Abstract Submitted
for the APR06 Meeting of
The American Physical Society

Gravitational Radiation Recoil from Merging Massive Black Hole Binaries[1] DAE-IL CHOI, NASA/GSFC, USRA, JOHN BAKER, JOAN CENTRELLA, NASA/GSFC, MICHAEL KOPPITZ, JIM VAN METER, NASA/GSFC, NRC — One key area of interest for numerical relativity is calculation of kicks in merging massive black hole binaries where linear momentum, as well as energy and angular momentum, is lost due to asymmetric radiation of gravitational waves. As a result, the merger remnant receives a kick also known as gravitational rocket effect. High kick velocities, comparable or higher than escape velocites of the host structures, will provide a critical input to our understanding of various aspects of massive black hole evolutions in the universe. I describe a recent calculation of the kick velocities from simulations of the merging massive black hole binaries. Starting from reasonable initial data for quasi-circular configurations of non-equal mass and non-spinning black hole binary, simulations are carried out through merger and ringdown. From mergers with different mass ratio and different initial separations, kick velocities are estimated based on gravitational waveforms extracted in the wavezone. I discuss astrophysical implications of the magnitude of the kicks.

[1]Supported by NASA ATP#02-0043-0056

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Date submitted: 14 Jan 2006 Electronic form version 1.4