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Final results of the OPERA experiment on nu-tau appearance in the CNGS neutrino beam

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The OPERA experiment at the Gran Sasso Laboratory was designed to study $\nu_\mu \rightarrow \nu_\tau$ oscillations in appearance mode in the CERN-to-Gran Sasso neutrino beam. We report the final analysis of the full data sample based on looser selection criteria than in previous analyses, and multivariate approach. Oscillation parameters have been determined with a reduced statistical uncertainty, and the discovery of tau neutrino appearance is confirmed with an improved significance level. The measurement of ν_τ CC cross-section was performed, and the direct observation of the ν_τ - lepton number is also reported.

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