

## Abstract: Cosmic probes of dark matter

Cosmological and astrophysical measurements provide clear evidence for the the existence of dark matter, and in recent years they have started to map dark matter over large volumes of the cosmos. At the same time, we still do not know much about the interaction properties of the dark matter particle(s?), and the possible mass of the particle could still span nearly 90 orders of magnitude. I will review a variety of cosmic probes of dark matter, and show how they are starting to provide insight into the microphysical properties of the dark matter particle itself. These include tracers as diverse as exoplanets, dwarf galaxies, neutron stars, clusters, and large-scale structure, which probe the properties of dark matter halos and extreme environments. I will focus on new probes of small-scale structure, including dwarf galaxies, which already provide very interesting constraints on these properties. Large multi-wavelength astrophysical surveys coming online this decade will accelerate this search, in a way that is complementary to other dark matter probes.