Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Exploring Neutrino Oscillation Parameter Space with a Monte Carlo Algorithm HUGO ESPEJEL, Fisk University, DAVID ERNST, Vanderbilt University, BERNADETTE COGSWELL, Princeton University, DAVID LATIMER, University of Puget Sound — The χ^2 (or likelihood) function for a global analysis of neutrino oscillation data is first calculated as a function of the neutrino mixing parameters. A computational challenge is to obtain the minima or the allowed regions for the mixing parameters. The conventional approach is to calculate the χ^2 (or likelihood) function on a grid for a large number of points, and then marginalize over the likelihood function. As the number of parameters increases with the number of neutrinos, making the calculation numerically efficient becomes necessary. We implement a new Monte Carlo algorithm (D. Foreman-Mackey, D. W. Hogg, D. Lang and J. Goodman, Publications of the Astronomical Society of the Pacific, **125** 306 (2013)) to determine its computational efficiency at finding the minima and allowed regions. We examine a realistic example to compare the historical and the new methods.

Hugo Espejel
Fisk University

Date submitted: 09 Jan 2015 Electronic form version 1.4