

Theory: Can General Relativity Play a Role in Galactic dynamics?

Monday, September 4, 2023 3:15 PM (15 minutes)

There have been some recent claims about the impact of general relativistic corrections on the dynamics of galaxies, with possible implications for their dark matter content. We examine and analyze the proposed models to discuss their reliability and limitations. Then, we focus on the properties of an exact solution of Einstein's equations describing a self-gravitating system, made of dust, distributed with axial symmetry and in stationary rotation, and discuss its non-Newtonian behavior: we suggest that if this system can be used as simplified model for a galaxy, its dynamics, i.e. the rotation curves, can be determined by peculiar relativistic effects.

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