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DOUBLE-HYPERFRAGMENT EVENT

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In this unusual event two hyperfragments emerge, almost back to back, from a 4.5 GeV/c π^- interaction in a photographic emulsion plate. The authors suggest as a natural explanation the initial formation of a short-lived Ξ – hypernucleus. The conversion reaction $\Xi + N \rightarrow 2\Lambda^0$ then following and resulting in the formation of two ordinary Λ^0 hypernuclei.

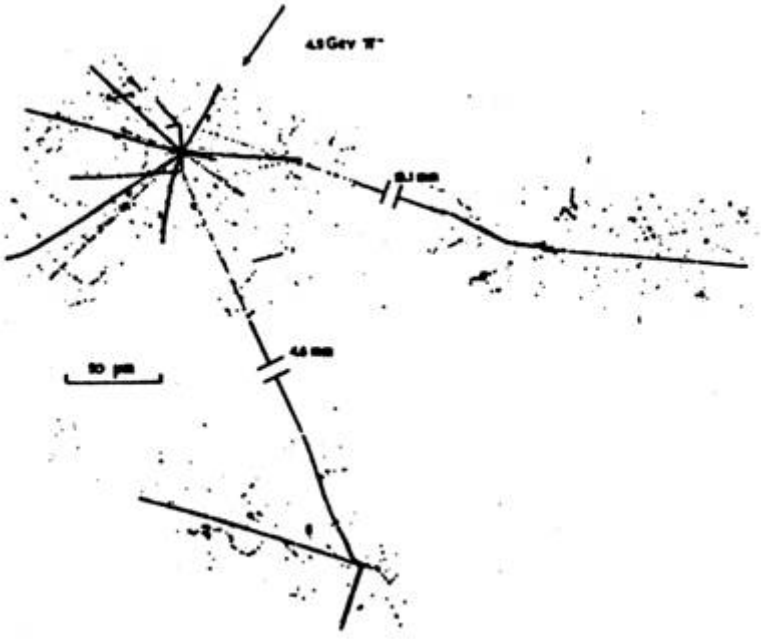

FIG. 1. Double-hyperfragment event.

ESTIMATE OF THE NEUTRAL π-MESON LIFETIME

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This experiment gave the first estimate of a value for the very short lifetime of the π^o meson. The method used K^+ mesons stopped in photographic emulsion and which then decayed by the mode: $K^+ \rightarrow \pi^+ + \pi^o$ followed by Dalitz decay of the $\pi^o \rightarrow e^+ + e^- + \gamma$. The method of measurement is illustrated in the diagram below. The final result, published in 1964, was (1.6 ± 0.5) X 10^{-16} s. corresponding to a mean decay path for the π^o of about 0.07mm.

Today's best value for the lifetime (by other methods !) is (0.84 ± 0.06) x 10^{-16}s. The π^o lifetime is of some interest as among the supporting evidence for the SU(3) of Color, the quark 'charge' in QCD.

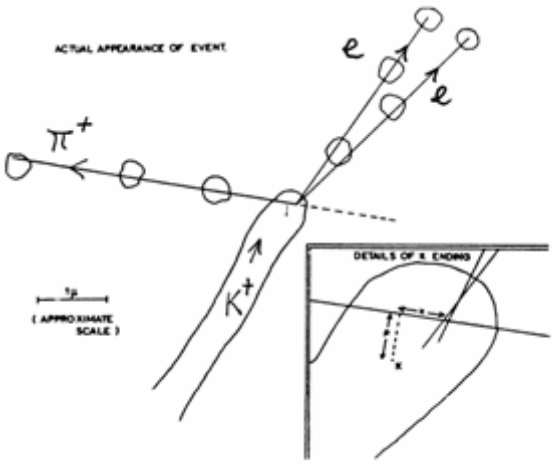

FIG. 1 - Diagram to illustrate the method and the measurements made.

Julia looking for stopped K^+ mesons.

Primary Cosmic Ray α-Particles - II.

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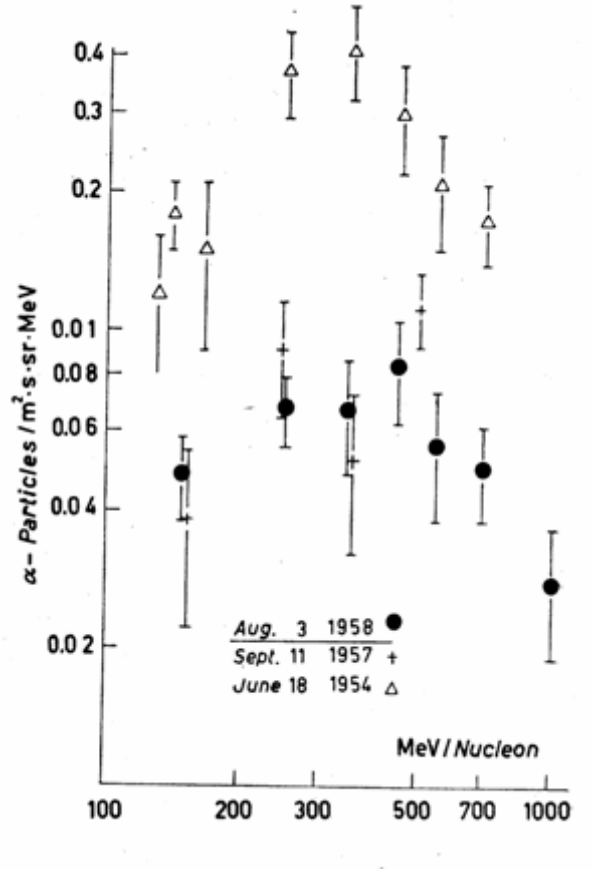
(ricevuto l'8 Marzo 1961)

Il. Nuovo Cim. **20** 1157 (1961)

A stack of photographic emulsions was flown by balloon at 61°N geomagnetic latitude from Neepawa, Canada, in August 1958 -- a year of high solar activity. When compared with similar data from 1954, near solar minimum, the energy spectrum measured showed a 55% reduction in flux.

The form of this modification of the spectrum was found to be consistent with the expectations of a model (due to Elliot et al) attributing the effect to changes in the properties of coronal ring currents and the emission of ionised gas clouds. In the figure, lower data is from this experiment in 1958; upper data is from 1954.



STUDY OF THE ANNIHILATION OF STOPPED ANTIPROTONS IN HYDROGEN:
THE REACTION $\bar{p}+p \rightarrow \pi^{+}+\pi^{-}+\pi^{0}$

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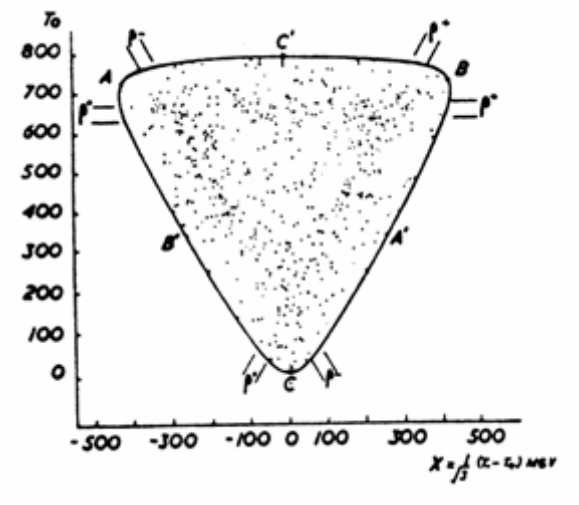
(Received 19 November 1962)

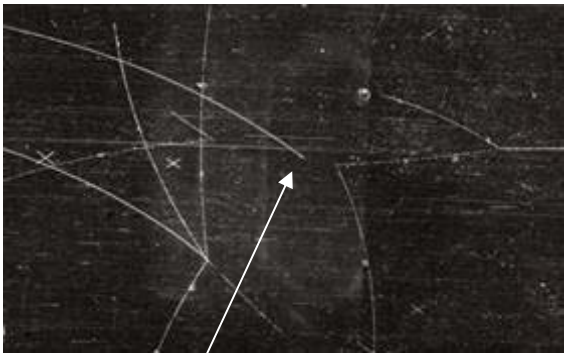
This analysis of the three pion final state from annihilation of protonium was one of the first detailed studies of the annihilation process. The Dalitz plot clearly shows the dominance of $\rho\pi$ production, with equality of the three charge combinations. This, together with the constructive interference at the three corners where the $\rho\pi$ bands overlap, indicates annihilation taking place from a 3S1 state of protonium.

But the observation of one event of annihilation to a pair of K^{o}_{1} [see picture], a final state of even C-parity, requires some contribution from an initial P-state.

Phys. Rev. Letts. **10** 62 (1963)



Sheila scanning bubble chamber pictures



Annihilation to two K^{0}s (V shapes)