

Hunting small dark matter halos in strongly lensed images with backpropagation

Tuesday, 8 October 2019 10:00 (30 minutes)

The analysis of strongly gravitationally lensed radio and optical images has the potential to probe dark matter (sub-)halos with masses several orders of magnitude below the mass of dwarf spheroidal galaxies. However, correctly analyzing these images is a rather complex task, since it requires a careful stochastic modeling of the source, the lense, and the instrumental characteristics. Expected observations with, e.g., the planned ELT, make it particularly urgent to develop new analysis techniques that allow a fast, accurate and flexible analysis of strongly lensed images. I will here discuss several ways in which both deep neural networks and differentiable probabilistic programming might be able to drastically improve the way in which upcoming images will be analysed, pathing the way for confirmation or falsification of the cold dark matter paradigm.

Presenter: WENIGER, Christoph (University of Amsterdam)

Session Classification: Session 3