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Simulations of Binary Black Hole Mergers in Gaseous Environments BRIAN FARRIS, YUK TUNG LIU, STUART SHAPIRO, University of Illinois Urbana-Champaign — Massive black hole mergers in the presence of gaseous accretion flows are prime candidates for simultaneous observations of both gravitational waves and electromagnetic signals. We study such systems using our fully general relativistic hydrodynamics code, focusing on the characterization of potentially observable electromagnetic signatures. We outline preliminary results from our investigations, focusing on binaries which merge inside a large, adiabatic cloud with constant gas density and temperature at infinity. We consider cases in which the binary center of mass is at rest (the "BHBH Bondi accretion problem") or moving (the "BHBH Bondi-Hoyle-Lyttleton accretion problem") relative to the gas cloud. We find evidence for enhancements in the electromagnetic luminosity over the values for single, isolated BHs. Such enhancements may constitute an observable signal.

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