

Gravitational Geometry and Dynamics Group Seminar

Wed., September 18th, 2024, at 11h00.

Room: Sala Sousa Pinto and Zoom ID: 955 4130 8539

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Complex structures of boson stars and anisotropic distribution of satellite galaxies

We construct and explore Noether charge-swapping structures of boson stars, drawing inspiration from similar configurations of non-topological solitons in Minkowski space (Charge-swapping Q-balls). The resulting structures are dynamic, with a multipolar structure and both positive and negative Noether charges within a star. The opposite charges are exchanged over time, and thanks to gravitational attraction, they exist even in the case of a free scalar field. We also investigate the effects of self-interactions on these complex structures. Finally, we discuss the use of such charge-swapping boson star models on a galactic scale as a potential solution to the problem of the observed anisotropic distribution of satellite galaxies.