

## Super KamiokaNDE and the neutrinos oscillations

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In 1998, Super KamiokaNDE proved the oscillatory nature of neutrinos thanks to solar and atmospheric neutrinos. Using the Cerenkov effect, this detector of 50 000 tons of purified water can watch the "light of the neutrinos". Neutrino interactions contained within the detector and in the nearby rock show a deficit of muon neutrino interactions which is consistent with  $\nu_\mu$  oscillation to  $\nu_\tau$  or  $\nu_{\text{sterile}}$  with maximal mixing and  $\Delta(m^2) \approx 3.5 \times 10^{-3} \text{ (eV)}^2$ . Then, it has been the target of neutrinos beams. The experiment K2K aimed it from 2003 to 2006, as T2K will from 2009. This beautiful tool for particle physics remains nevertheless unfamiliar in its very details :- How Super KamiokaNDE reconstructs neutrinos?- What is the difference between a  $\nu_\mu$  and a  $\nu_e$  interactions in it?- What are the important parameters to monitor and calibrate? After a pedagogic introduction to neutrino oscillation, this seminar will focus on the experimental aspect to expose the reconstruction performances of Super KamiokaND