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Towards realistic simulations of non-vacuum compact binaries[1]
DAVID NEILSEN, Brigham Young University, MATTHEW ANDERSON, Louisiana State University, CHRISTIAN DRAPER, ERIC HIRSCHMANN, Brigham Young University, LUIS LEHNER, Perimeter Institute, STEVEN LIEBLING, Long Island University, MEGEVAND MIGUEL, Louisiana State University, PATRICK MOTL, Indiana University Kokomo, CARLOS PALENZUELA, Canadian Instiute for Theoretical Astrophysics — Binary mergers in non-vacuum spacetimes often display complex dynamics that are sensitive to the physical phenomena included in the model, and which may affect the gravitational wave signature from the system. For example, magnetic fields, cooling mechanisms, and equations of state influence the merger and post-merger evolution of compact binaries. Thus, these effects should be included in computational models that connect with astrophysical observations. In this talk we present results of neutron star evolutions with a finite-temperature equation of state in the context of binary mergers, and we also consider effects of other relevant physical phenomena.

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