Referee's Comments
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Comments on Proposal EmC 63/3

(W.M. Gibson, W.A. Venus: Proposal of an emulsion experiment requiring a mass-separated $K^{\pm}$ beam).

The primary purpose of the experiment proposed is to study the process

$$K^{\pm} + {}_{z}N^{A} \rightarrow K^{\pm} + \pi^{+} + \pi^{-} + {}_{z}N^{A}$$

in order to obtain, in a way suggested by Good and Walker, and by Matthews and Salam, information on the $K\bar{K}\pi\pi$ interaction.

Independent of the conclusiveness of these theoretical auguments the intended investigation, if successful, is certainly of interest because so far there exist no measurements of K interactions at the high energies to be studied here. Only a few words of caution have to be uttered, however, regarding technical points.

The nature of the experiment requires high beam purity at high beam intensity. This probably means that the experiment will have to wait for the installation of the RF separators in the East Experimental Area.

The authors of the proposal say that a large contamination of pions would be tolerable, since the events having pion primaries could be identified by comparing the ionisation of the primary track with that of neighbouring beam tracks. Although the Bristol-Dublin work on the variation of grain density with velocity in the relativistic region is available a large background of pions would naturally introduce additional uncertainties, errors and great labour (at 6 GeV/c the difference in ionisation between pions and kaons is very small), and should therefore be avoided.

The feasibility of the experiment can only be shown by a test exposure. This test exposure should have a high priority as soon as the beam is available, considering the interest in the exploration of a new energy region of K interaction, and the fact that the authors essentially made this proposal already two years ago.

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