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A fast evolution code for star clusters with stellar-mass black holes.

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Stellar-mass black holes play a crucial role in the dynamical evolution of globular clusters. In this work we discuss a fast method to evolve star clusters with varying initial black hole contents. We use the fast model clusterBH to reproduce the evolution of globular clusters in the database of Cluster Monte Carlo (CMC) models. In particular, we reproduce the evolution of the total stellar mass, the cluster half-mass radius and the total mass of the black hole population. We reproduce these time-dependent quantities within 30% for a range of initial cluster masses, cluster radii and Galactocentric radii. This fast model runs $\ll 1$ sec and has powerful applications, such as fitting initial conditions of observed clusters and forward models of gravitational wave production.

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