

BLACK HOLES IN DENSE STAR CLUSTERS
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TITLE: Dynamical Evolution of a Supermassive Binary in a Rotating Galactic Nucleus

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We have modeled the time evolution of the orbital elements of a binary supermassive black hole in the center of a rotating galactic nucleus by means of 3-body scattering experiments and Fokker-Planck formalism. The main result is the following: when the nucleus possesses some degree of rotation, there's a significant change in the orbital orientation of a supermassive binary towards alignment with the plane of rotation of the nucleus. We have also found that the eccentricity change depends on the orbital inclination: eccentricity decreases for co-rotating binaries and increases for counterrotating ones. Knowing the orbital orientation of a supermassive binary is important because it defines the orientation of the accretion disk and the spin of the merger remnant.