

An Improved Signal Model for Axion Dark Matter Searches

Tuesday 16 May 2017 09:55 (20 minutes)

To date, most direct detection searches for axion dark matter, such as those by the Axion Dark Matter Experiment (ADMX) microwave cavity search, have assumed a signal shape based on an isothermal spherical model of the Milky Way halo. Such a model is not capable of capturing contributions from realistic infall, nor from a baryonic disk. Modern N-Body simulations of structure formation can produce realistic Milky Way-like halos which include the influences of baryons, infall, and environmental influences. An analysis of the Romulus25 N-Body simulation shows that the axion signals from MW-like halos are narrower than the SHM by nearly a factor of two, which has important implications for cavity searches. An improved signal shape and an account of the relevant halo dynamics are also given.

Primary author: Mr LENTZ, Erik (University of Washington)

Presenter: Mr LENTZ, Erik (University of Washington)

Session Classification: Session 5