

Scientific Spokesman:

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Multiple-Pion Production by 200 GeV/c Muons

Names and Institutions of Participants in the Proposal/Experiment

Names	Institutions
Tomonori WADA	Okayama University, Okayama
Shuichi KATSUBE	Ashikaga Institute of Technology, Ashikaga
Kiyomi MITSUI	Cosmic Ray Laboratory, University of Tokyo, Tokyo
Kohei MIZUTANI	Saitama University, Urawa
Katsuhiko SAITOH	Ashikaga Institute of Technology, Ashikaga

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Proposal/Experiment.

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Review of the One-Page Summary for the Proposal/Experiment.

The main objectives of this experiment are to study the multiple-pion production, especially fire ball-like behavior at the known muon energy, and to compare with the cosmic ray data by means of cloud chambers containing lead plates and with emulsion stack data in the lower energy region (5GeV/c). The cloud chamber data by cosmic ray muons has been investigated by means of the One Fire Ball Model (the mesons are emitted from excited centers) in the energy range of 10 to 100 GeV, while the emulsion data at 5 GeV/c have indicated dominant contributions from isobars (the excited baryon of 1238-MeV). In the cosmic ray data we can not discuss more details of "the fire ball", such as its mass or temperature, because that incident muon energies can not be estimated directly.

The detector is constituted of nuclear emulsion plates and 0.5 cm lead plates which are piled up in the form of a stack. The geometrical size of the detector is about 10 cm x 10 cm wide and 20 cm thick including lead target of 15 cm thick.

Followings are the summary of the conditions required in this experiment.

- (1) Beam; parallel and mono-energetic muon beam.
- (2) Energy; 200 GeV,
- (3) Intensity; 10^5 muons/cm² on the detector.
- (4) Accuracy of the beam energy; better than ± 10 %.
- (5) The first experiment time for data-taking; September 1975 at the first stage.