# Fuzzy Dark Matter and Cosmology

[X-Ray:NASA/CXC/UMass/D. Wang et al.; Radio:NRF/SARAO/MeerKAT]

**Bodo Schwabe** is a PostDoc Researcher at CAPA, focused on dark matter, axions and numerical simulations.

**Abstract**: On linear scales much larger than the typical extend of galaxies the standard model of cosmology with cold dark matter and a cosmological constant can reproduce observational data with high precision. But there are potential difficulties on galactic scales. In this 50 minutes master level lecture I will present the main concepts of fuzzy dark matter, a well motivated dark matter candidate that reproduces the successes of cold dark matter on large scales, while implying unique observable features like solitons and interference patterns within halos and filaments. During the lecture I will derive the equations of motion governing the evolution of fuzzy dark matter, concentrating on their physical implications. While conceptionally simply, solving these non-linear equations requires intensive numerical computations. Alongside the theoretical considerations I will therefore present numerical methods that have been used to analyse non-linear dynamics of fuzzy dark matter on (sub-)galactic scales

Jueves 4 de noviembre, 12 horas, seminario de Física Nuclear

On-line

CAPA Centro de Astropartículas y Física de Altas Energías
Universidad Zaragoza