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BLACK HOLES BINARIES FROM GLOBULAR CLUSTERS as sources of gravitational waves

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We analyze about a thousand globular cluster (GC) models simulated using the MOCCA Monte Carlo code for star cluster evolution to study black hole - black hole interactions in these dense stellar systems that can lead to gravitational wave emission. We extracted information for all coalescing binary black holes (BBHs) that merge via gravitational radiation from these GC models and for those BHs that collide due to 2-body, 3-body and 4-body dynamical interactions. By obtaining results from a substantial number of realistic star clusters evolution models, that cover different initial parameters (masses, metallicities, densities etc) we have an extremely large statistical sample of two black holes which merge or collide within a Hubble time. We found that creation of an Intermediate Mass Black Hole (IMBH, defined as a BH with mass above $100 M_{\odot}$) in a GC's center has large influence on merger and collision rates.

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