



Contribution ID: 149

Type: parallel talk

Three Twin Neutrinos: Evidence from LSND and MiniBooNE

Monday 9 May 2016 18:00 (15 minutes)

We construct a model with three twin neutrinos in light of the neutrino appearance excesses at LSND and MiniBooNE. The model, which includes a twin parity, naturally predicts identical lepton Yukawa structures in the Standard Model and the twin sectors. As a result, a universal mixing angle controls all three twin neutrino couplings to the Standard Model charged leptons. This mixing angle is predicted to be the ratio of the electroweak scale over the composite scale of the Higgs boson and has the right order of magnitude to fit the data. The heavy twin neutrinos decay within the experimental lengths into active neutrinos plus a long-lived Majoron and can provide a good fit, at around 4σ confidence level, to the LSND and MiniBooNE appearance data while simultaneously satisfying the disappearance constraints. For the Majorana neutrino case, the fact that neutrinos have a larger scattering cross section than anti-neutrinos provides a natural explanation to MiniBooNE's observation of a larger anti-neutrino appearance excess.

Summary

Authors: STEFANEK, Benjamin (University of Wisconsin Madison); SALVADO, Jordi (University of Wisconsin Madison); LU, Ran; LU, Sida (University of Wisconsin Madison); BAI, Yang (University of Wisconsin, Madison)

Presenter: STEFANEK, Benjamin (University of Wisconsin Madison)

Session Classification: Neutrinos