

OPERA observes the second tau neutrino

June 7 2012

(Phys.org) -- The OPERA collaboration has announced yesterday at the Neutrino 2012 conference in Japan, the observation of their second neutrino tau interaction, after the first observation made in 2010.

In an official note the collaboration explains that "The [OPERA experiment](#) was designed to search for the very rare and peculiar phenomenon of neutrino oscillations, according to which muon neutrinos along their path transform into a different type of neutrinos, the so-called [tau neutrinos](#).

The [accelerator](#) at [CERN](#), Geneva, produce an intense beam of muon neutrinos which is sent towards the Gran Sasso National Laboratory of INFN.

Thanks to their extremely rare interactions with matter, neutrinos arrive unperturbed at Gran Sasso after crossing 730 km of rock. The OPERA experimental apparatus located at Gran Sasso acts like a photographic camera with a mass of 1250 tons, capable of recording interactions of tau neutrinos, thus being able to demonstrate the [oscillation](#) phenomenon.

The experiment is taking data since 2008 and in 2010 the Collaboration reported the observation of a first tau neutrino. Since then, the experiment has collected more data, analyzing with micrometric accuracy several thousands of neutrino interactions.

At the Neutrino 2012 International Conference in Kyoto, Japan, on June

5th, the Collaboration just reported the observation of their second neutrino tau interaction. This new event is an important step towards the accomplishment of the final goal of the experiment."

OPERA is an experiment designed and realized by a group of 160 researchers from universities and scientific institutes in Belgium, Croatia, France, Germany, Israel, Italy, Japan, Korea, Russia, Tunisia, Switzerland, and Turkey.

Provided by INFN

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