



量子物理学・ナノサイエンス第 359 回セミナー

Ultralight Dark Matter and the Formation of Gravitational Atoms

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- 日程** : 4月12日(水) 16:30-18:00
- 場所** : 本館2階 290 物理学系輪講室

概要

Dark matter is a cornerstone of our understanding of cosmology and astrophysics, yet its particle identity remains unknown. In this talk, I will discuss a broad class of models, known as ultralight dark matter (ULDM), with masses below the eV scale and which give rise to large-scale wave dynamics of dark matter in galaxies. As a consequence, the ULDM field in the vicinity of stars (including our Sun) can be amplified by gravitational focusing and Bose enhancement, leading to increased capture rates into states we call gravitational atoms, due to their similarity to atomic states. The resulting large dark matter densities at the position of the Sun, the Earth, and other astrophysical bodies have unique consequences for terrestrial, space-based, and astrophysical search prospects, which are highly complementary in their detection capabilities and can cover large regions of ULDM parameter space.

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