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Exploring the Magnetic field and Black Hole Spin in Black Hole–Neutron star mergers SARVNIPUN CHAWLA, MATTHEW ANDERSON, Louisiana State University, LUIS LEHNER, Perimeter Institute, STEVEN LIEBLING, Long Island University, MIGUEL MEGEVAND, Louisiana State University, PATRICK MOTL, Indiana University Kokomo, DAVID NEILSEN, Brigham Young University, CARLOS PALENZUELA, Canadian Institute for Theoretical Astrophysics — A sizable magnetic field in neutron star-black hole binaries can have a strong influence on the merger dynamics of the fluid by redistributing angular momentum through different mechanisms. The magnetic field can also be responsible for collimating jets. BH spin can increase the number of orbits before merger as compared to a binary with a non-spinning BH. The corresponding decrease in ISCO can alter the tidal disruption suffered by the NS. We present results of fully relativistic black hole–neutron star simulations proceeding from quasi-circular initial data generated with the Lorene libraries. We explore the effect of magnetic field and spin by evolving four sets of nearly identical initial data which differ in their magnetic field and spin values. We examine the gravitational wave signature through direct simulation. Finally, we compare the fluid structure and explore the magnetic field configuration in the post-merger remnant disk.

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