

Abstract Submitted  
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**Chirplet Clustering Algorithm for Black Hole Coalescence Signatures in Gravitational Wave Detectors** ZACHARY NEMTZOW, University of Massachusetts Amherst, ERIC CHASSANDE-MOTTIN, APC, Univ Paris Diderot, SATYANARAYAN R.P. MOHAPATRA, LAURA CADONATI, University of Massachusetts Amherst — Within this decade, gravitational waves will become new astrophysical messengers with which we can learn about our universe. Gravitational wave emission from the coalescence of massive bodies is projected to be a promising source for the next generation of gravitational wave detectors: advanced LIGO and advanced Virgo. We describe a method for the detection of binary black hole coalescences using a chirplet template bank, Chirplet Omega. By appropriately clustering the linearly variant frequency sin-Gaussian pixels the algorithm uses to decompose the data, the signal to noise ratio SNR of events extended in time can be significantly increased. We present such a clustering method and discuss its impacts on performance and detectability of binary black hole coalescences in ground based gravitational wave interferometers.

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