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Aspects of Dark Matter Axion Clumps

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In this talk I begin by reviewing how dark matter axions can undergo Bose-Einstein condensation and why this is captured by classical field theory. I explain that such condensates are spatially localized clumps, as they are organized by gravitation and self-interactions, and they may populate the galaxy. I discuss both the ground state and finite angular momentum states. Also, I comment on using ultra-light axions to resolve the cusp-core problem at the center of galaxies. I then discuss the possibility of parametric resonance of these axion clumps into electromagnetic waves, which may leave an astrophysical signature.

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