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Gravitational wave signatures of dark matter around binary black holes

Some of the most well-motivated extensions of the Standard Model of particle physics introduce light scalar fields to explain the origin of dark matter. These fields interact with black holes and can alter the gravitational waveforms produced by binary merger events. In this talk, I will discuss the use of numerical relativity simulations to study these signatures.

[Based on https://arxiv.org/abs/2210.09254, https://arxiv.org/abs/2311.18156, https://arxiv.org/abs/2409.01937]

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