



Contribution ID: 22

Type: **not specified**

Constraining Dark Matter models with extremely distant galaxies

The investigation of distant galaxy formation and evolution is a powerful tool to constrain dark matter scenarios, supporting and in some cases surpassing other astrophysical and experimental probes. The recent completion of the Hubble Frontier Field (HFF) programme combining ultra-deep Hubble Space Telescope observations and the magnification power of gravitational lensing produced by foreground galaxy clusters has enabled the detection of the faintest primordial galaxies ever studied. In this talk I will show how the number density of such primordial galaxies enables to constrain a variety of DM models alternative to CDM. In particular, it provides stringent limits on the mass of thermal WDM candidates, and on the parameter space of sterile neutrino production models, and other DM scenarios featuring particles in the keV mass range which is also supported by recent detections of a 3.5keV X-ray line.

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