

Phenomenology 2020 Symposium



Contribution ID: 1049

Type: Parallel Talk

Neutrino Non-Standard Interactions via Light Scalars

Monday 4 May 2020 15:15 (15 minutes)

Non-standard interactions (NSI) of neutrinos with matter mediated by a scalar field would induce medium-dependent neutrino masses which can modify oscillation probabilities. Generating observable effects requires an ultra-light scalar mediator. I'll talk about general results for the scalar NSI using techniques of quantum field theory at finite density and temperature, including the long-range force effects, and discuss various limiting cases applicable to the neutrino propagation in different media, such as the Earth, Sun, supernovae and early universe. By combining all the constraints on the NSI parameters, it is shown that observable scalar NSI effects, although precluded in terrestrial experiments, are still possible in future solar and supernovae neutrino data.

Summary

Author: CHAUHAN, Garv (Washington University in St. Louis)

Co-authors: BABU, Kaladi (Oklahoma State University); Prof. DEV, Bhupal (Washington University in St. Louis)

Presenter: CHAUHAN, Garv (Washington University in St. Louis)

Session Classification: Neutrinos I

Track Classification: Neutrinos