

Special Issue on New Physics Landmarks: Dark Matter and Neutrino Masses

CALL FOR PAPERS

The standard model of particle physics provides the most accurate description of nature and has successfully passed several precision tests. However, there are two major observational evidences for going beyond the standard model. One is the existence of neutrino masses through the observation of neutrino oscillations, and the other comes from several cosmological and galactic observations indicating the presence of dark matter in our universe.

Since the existence of neutrino masses has been established, the key open question lies in the mechanism responsible for generating neutrino masses. Moreover, these mechanisms are often tied to several other phenomena such as lepton flavor violation and leptogenesis. Therefore, it is important to understand the mechanism behind the generation of neutrino masses as well as the consequences in a broad sense. Moreover, the existence of some exotic type of matter that does not emit electromagnetic light, known as dark matter, is one of the most puzzling problems in science, since this exotic matter constitutes about 80% of the entire matter budget in our universe and plays a crucial role in the evolution of our universe.

Consequently it is timely sensitive to revisit the theoretical foundations of these two new physics landmarks. Besides opening up space for theoretical constructions and experimental reports, this open call aims at attracting works also focused on the complementarity between these two observables. In some scenarios, neutrino masses are tied to the dark matter problem while featuring gripping phenomenology.

Potential topics include but are not limited to the following:

- ▶ Mechanisms for generating neutrino masses
- ▶ Phenomenological studies of neutrino physics including mass differences and mixing angles
- ▶ Dark matter model building
- ▶ Phenomenological studies of the dark matter models including direct, indirect, and collider probes
- ▶ Complementarity between neutrino and dark matter physics

Authors are expected to deposit their manuscript in the arXiv pre-print server prior to submission, under the relevant high energy physics subject area: Experiment (hep-ex), Lattice (hep-lat), Phenomenology (hep-ph), or Theory (hep-th). Articles that are rejected by arXiv for these categories are unlikely to be suitable for the journal.

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/ahep/nplm/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Farinaldo Queiroz, Max Planck Institute for Nuclear Physics, Heidelberg, Germany
farinaldo.queiroz@iip.ufrn.br

Guest Editors

Jose W. F. Valle, University of Valencia, Valencia, Spain
valle@ific.uv.es

Yann Mambrini, LPT Orsay, Orsay, France
yann.mambrini@th.u-psud.fr

Giorgio Arcadi, Max Planck Institute for Nuclear Physics, Heidelberg, Germany
arcadi@mpi-hd.mpg.de

Submission Deadline

Friday, 13 April 2018

Publication Date

August 2018