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Searching for boson-star mergers in gravitational-wave data

Thursday 25 August 2022 14:20 (20 minutes)

Boson-stars are self-gravitating Bose-Einstein condensates of ultra-light boson fields, which are widely considered as strong candidates to account for at least part of Dark Matter. Boson-star mergers can produce gravitational-wave signals observable by current detectors such as Advanced LIGO and Virgo. I will present a systematic comparison of existing (high-mass) gravitational-wave signals to a catalog of ˜800 numerical simulations of (vector) boson-star mergers, performing model selection with respect to the canonical black-hole merger scenario. In particular I will show that the controversial event GW190521 slightly prefers the boson-star merger model over the black-hole merger one and that all analysed events yield consistent boson-mass estimates. Finally, I will present preliminar results on the potential population of these objects.

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