

SPEAKER:

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TITLE:

Ultra-light boson particles as dark matter candidates: boson mass and self-interaction

ABSTRACT:

I will present details about the possibility that ultra-light bosons could be the dark matter, from large scales down to galactic scales in the Universe. Using numerical solutions, and the classical scalar field approximation, I will show the constraints that cosmological observations impose upon the boson mass and its quartic self-interaction in the cases of axion and cosh potentials. I will also comment on the consequences of this scalar field hypothesis for the formation of galaxies, in particular the growth of linear density perturbations, and the case of satellite galaxies in the Milky Way. At the end, I will present an overall assessment of the viability of this model to be the dark matter component.

REFERENCES

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2. Unbiased constraints on ultralight axion mass from dwarf spheroidal galaxies. Alma X. González-Morales et al, Mon.Not.Roy.Astron.Soc. 472 (2017) no.2, 1346-1360. e-Print: arXiv:1609.05856 [astro-ph.CO]
3. Cosmological signatures of ultralight dark matter with an axionlike potential. Francisco X. Linares et al, Phys.Rev. D96 (2017) no.6, 061301. e-Print: arXiv:1703.10180 [gr-qc]
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