

Results from the OPERA experiment in the CNGS beam

The OPERA experiment at the Gran Sasso underground laboratory has recently established $\nu_{\mu} \rightarrow \nu_{\tau}$ oscillations in appearance mode with a significance of 5.1 sigma thanks to the observation of five signal candidate events in a sample with a signal-to-background ratio of about ten.

The ν_{τ} data analysis will be discussed, with emphasis on the background constraints obtained by using dedicated data-driven control samples. The analysis of the $\nu_{\mu} \rightarrow \nu_{e}$ channel, formerly based on the first two years of run, has been extended over the full data set with a more than twofold increase in statistics. The implications of the tau neutrino and electron neutrino samples in the framework of the 3+1 sterile model will be discussed.

The Collaboration is also focusing on the characterization of ν_{τ} -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 will be presented. Finally, topics in the analysis of the OPERA cosmic ray sample will be covered.

Summary

The results achieved by the OPERA experiment at the Gran Sasso underground laboratory are reviewed and updated.

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