

Sterile neutrino oscillation studies with the T2K far detector Super-Kamiokande

T2K (Tokai-to-Kamioka) is a long-baseline accelerator neutrino experiment in Japan. The physics program is focused on the study of neutrino oscillations. For the oscillation analysis, events induced by a generated neutrino beam are measured in a set of detectors close to the beam source and compared with observations of beam-induced events in a far detector (Super-Kamiokande) at a distance of 295 km.

This poster explores the potential use of the T2K far detector to search for neutrino oscillations due to the presence of sterile neutrinos. The existence of sterile neutrinos is an open question. They are singlet fermions which can contribute to weak interactions only through mixing with active neutrinos and may explain some observations which appear anomalous in the standard three-neutrino scenario.

This study shows the effect of the sterile neutrino mixing parameters on various samples of the far detector: single and multi-ring muon and electron as well as neutral current pi-zero and de-excitation gamma samples.

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