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Gravitational radiation from binary neutron star mergers: Magnetic and microphysical effects DAVID NEILSEN, Department of Physics and Astronomy, Brigham Young University, Provo, UT 84602 USA, MATTHEW ANDERSON, Center for Research in Extreme Scale Technologies, Indiana University, Bloomington, IN 47405, USA, LUIS LEHNER, Perimeter Institute for Theoretical Physics, Waterloo, Ontario N2L 2Y5, Canada, STEVEN L. LIEBLING, Department of Physics, Long Island University, New York 11548, USA, PATRICK MOTL, Department of Science, Mathematics and Informatics, Indiana University Kokomo, Kokomo, IN 46904, USA, CARLOS PALENZUELA, Departament de Fisica, Universitat de les Illes Balears, Crta. Valldemossa km 7.5, E-07122 Palma, Spain, MARCELO PONCE, Department of Physics, University of Guelph, Guelph, Ontario N1G 2W1, Canada — Binary neutron star mergers will be important sources of gravitational radiation for Advanced LIGO. Understanding how different physical processes–such as magnetic and microphysical effects due to equations of state or neutrino cooling–are imprinted on the radiation is important for learning more about these systems. We perform a series of binary neutron star mergers to examine some of these effects on the gravitational radiation. We use three different realistic equations of state, ranging from soft to stiff, initially magnetized stars, and include neutrino cooling of the post-merger system using a leakage scheme. We discuss possible observational signatures for these systems.

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