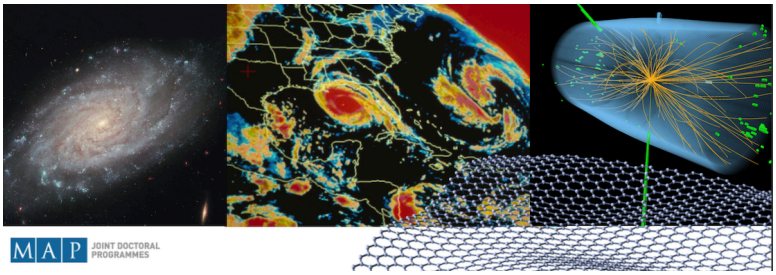

Contribution ID: **117** Type: **Contributed Talk (20 minutes)**

THE NON-SPHERICAL GROUND STATE OF PROCA STARS

Friday 11 October 2024 16:35 (20 minutes)

Spherical Proca Stars (PSs) are regarded as the ground state amongst the family of PSs. In accordance, spherical PSs are thought to have a fundamental branch of stable solutions.We provide energetic, morphological and dynamical evidence that spherical PSs are actually excited states. The ground state is shown to be a family of static, non-spherical, in fact prolate, PSs. The spherical stars in the fundamental branch, albeit stable against spherical perturbations, turn out to succumb to non-spherical dynamics, undergoing an isometry breaking into prolate PSs. We also provide evidence for the dynamical formation of prolate PSs, starting from spherical dilute initial data, via gravitational cooling. Consequently, PSs provide a remarkable example of (possibly compact) relativistic stars, in General Relativity minimally coupled to a simple, physical, field theory model, where staticity plus stability implies non-sphericity.

Which topic best fits your talk?

Astrophysics

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