

Abstract Submitted
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General Relativistic Simulations of Magnetized Plasmas around Merging Supermassive Black Holes BRUNO GIACOMAZZO, University of Colorado, JOHN BAKER, NASA Goddard Space Flight Center, M. COLEMAN MILLER, CHRISTOPHER REYNOLDS, University of Maryland, JAMES VAN METER, NASA Goddard Space Flight Center — Coalescing supermassive black hole binaries are produced by the mergers of galaxies and they are among the most powerful sources of gravitational waves that can be detected by space gravitational observatories. In many cases it is believed that the merger of supermassive black holes may happen in presence of matter and magnetic fields and in this case the gravitational wave signal may be accompanied by an electro-magnetic counterpart. We present the first general relativistic simulations of a magnetized plasma around merging supermassive black holes using the general relativistic magnetohydrodynamic code Whisky. By considering different magnetic field strengths, going from non-magnetically dominated to magnetically dominated regimes, we explore how magnetic fields affect the dynamics of the plasma and the possible emission of electromagnetic signals.

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