Abstract Submitted for the APR09 Meeting of The American Physical Society

Massive Black Hole Mergers: Can we see what LISA will hear?¹ JOAN CENTRELLA, NASA Goddard Space Flight Center, COLE MILLER, CHRIS REYNOLDS, University of Maryland, JAMES VAN METER, JOHN WISE, JOHN BAKER, NASA Goddard Space Flight Center, DARIAN BOGGS, University of Maryland, BERNARD KELLY, SEAN MCWILLIAMS, NASA Goddard Space Flight Center — Coalescing massive black hole binaries are formed when galaxies merge. The final stages of this coalescence produce strong gravitational wave signals that can be detected by the space-borne LISA. When the black holes merge in the presence of gas and magnetic fields, various types of electromagnetic signals may also be produced. Modeling such electromagnetic counterparts requires evolving the behavior of both gas and fields in the strong-field regions around the black holes. We have taken a first step towards this problem by mapping the flow of pressureless matter in the dynamic, 3-D general relativistic spacetime around the merging black holes. We report on the results of these initial simulations and discuss their likely importance for future hydrodynamical simulations.

¹This work was supported in part by NASA grant 06-BEFS06-19, and the simulations were carried out at the NASA Center for Computational Sciences (Goddard Space Flight Center).

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Date submitted: 09 Jan 2009 Electronic form version 1.4