

Scalar field dark matter with ϕ^6 self-interaction

Tuesday, 24 December 2019 11:55 (20 minutes)

The ultralight dark matter (ULDM) model proposes as DM particles candidates bosons with typical mass 10^{-22} eV, such that its de Broglie wavelength is of galactic scale (\sim kpc). The ULDM was among the models, that were proposed to resolve CDM tensions on the small scales, such as core-cusp and missing satellite problem. However last times it faces some difficulties between observed spiral galaxies rotation curves and the model's predictions, if one takes into account core/host halo mass relation and the relation between mass and radius of a central core, that follows from simulations. In the present work, we consider complex scalar field minimally coupled to gravity with ϕ^6 self-interaction potential. We will discuss this model's predictions including DM density distribution in the galactic halo and its potential regarding solving the above-mentioned problems.

Primary author: Ms KHELASHVILI, Mariia (Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine, Kyiv)

Presenter: Ms KHELASHVILI, Mariia (Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine, Kyiv)

Session Classification: Astrophysics and Cosmology

Track Classification: Astrophysics and Cosmology