

[GW-07] Effects of Black Hole Mass Spectrum in Dynamics of Globular Clusters

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Dynamics of a globular cluster (GC) is dominated by behaviors of high-mass components such as neutron stars or black holes (BHs). Massive components in a cluster are segregated into the cluster core and some of them are ejected by dynamical interactions. In this study, we perform N-body simulations of GCs adapting two BH mass components, $10M_{\odot}$ and $20M_{\odot}$. Previous studies which mostly assume single-mass BHs suggested a rapid collapsing and escaping of BHs. A cluster with a two-component BH mass spectrum, however, retains a large fraction of $10M_{\odot}$ BHs longer. In addition to their roles in cluster dynamics, massive components in binaries are one of important sources of gravitational waves (GWs). We investigate properties of BH binaries escaped from the cluster and discuss their implications for GW detection.
