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Search for gravitational waves from black hole hyperbolic encounters in LIGO-Virgo

Wednesday 8 June 2022 10:05 (20 minutes)

There is evidence and theoretical reasons to believe that Black Holes are densely clustered. Black holes in dense clusters will gravitationally scatter off each other in hyperbolic encounters, emitting gravitational waves that can be observed by current detectors. In this talk I will talk about the properties of the gravitational waves that are emitted in close encounters and the signal we expect to observe in the network of gravitational wave detectors currently on Earth. Using the properties of the signal, I will detail the data processing techniques, both standard and with Machine Learning methods that can be used to make the signal stand above the detector noise. Finally, I will talk about how we applied these methods to search from these hyperbolic encounters in the publicly available LIGO-Virgo data and the results that we obtained.

Which topic best fits your talk?

GW Experimental Results

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