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## Narrowing down the mass range of ultra-light dark matter

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The nature of dark matter remains one of the biggest mysteries in cosmology. Among the many possible candidates, one of the most well-motivated class of models and leading candidate is the ultra-light dark matter (ULDM). ULDM represents the lightest possible dark matter candidates and exhibits wave-like behavior on galactic scales, offering a unique opportunity to probe its properties through distinctive astrophysical signatures. In this talk, I will discuss the latest efforts to constrain the mass of ULDM, focusing on the fuzzy dark matter (FDM) model. I will show how we can use the different predictions of this model and different astrophysical systems to put the strongest bounds to date on the mass of this ultra-light axion, and possibly other quantities like the fraction, spin, and axion-photon coupling. I will focus more on the current developments in using interference patterns as a way to probe the FDM model. In particular using gravitational lensing and pulsar timing data as a powerful probe to measure this wave behaviour.

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