



Contribution ID: 416

Type: **Oral Presentation**

Search for tau-neutrino interactions in the OPERA hybrid detector

Saturday 11 June 2011 11:30 (30 minutes)

The OPERA neutrino detector in the underground Gran Sasso Laboratory is designed to detect muon-neutrino to tau-neutrino oscillations in direct appearance mode. The hybrid apparatus, consisting of an emulsion/lead target complemented by electronic detectors, is placed in the long-baseline CERN to Gran Sasso neutrino beam (CNGS), 730 km away from the muon-neutrino source, and is taking data since 2008.

The experimental setup and associated facilities used to extract data recorded in the emulsion are described, together with the special procedures developed to locate precisely the interactions and detect short decay topologies. Progress in assessing efficiencies and background will be discussed with the presentation of first results.

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Session Classification: Detector for Neutrinos

Track Classification: Detectors for neutrino physics