

MOND: An alternative to particle dark matter

Tuesday, 9 July 2024 14:00 (20 minutes)

Milgromian dynamics (MOND) is a major alternative to non-baryonic particle dark matter, proposed by Moti Milgrom in 1983. In this invited talk, I will review the multiple successful predictions that MOND had on galaxy scales, as well as the long-standing challenges it faces on galaxy-cluster and cosmological scales. In particular, I will describe the dynamical regularities and empirical laws followed by rotating galaxies, which point to the existence of a characteristic acceleration scale in the dark matter problem. I will also discuss recent progress in building relativistic extensions of MOND, which allow reproducing the cosmic microwave background, the linear matter power spectrum, and the correct propagation speed of gravitational waves.

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