Contribution ID: **99** Type: **talk**

Results from the OPERA experiment at the CNGS beam

Thursday 23 July 2015 10:22 (23 minutes)

The OPERA experiment at the Gran Sasso underground laboratory has been designed to study the nu_mu -> nu_tau oscillation in appearance mode in the CNGS neutrino beam. Four nu_tau candidate events have been confirmed so far, using a sub-sample of data from the 2008-2012 runs. Given the number of analysed events and the low background, nu_mu -> nu_tau oscillations have been established with a significance of 4.2 sigma. In the talk we will present results based on an increased sample of scanned emulsion target units (bricks). The nu_tau data analysis will be updated and discussed, with emphasis on the background constraints obtained by using dedicated data-driven control samples. The analysis of the collected electron neutrino sample and the analysis of the muon charge ratio in the cosmic ray sample will also be covered.

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Session Classification: Neutrino Physics

Track Classification: Neutrino Physics