

Towards an Effective Theory Of Structure formation (ETHOS)

Wednesday 27 July 2016 10:00 (30 minutes)

Although there is substantial gravitational evidence for the existence of dark matter, its particle nature remains one of the biggest mysteries in modern physics. The favourite theoretical model, Cold Dark Matter (CDM), assumes that non-gravitational dark matter interactions are irrelevant for galaxy formation and evolution.

Surprisingly, current astronomical observations allow significant departures from the CDM hypothesis that have a relevant impact on our understanding of how galaxies form and evolve. Moreover, the observed properties of the smallest galaxies have been a consistent challenge for the CDM model.

In this talk, I will argue that to explain galaxy formation and evolution in the broadest sense, an effective dark matter theory must contain a wider range of dark matter particle physics. I will describe the first steps we have taken towards developing ETHOS and present some of its applications.

Summary

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Track Classification: Alternatives to LambdaCDM Cosmology