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Dataset of tau neutrino interactions recorded by OPERA experiment

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We describe the dataset of very rare events recorded by the OPERA experiment. Those events represent tracks of particles associated with tau neutrinos emerged from a pure muon neutrino beam, due to neutrino oscillations. The OPERA detector, located in the underground Gran Sasso Laboratory, consisted of an emulsion/lead target with an average mass of about 1.2 kt, complemented by the electronic detectors. It was exposed, from 2008 to 2012, to the CNGS (CERN Neutrinos to Gran Sasso) beam, an almost pure muon neutrino beam with a baseline of 730 km, collecting a total of 17.97×10^{19} protons on target. The OPERA Collaboration eventually assessed the discovery of $\nu_\mu \rightarrow \nu_\tau$ oscillations with a significance of 6.1σ by observing ten ν_τ candidates. These events have been published at CERN Open Data Portal.

Consider for promotion

No

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