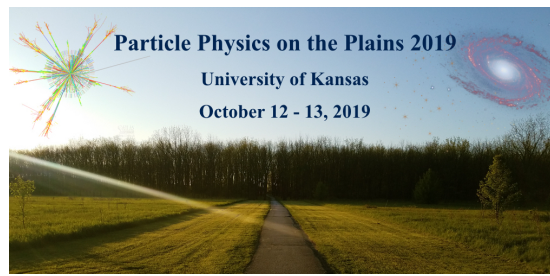


Particle Physics on the Plains 2019



Contribution ID: 16

Type: **not specified**

Non-Standard Interactions in Radiative Neutrino Mass Models

Sunday 13 October 2019 11:30 (20 minutes)

Models of radiative Majorana neutrino masses require new scalars and/or fermions to induce lepton number violating interactions. We show that these new particles also generate observable neutrino nonstandard interactions (NSI) with the matter. We classify radiative models as type-I or II, with type-I models containing at least one Standard Model (SM) particle inside the loop diagram generating neutrino mass, and type-II models having no SM particle inside the loop. While type-II radiative models do not generate NSI at tree-level, popular models which fall under the type-I category are shown, somewhat surprisingly, to generate observable NSI at tree-level, while being consistent with direct and indirect constraints from colliders, electroweak precision data and charged lepton flavor violation (cLFV). We survey such models where neutrino masses arise at one, two and three loops. The most stringent constraints on the diagonal NSI are found to come from neutrino oscillation and scattering experiments, while the off-diagonal NSI are mostly constrained by low-energy processes, such as atomic parity violation and cLFV.

Authors: THAPA, anil (Oklahoma State University); Dr JANA, Sudip (Department of Physics, Oklahoma State University); Prof. BABU, Kaladi (Oklahoma State University); DEV, Bhupal (Washington University in St. Louis)

Presenter: THAPA, anil (Oklahoma State University)

Session Classification: Neutrinos