

BLACK HOLES IN DENSE STAR CLUSTERS
Aspen Center for Physics
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TITLE: Binary Black Hole Accretion

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Binary black hole mergers in the presence of gaseous accretion flows are prime candidates for simultaneous observations of both gravitational waves and electromagnetic signals. I will present the results of 2D hydrodynamical simulations of circumbinary disk accretion using the finite-volume, moving mesh code DISCO. These simulations demonstrate that gas is efficiently stripped from the inner edge of the circumbinary disk and enters the cavity along accretion streams, which feed persistent “mini-disks” surrounding each black hole. I will discuss characteristic periodicity in the measured accretion rate onto each BH, as well as the dependence of the accretion flow on the binary mass ratio. I will also discuss characteristic modifications to the spectrum which arise from shock heated gas inside the circumbinary cavity. Finally, I will discuss simulations which include binary inspiral and merger due to gravitational wave emission in order to track the changes in the accretion as the orbit shrinks.