Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Optimizing the Neutrino Interaction Simulation of MicroBooNE[1]
RICHARD DIURBA, University of Minnesota, MICROBOONE COLLABORATION — MicroBooNE is a liquid argon time projection chamber with a focus on measuring neutrino-argon cross sections and investigating the anomalous excess of electron-like low-energy neutrino events reported by MiniBooNE. It uses GENIE version three for its neutrino interaction simulation, more specifically the GENIE out-of-the-box G18_10a_02_11a tune. To ensure the simulation agrees well with real-world data, MicroBooNE tunes parameters associated with the charged current (CC) quasi-elastic and meson exchange current cross sections to external data from T2K. The presentation will discuss how MicroBooNE tunes these parameters using T2K CC data with zero pions in the final state to form the MicroBooNE GENIE tune currently used by the electron-like low-energy excess searches. It will then discuss how systematic uncertainties associated with the simulation are quantified by considering the spread of possible parameter values acquired from the fit to external data.

[1]This document was prepared using resources from the Fermi National Accelerator Laboratory (FermiLab)

Richard Diurba
University of Minnesota

Date submitted: 07 Jan 2021 Electronic form version 1.4