Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Could deficient knowledge in the ^{235,238}U and ^{239,241}Pu antineutrino spectra explain the reactor neutrino anomaly?[1] ALEJANDRO SONZOGNI, Brookhaven National Laboratory, ROSS MACFADYEN, Department of Physics, Bard College at Simon's Rock, ELIZABETH MCCUTCHAN, Brookhaven National Laboratory — The Daya Bay, Double Chooz and RENO collaborations have reported measurements of Inverse Beta Decay antineutrino spectra generated by nuclear reactors. Their results have not only confirmed an electron antineutrinos deficit of about 5% at short distances with respect to our current best models, but also revealed a spectrum distortion characterized by an overprediction at the top of the spectrum and an underprediction at around 5 MeV. Our numerical accounting of the antineutrino spectrum generated by a nuclear reactor is based on the electron spectra measured by ILL for ^{235}U and ^{239,241}Pu, the conversion of these electron spectra into the corresponding antineutrino spectra and the calculation of the ^{238}U antineutrino spectrum using nuclear databases. Here we explore if uncorrelated or correlated adjustments to the spectra of these four fissile isotopes are consistent with the data available, by describing the evolution of the adjusted models as a function of fuel burnup and comparing the adjusted antineutrino spectra to their corresponding electron ones via a novel reverse conversion process.

[1]Work at BNL was sponsored by the Office of Nuclear Physics, Office of Science of the U.S. Department of Energy under Contract No. DE-AC02-98CH10886, and by the DOE Office of Science, WDTS Office, SULI Program.

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Date submitted: 02 Jul 2019 Electronic form version 1.4