

Abstract Submitted
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Distinguishing transients from merger characteristics in EM signals from black hole binary mergers.¹ BERNARD KELLY, CRESST/UMBC/NASA GSFC, ZACHARIAH ETIENNE, West Virginia University, BRUNO GIACOMAZZO, University of Trento, JOHN BAKER, JEREMY SCHNITTMAN, NASA GSFC — The merger of comparable-mass black holes is already known to produce extremely high luminosity in the form of gravitational waves, offering a prime target to current and future interferometric gravitational-wave detectors. Such mergers will often take place in plasma-rich environments, leading to the exciting possibility of concurrent electromagnetic merger signals that can be analyzed by traditional astronomical facilities. While mergers in magnetized plasmas are generically expected to produce jet-like structures, there is little consensus about the formation and detailed nature of these jets. We report on simulations in 3D general relativistic ideal MHD of the merger of equal-mass binaries, each initially immersed in a homogeneous fluid with a uniform magnetic field aligned with the orbital axis. In particular, by simulating a series of binaries at different initial separations, we are able to distinguish between transient features characteristic of frame-dragging of the plasma and later features correlated with the merger itself.

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Bernard Kelly
CRESST/UMBC/NASA GSFC

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