Contribution ID: **81** Type: **talk**

Self-interacting Dark Matter with Scalar Dilepton Mediator

Monday, 12 July 2021 16:15 (15 minutes)

The cold dark matter (CDM) candidate with weakly interacting massive particles can successfully explain the observed dark matter relic density in cosmic scale and the large-scale structure of the Universe. However, a number of observations at the satellite galaxy scale seem to be inconsistent with CDM simulation.
This is known as the small-scale problem of CDM.
In recent years, it has been demonstrated that self-interacting dark matter (SIDM) with a light mediator offers a reasonable explanation for the small-scale problem.
We adopt a simple model with SIDM and focus on the effects of Sommerfeld enhancement.
In this model, the dark matter candidate is a leptonic scalar particle with a light mediator.
We have found favored regions of the parameter space with proper masses and coupling strength generating a relic density that is consistent with the observed CDM relic density.
Furthermore, this model satisfies the constraints of recent direct searches and indirect detection for dark matter as well as the effective number of neutrinos and the observed small-scale structure of the Universe.
In addition, this model with the favored parameters can resolve the discrepancies between astrophysical observations and N-body simulations.

Are you are a member of the APS Division of Particles and Fields?

Yes

Primary author: KAO, Chung (University of Oklahoma)

Presenter: KAO, Chung (University of Oklahoma)

Session Classification: Dark Matter

Track Classification: Dark Matter