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Relaxation in axisymmetric stellar cusps around black holes EUGENE VASILIEV, DAVID MERRITT, Rochester Institute of Technology — We consider two-body relaxation in flattened axisymmetric stellar cusps around supermassive black holes and associated rates of star capture by the black hole. Inside the black hole radius of influence, the motion of stars in the mean field can be described analytically. Perturbations from discreteness of the mass distribution lead to diffusion of stars in the phase space, which is described by a Fokker-Planck equation. We solve this equation for various values of the capture boundary and degree of flattening, and find that capture rates increase with respect to spherical case, up to a factor of few. We also perform a set of collisional N-body simulations to confirm the predictions of the Fokker-Planck models. We discuss implications for the rates of stellar tidal disruption in nuclear star clusters, and extreme mass ratio inspirals in Milky Way and external galaxies.

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