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The strong impact of IMF in star cluster dynamics

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Massive stars have a significant impact on the dynamical evolution of star clusters. They play a crucial role during star formation, as their radiation can push surrounding gas away and inhibit further star formation. Additionally, strong mass loss from massive stars via strong winds can rapidly reduce the gravitational potential of star clusters and trigger their fast expansion. Once these massive stars evolve into black holes, they continue to drive the expansion of the cluster by forming binary black holes at the center. In this talk, we will discuss the impact of stochastic variations in star formation and the variation of initial mass function on the dissolution of star clusters. We will utilize numerical N-body simulations to explore the potential of combining these models with observations, such as Gaia and CSST data, to constrain the initial conditions of star clusters. Specifically, we will focus on investigating the dynamical effects of massive stars and black holes and their implications for the properties of initial mass functions.

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