

BLACK HOLES IN DENSE STAR CLUSTERS
Aspen Center for Physics
2015 Aspen Winter Conference January 17–22, 2015

POSTER TITLE: Circumnuclear Mediums and Accretion Rates Quiescent Supermassive Black Holes

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We calculate the steady-state hydrodynamic profiles of hot gas for quiescent galaxies for a range of black hole masses, parameterized gas heating rates, and physically-motivated stellar density profiles. Mass is supplied to the circumnuclear medium (CNM) by stellar winds according to the stellar density profile, while the heating rate is related to the integrated star formation history of the galaxy. This in turn is correlated with the black hole mass, M_{\bullet} . We delineate two different regimes for the state of the CNM: (i) ($M_{\bullet} < 10^8 M_{\odot}$) ongoing star formation supplies enough heating to stabilize the solution to thermal instability and a steady state may be achieved and (ii) ($M_{\bullet} > 10^8 M_{\odot}$) there is insufficient heating to avoid thermal instability and no true steady state is possible.