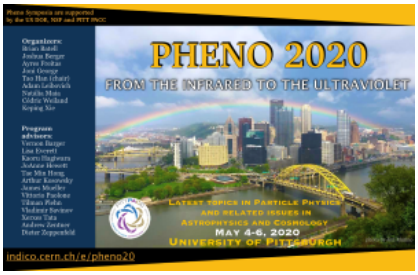

Contribution ID: **954** Type: **Parallel Talk**

Co-SIMP Miracle

Tuesday 5 May 2020 17:45 (15 minutes)

I will present a new mechanism for thermally produced dark matter, based on a semi-annihilation-like process, $\chi + \chi + \mathrm{SM} \longrightarrow \chi + \mathrm{SM}$, with intriguing consequences for the properties of dark matter. First, its mass is low, ⊠ 1 GeV (but ⊠ 5 keV to avoid structure-formation constraints). Second, it is strongly interacting, leading to kinetic equilibrium between the dark and visible sectors, avoiding the structure-formation problems of $\chi + \chi + \chi \longrightarrow \chi + \chi$ models. Third, in the $3 \longrightarrow 2$ process, one dark matter particle is consumed, giving the standard-model particle a monoenergetic recoil. We show that this new scenario is presently allowed, which is surprising (perhaps a "minor miracle"). However, it can be systematically tested by novel analyses in present and near-term experiments.

Summary

Authors: SMIRNOV, Juri (Ohio State University, CCAPP); Prof. BEACOM, John (Ohio State University)

Presenter: SMIRNOV, Juri (Ohio State University, CCAPP)

Session Classification: DM IV

Track Classification: Dark Matter