12th Iberian Gravitational Waves Meeting



Contribution ID: 23

Type: Contributed Talk (20 minutes)

A numerical-relativity gravitational-wave catalogue of spinning Proca-star collisions

Tuesday 7 June 2022 12:00 (20 minutes)

We have performed a systematic study of the dynamics and the emission of gravitational radiation in head-on collisions of dynamically robust spinning vector boson stars, {\it aka} Proca stars. We find that the wave-like nature of bosonic stars has large impact on the gravitational-wave emission. The energy emitted in gravitational waves critically depends on the difference between the oscillation frequencies of the primary and secondary stars $\Delta\omega/\mu = (\omega_1 - \omega_2)/\mu$ in a non-monotonic way. In the unequal-mass case we observe a periodic modulation of the radiated energy as a function of ω_2/μ of the secondary star with fixed ω_1/μ that we relate to constructive and destructive interference due to the interaction of the Proca field with itself.

Which topic best fits your talk?

GW Theory and Fundamental Physics

Primary author: SANCHIS-GUAL, Nicolas Presenter: SANCHIS-GUAL, Nicolas