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Spherically symmetric Einstein-aether gravity

Wednesday 17 July 2024 18:10 (20 minutes)

In this talk, I will address the Einstein-aether theory (EAE). This theory is an ancestor to the aether-scalar-tensor theory (AEST), which is currently considered the most promising relativistic completion of Modified Newtonian Dynamics (MOND). By studying EAE, we can gain valuable insights into the more complicated AEST. First, I will present a new a gauge freedom within the spherically symmetric solutions to EAE theory, which simplifies the analysis of a toy model of stars. Next, I will derive the EAE version of Buchdahl's theorem, revealing an unexpected trend for a larger coupling constant. Following this, I will discuss galaxy rotation curves and galaxy clusters, where we discovered a scaling relation between EAE and Newtonian profiles. This relation could provide new perspectives on the missing baryon problem of MOND. These findings pave the way for future investigations of AEST.

Presenter: Mr HSU, Arthur Yi-Hsiung (University of Cambridge)

Session Classification: Student talks