

Invited talk

Small-scale cosmology with dwarf galaxies

Oliver Muller (oliver.muller@astro.unistra.fr, oliver@oliver-mueller.ch)
Observatoire astronomique de Strasbourg, University of Strasbourg, France

Dwarf galaxies are powerful testbeds to study cosmology on small-scales. In the Local Group, several discrepancies between theoretical predictions and observations of dwarfs have been identified and dubbed as a small-scale crisis. One of the most severe is the so-called plane-of-satellite problem, which describes the peculiar distribution and motion of dwarf galaxies around the Milky Way and the Andromeda galaxy. To extend these studies, we have conducted – and will conduct – several surveys with a multitude of small and large telescopes to probe other nearby galaxy groups and search for dwarf galaxies, ultra-diffuse galaxies, and tidal features. In my talk, I will provide evidence that some small-scale problems persist in other galaxy groups, most notably in the Centaurus A group. And more, I will present how a recently developed algorithm for medical image analysis can help us discover low-surface brightness features in astronomical images and can be used to process large ongoing and upcoming surveys to get a better census of satellite systems to study cosmology on small-scales.