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New results from the OPERA experiment

Tuesday 29 August 2017 10:00 (30 minutes)

The OPERA experiment reached its main goal by proving the appearance of ν_τ in the CNGS ν_μ 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 5.1 σ. The search has been extended to ν_τ-like interactions failing the kinematical analysis defined in the experiment proposal to obtain a statistically enhanced, lower purity, signal sample. Based on the enlarged data sample the estimation of Δm^2_{23} in appearance mode is presented. The search for ν_e 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. Moreover the results of the analysis of the annual modulation of the cosmic muon rate will be presented.

Topic:

Topic: High Energy Particle Physics

Summary

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