

More results from the OPERA experiment at the Gran Sasso underground Lab

Friday, 1 September 2017 15:15 (25 minutes)

The OPERA experiment reached its main goal by proving the appearance of $\nu\tau$ in the CNGS $\nu\mu$ beam. A total sample of 5 candidates fulfilling the analysis defined in the proposal was detected with a S/B ratio of about ten allowing to reject the null hypothesis at 5.1σ . The search has been extended to $\nu\tau$ -like interactions failing the kinematical analysis defined in the experiment proposal to obtain a statistically enhanced, lower purity, signal sample. One such interesting neutrino interaction with a double vertex topology with a high probability of being a $\nu\tau$ interaction with charm production is reported. Based on the enlarged data sample the estimation of Δm_{223} in appearance mode is presented. The search for νe interactions has been extended over the full data set with a more than twofold increase in statistics with respect to published data. The analysis of the $\nu\mu \rightarrow \nu e$ channel is updated and the implications of the electron neutrino sample in the framework of the 3+1 sterile model is discussed. An analysis of $\nu\mu \rightarrow \nu\tau$ interactions in the framework of the sterile neutrino model has also been performed. Finally, the results of the analysis of the annual modulation of the cosmic muon rate is presented.

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Session Classification: Neutrino physics

Track Classification: 3) Neutrino physics