



Contribution ID: 104

Type: **not specified**

## Aspects of Light Scalar Dark Matter

*Wednesday 2 February 2022 15:00 (1h 20m)*

I discuss various aspects of very light scalar dark matter, including axions. I begin by reviewing the properties of light scalar dark matter in superfluid condensates, and the relation to classical field theory. I review how such condensates are spatially localized clumps, which may be present in the galaxy. I then discuss the interesting possibility of parametric resonance of scalar axion clumps into electromagnetic waves, after mergers, which may leave an astrophysical signature. I also critically examine whether ultra-light scalars can resolve the core-cusp problem at the center of galaxies. I discuss the rate of decoherence of dark matter scalars that are in non-trivial quantum states. Finally, I examine the theoretical consistency of scalar dark matter models with non-standard interactions that address novel galactic features.

**Presenter:** HERTZBERG, Mark (Tufts University)