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Non-WIMP dark matter in cosmology

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The nature of dark matter is one of the major "known unknowns" of the physics of the Universe. There exists a zoo of hypothesized dark-matter candidates, each of which has a set of properties that determine the prospects for detecting and identifying it. The physical properties of these dark-matter candidates may leave unique signatures in formation and evolution of dark-matter halos and galaxies. In this talk, I will show how to classify dark-matter candidates in by cosmologically relevant phenomenological parameters. I demonstrate how dark-matter physics affects the growth of structure in the Universe, and what kinds of astronomical observations may be employed to constrain the particle properties of dark matter.