Estimation of aligned search efficiency for low-mass coalescing generic spinning binary black holes in gravitational wave data NAIRWITA MAZUMDER, Washington State Univ, STEPHEN PRIVITERA, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam-Golm, Germany, PARAMESWARAN AJITH, International Centre for Theoretical Sciences, Tata Institute of Fundamental Research, Bangalore, India — In this work, we study the efficiency of the aligned spin search for the gravitational waves from coalescing binary black holes of mass $M_{\text{total}} \in [4, 16] M_\odot$ having generic spin where the spin angular momenta of the binary black holes is not specifically (anti-)aligned with the orbital angular momentum of the system. The simulated gravitational wave signals from generic spinning binary black holes are injected to real detector noise of initial LIGO era as well as to the simulated realistic noise for early advanced LIGO. We have done a comparative study between the recovery of such generic-spinning signals with aligned spin template bank and non-spinning *TaylorF2* template bank using *gstlal* search pipeline . The aligned spinning template bank is generated by the *TaylorF2RedSpin* waveform family that comprises two mass parameters and one reduced spin parameter. We construct our template bank by following stochastic template placement algorithm. The performance of the reduced spin stochastic template bank has been assessed towards both aligned and precessional low mass binary black hole systems using two weeks of initial LIGO S5 data and simulated early advanced LIGO data.

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