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GR Simulations of Binary Black Hole Mergers in Magnetized Disks BRIAN FARRIS, VASILEIOS PASCHALIDIS, ROMAN GOLD, STUART SHAPIRO, University of Illinois Urbana-Champaign — Binary black hole mergers in circumbinary gaseous accretion disks are prime candidates for simultaneous observations of both gravitational and electromagnetic waves. We study such systems using our fully general relativistic magnetohydrodynamics code. We determine the quasi-equilibrium structure of a magnetized disk prior to binary-disk decoupling and track the dynamical evolution of the disk thereafter. We sketch recent developments in our study, which focuses on the final stages of binary black hole merger and the dynamical response of the disk. We discuss accretion onto the black holes during their late inspiral and merger and calculate the optically thin electromagnetic radiation as a perturbation. We identify characteristic, observable changes in the "precursor" and "aftermath" electromagnetic luminosity at merger.

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