



Contribution ID: 51

Type: Oral

Empirical Determination of Dark Matter Velocity Distribution Using Metal Poor Stars

Thursday, 10 August 2017 14:00 (15 minutes)

In this talk, I will show that metal poor halo stars have similar kinematics as dark matter in the solar neighborhood, using the hydrodynamic zoom-in simulation Eris of the Milky Way. Within this expectation, I extract the first empirically-determined dark matter velocity distribution using the velocity dispersions of the halo stars as measured by the Sloan Digital Sky Survey, and show that using this newly-found velocity distribution, the direct detection limits on dark matter scattering off nuclei are loosened by almost an order of magnitude at low dark matter masses.

Primary author: NECIB, Lina (MIT)

Co-authors: LISANTI, Mariangela (Stanford University); Prof. MADAU, Piero (UC Santa Cruz); HERZOG-ARBEITMAN, Jonah (Princeton University)

Presenter: NECIB, Lina (MIT)

Session Classification: Dark matter

Track Classification: Dark matter (direct detection, indirect detection, theory, etc.)