

Rehearsal for OPERA Event Location Procedure at KEK PS

T543 Status Report 2003

S. Aoki¹⁾, A. Ariga²⁾, T. Fukuda²⁾, K. Kodama³⁾, M.Nakamura²⁾, T. Nakamura²⁾, N. Naganawa²⁾, K. Niwa²⁾

1) Kobe University, 2) Nagoya University, 3) Aichi University of Education

Purpose

T543 is intended to provide sample emulsion bricks to do rehearsal of the event location procedure for OPERA experiment [1]. The event location in OPERA is done by tracing back, from the last emulsion sheet, daughter tracks of a neutrino interaction. It is called Scan Back Method and has been used in E531, DONUT and CHORUS etc. Emulsion read-out for this procedure is much heavier job in OPERA compared to previous experiments due to poor position resolution of electronic tracking device. In addition, it has to be started without any problem in processing about 60 events every day when the beam is delivered in 2006. Thus a rehearsal of this event location procedure must be done. KEK-PS is close to Nagoya where OPERA emulsion data taking is done and thus is a good place to make samples for this rehearsal.

Activities

In this rehearsal, Scintillating Fiber Tracker (SFT) used in DONUT is used to know the truth by tagging an incoming parent particle and outgoing daughter tracks. This experimental setup has been completed and tested at F-ken in Nagoya using cosmic rays. A photo of the setup is shown in Fig.1 and connection accuracy between SFT and an emulsion brick (in mm unit) is shown in Fig.2. Extremely low intensity beam of about 1-10 particles/spill, which is required for this rehearsal, was tested and found to be possible at $\pi 2$ test beam line at KEK-PS. Some emulsion exposures to make necessary samples for preparation of OPERA were also done.

Reference

[1] OPERA Experiment Proposal, CERN SPSC 2000-028, SPSC/P318, LNGS P25/2000, July 10, 2000



Fig.1

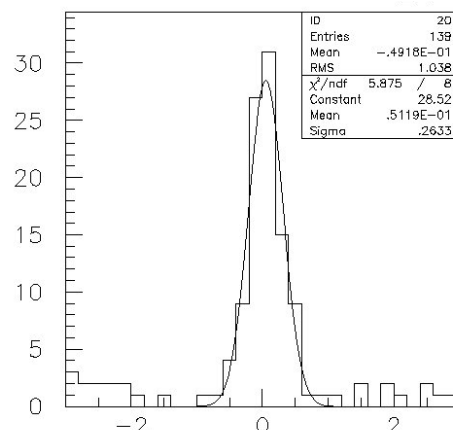


Fig.2