



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 3643

Type: **Oral (Non-Student) / Orale (non-étudiant(e))**

Long-baseline neutrino oscillation analysis at the T2K experiment using a Bayesian framework

Wednesday 21 June 2023 15:00 (15 minutes)

The Tokai-to-Kamioka (T2K) long-baseline neutrino experiment measures neutrino-flavor oscillation parameters using the three-flavor oscillation model parameterized by the PMNS matrix. The measurement is performed by sampling the JPARC (anti)neutrino beam by various detectors at a near detector complex before oscillations and at a far detector after oscillations. A critical part of the data analysis is the fit machinery that finds the best compatibility of the model with many parameters (neutrino interaction, flux, detector, and oscillation model parameters) and the neutrino scattering data. T2K uses several approaches to fit the data that are frequently cross-checked against each other. In this talk, the Bayesian analysis approach is presented, which performs a joint near-far detector fit and uses a Markov Chain Monte Carlo sampling.

Keyword-1

neutrino oscillation

Keyword-2

CP-violation

Keyword-3

Bayes theorem

Author: Dr RADICS, Balint

Presenter: Dr RADICS, Balint

Session Classification: (PPD) W2-1 DM / Neutrino 3 | DM / Neutrino 3 (PPD)

Track Classification: Technical Sessions / Sessions techniques: Particle Physics / Physique des particules (PPD)