

BLACK HOLES IN DENSE STAR CLUSTERS
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TITLE: Formation and Evolution of Nuclear Stellar Clusters and their Structural Components

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Nuclear stellar cluster are known to exist around massive black holes (MBHs) in galactic nuclei. The properties of these extremely dense clusters are strongly related to the MBH they host, and both are likely to co-evolve together. Nuclear clusters are thought to have formed through the infall of multiple stellar clusters, and/or through in-situ star formation following gas inflow to the nucleus of the galaxy. Here we discuss the formation and long term evolution of NSCs through these channels, and explore the various dynamical processes that sculpture their structure and the interaction of NSC stellar population with the MBH they host. These include the evolution of stellar disks such as observed in the Galactic center, as well as star-formation and cluster-infall dynamics that may explain the origin of core-cusp structures. In addition we'll show how the build-up of NSCs and their evolution affect the rates and history of tidal disruption event in galaxies.