Contribution ID: **50** Type: **Oral**

Self-interacting dark matter, muon g-2, and neutrino physics in a gauged Lmu-Ltau model

Friday, 29 June 2018 17:00 (30 minutes)

Our current understanding of the large-scale structure of the Universe is based on the cold dark matter model. Observed small-scale (sub-galactic) matter distribution, on the other hand, appears to challenge this standard paradigm.
Self-interaction between dark matter particles reconciles small-scale issues by flattening the dark matter density profile inside halos.
I will present a particle physics model of self-interacting dark matter with the cross section diminishing with increasing velocity, which maintains the success of the cold dark matter model above galactic scales.
The model is based on a gauged Lmu-Ltau extension of the standard model, where the mu and tau leptons and neutrinos in addition to dark matter particles couple to a new gauge boson.
Interestingly, it ameliorates the discrepancy of the measured muon g-2 with the standard model prediction and the small-scale issues in the structure formation at the same time.
I will demonstrate how the neutrino physics experiments, such as Borexino (solar neutrino experiment), IceCube (high-energy neutrino observatory), and Planck (cosmological measurement of effective number of neutrino degrees of freedom), constrain its parameter space.

Primary author: KAMADA, Ayuki (IBS-CTPU)

Co-authors: YU, Hai-bo (University of California, Riverside); YANAGI, Keisuke (University of Tokyo); KANETA, Kunio (University of Minnesota)

Presenter: KAMADA, Ayuki (IBS-CTPU)

Session Classification: Parallel Session 2-2