



## Stability analysis of I-Proca stars

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Vector boson stars, aka Proca stars, enjoy a dynamical robustness that makes them viable candidates for exotic compact objects that: (1) could deal with the problem of degeneracy in the interpretation of strong gravity data against the black hole paradigm, and (2) could constitute part of dark matter. In this talk, I will present our first steps to enlarge the solution space of Proca stars by proposing new multi-field solutions with a richer inner multi-polar structure. First, I will introduce the multi-field generalization of the spherical Proca star, the ell-Proca star, and then, perform a stability analysis using 3D numerical relativity simulations implemented using the Einstein Toolkit infrastructure, showing that these configurations are unstable under non-spherical perturbations, loss their spherical symmetry and migrate to a new state with prolate morphology.

- **Presenter:** Claudio Lazarte

- **Key words:** Bosonic stars, numerical relativity, general relativity