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Title: Ultralight bosons for strong gravity applications from simple Standard Model extensions

Abstract: We discuss families of simple extensions of the Standard Model that can yield ultralight real or complex vectors or scalars with potential astrophysical relevance. Specifically, the mass range for these putative fundamental bosons ($\sim 10^{-10} - 10^{-20}$ eV) can lead dynamically to compact objects such as bosonic stars and new non-Kerr black holes, with masses ranging from 1 up to about 10^{10} solar masses, corresponding to the mass range of astrophysical black hole candidates (from stellar mass to supermassive). For each model, we study the properties of the mass spectrum and interactions after spontaneous symmetry breaking, discuss its theoretical viability as well as some of its potential and most relevant phenomenological implications linking them to the physics of compact objects.