



Contribution ID: 195

Type: Poster

Neutrino-Dark Matter Connections in Gauge Theories

We discuss the connection between the origin of neutrino masses and the properties of dark matter candidates in the context of gauge extensions of the Standard Model. We investigate minimal gauge theories for neutrino masses where the neutrinos are predicted to be Dirac or Majorana fermions. We find that the upper bound on the effective number of relativistic species provides the strongest constraint in the scenarios with Dirac neutrinos. In the context of theories where the lepton number is a local gauge symmetry spontaneously broken at the low scale, the existence of dark matter is predicted from the condition of anomaly cancellation. Applying the cosmological bound on the dark matter relic density, we find an upper bound on the symmetry breaking scale in the multi-TeV region. These results imply that we could test simple gauge theories for neutrino masses at current or future experiments.

Mini-abstract

Interplay between origin of neutrino masses and properties of dark matter in gauge SM extensions

Primary author: PLASCENCIA, Alexis (Case Western Reserve University)

Co-authors: MURGUI, Clara (IFIC, University of Valencia); FILEVIEZ PEREZ, Pavel (Case Western Reserve University)

Presenter: PLASCENCIA, Alexis (Case Western Reserve University)

Session Classification: Poster session 4