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Experimental proposal

Title

Multiparticle production in high energy pion
nucleus interactions

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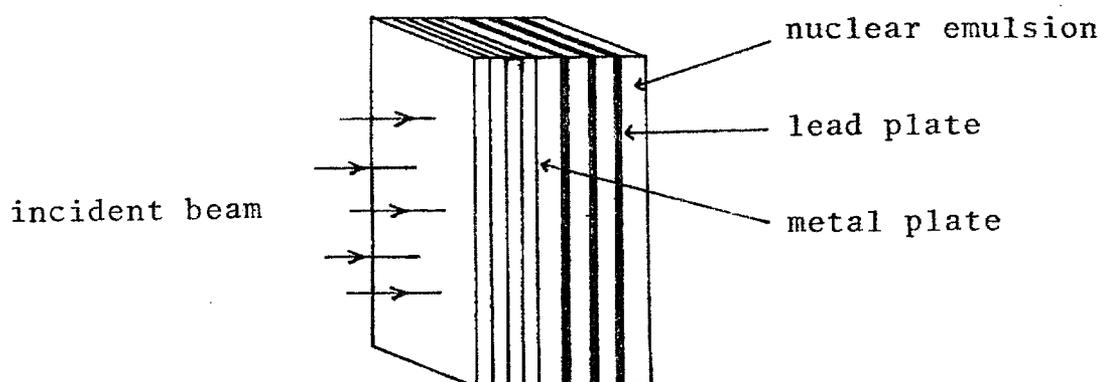
1. Object.

It is suggested that the study of high energy hadron nucleus interactions might provide new information on hadron dynamics that cannot be obtained in free hadron hadron interactions. Recently some authors have studied the inelastic hadron nucleus interactions at hundred GeV region using heavy liquid bubble chamber and nuclear emulsion. Up to now, however, most part of experimental data is related to proton nucleus interactions and generally confined to just one or two target nuclei.

In order to make further study of high energy hadron dynamics, we feel strongly the need for a similar experiment to be done for meson nucleus interactions. For this purpose we would like to propose an experiment of inelastic π^- nucleus interactions at several hundred GeV using emulsion chamber. The aim of this experiment is to study the behavior of the characteristic quantities in meson nucleus interactions as a function of target mass number, and to compare with similar results obtained in proton nucleus interactions.

2. Instrument

The emulsion chamber for this experiment is shown below. This emulsion chamber with a producing layer is the same as that used for the previous experiment of 400 GeV proton nucleus interactions performed at FNAL, 1972.



3. Exposure.

The emulsion chamber will be exposed to π^- beam in the vertical direction to the emulsion plane. Conditions of exposure in this experiment are listed as follow.

The beam	negative pions
The energy of beam	200 GeV or highest possible
The beam intensity	5×10^4 particles/cm ²
Total number of the emulsion chamber to be exposed	8 blocks
