

Abstract Submitted
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Gas Dynamics of the Central Cavity during Black Hole Binary Inspiral DENNIS BOWEN, Rochester Inst of Tech — During galaxy mergers, as a result of dynamical friction (stars, gas, etc.) and gravitational slingshot, the supermassive black holes (SMBHs) from each galaxy will become gravitationally bound and eventually merge due to gravitational radiation. It is expected that gas will form a circumbinary accretion disk around the SMBH binary that will persistently feed individual mini-disks via dense streams out to their tidal truncation radii. We present simulations of SMBH binaries in this astrophysical environment during the general relativistic inspiral regime. We place particular emphasis on the dynamics of the individual mini-disks where violent shocks via disk-disk and disk-stream interactions will likely produce intense electromagnetic emission. This signal emanating from the mini-disks will likely prove instrumental in direct detection of SMBH binaries with currently available observatories.

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