

Intermediate-Mass Black Hole as a Carrier of the Young Stars in the Central Parsec of Our Galaxy

Sungsoo S. Kim

Kyung Hee University, Dept. of Astronomy & Space Science

It has been suggested that dynamical friction, which causes a star cluster to lose orbital energy and spiral in toward the galactic center, may explain the presence of a cluster of very young stars in the central parsec of our galaxy, where star formation might be prohibitively difficult because of strong tidal forces. Kim & Morris (2003) performed numerical simulations of the dynamical friction suffered by a star cluster near the Galactic center, and found that dynamical friction indeed brings a cluster to the central parsec, but this is only possible with unlikely initial cluster conditions (very large initial mass and central density). Recently, Hansen & Milosavljevic (2003) suggested that if the cluster formed outside the central parsec harbors an intermediate-mass (1,000-10,000 solar masses) black hole, the dynamical friction scenario may work with more plausible initial cluster conditions. In this poster, we present numerical simulations of the dynamical friction suffered by a cluster with an intermediate-mass black hole at the center, which have been performed with a parallelized tree code.