

Contribution ID: 861

Type: Poster

Model-independent test of T violation in neutrino oscillations

As a function of the baseline L, neutrino oscillation probabilities are linear combinations of $\sin^2(\omega L)$ and $\sin(2\omega L)$, with oscillation frequencies ω that depend on the neutrino energy. Even though the frequencies depend on the oscillation model, in general the presence of L-odd terms in the probability requires the existence of Time Reversal Violation. We propose a χ^2 test of T violation based on fitting oscillation data at a given energy to the functional form of the oscillation probability P(L) with and without the L-odd terms. A large $\Delta \chi^2$ between these two cases would show that L-odd terms are necessary to describe the data, and thus signal the presence of T violation. We use expected number of events at compatible energies in future accelerator neutrino experiments to illustrate that such a test can be applied at planned next-generation experiments. This allows to search for T violation in a largely model independent way, since the argument applies to a wide class of beyond-standard model scenarios.

First author

Alejandro Segarra

Email

Alejandro.Segarra@kit.edu

Collaboration / Activity

Primary authors: SEGARRA, Alejandro (KIT); SCHWETZ-MANGOLD, Thomas (KIT)

Presenter: SEGARRA, Alejandro (KIT)

Session Classification: T04: Neutrino Physics

Track Classification: Neutrino Physics