnet with a triangular cross-section, in which the μ mesons produced showers, including some on electrons polarized by the magnetic field.

to its momentum, and in the STP interaction the reverse is true.

In the present work we measured the chirality of the μ meson by a method proposed earlier,[1] based on measuring the cross section of the scattering of polarized μ mesons by polarized electrons, since this cross section depends on the relative orientation of the colliding particles.

The quantity measured directly in the test was the number of δ showers produced by μ mesons in magnetized iron and having not less than two particles ($n \geq 2$). Formulas and tentative estimates on the magnitude of this effect for cosmic-ray μ mesons are given in reference 1. The drawing shows the experimental setup. I, II, and III are arrays of hodoscopic counters, which allow to plot the trajectory of the particle from three points and to determine its sign from the deflection in a magnetic field of $\sim 10,000$ gauss in the iron yoke of the permanent closed magnet A. The μ meson was deflected in the iron core by the effect of the magnetic field (Δ_H) and by repeated scattering (Δ_S). Under our conditions $\Delta_H/\Delta_S = 6.7$. The δ showers occurred in the iron core of the closed electromagnet B, which had a triangular cross section.