BLACK HOLES IN DENSE STAR CLUSTERS
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TITLE: Gravitational Encounters in the Relativistic Regime

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The character of the orbital motion changes as a function of distance from a supermassive black hole, and these changes imply corresponding changes in the nature of gravitational encounters. Classical solutions like Bahcall and Wolf's are only valid beyond a certain distance; as one approaches more closely to the black hole, the effects of general relativity become increasingly important. I discuss what has been learned so far about statistical mechanics in the relativistic regime, and present solutions to the Fokker-Planck equation for f(E,L) that are valid much closer to the black hole than Bahcall & Wolf's . Applications of these results to the Galactic center will be presented.