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Gravitational Waves from Magnetized Binary Neutron Star Mergers BRUNO GIACOMAZZO, University of Maryland, LUCIANO REZZOLLA, Albert Einstein Institute, LUCA BAIOTTI, Yukawa Institute for Theoretical Physics — Binary neutron stars are among the most important sources of gravitational waves which are expected to be detected by the current or next generation of gravitational wave detectors, such as LIGO and Virgo, and they are also thought to be at the origin of very important astrophysical phenomena, such as short gamma-ray bursts. In order to describe the dynamics of these events one needs to solve the full set of general relativistic magnetohydrodynamics equations through the use of parallel numerical codes. I will report on some recent results obtained with the use of the fully general relativistic magnetohydrodynamic code Whisky in simulating binary neutron stars which inspiral and merge forming an hypermassive neutron star which eventually collapses to form a black hole surrounded by a torus. I will in particular describe how the magnetic fields can affect the dynamics and consequently the gravitational waves emitted by these systems and discuss about their detectability by current and future gravitational-wave detectors.

Bruno Giacomazzo
University of Maryland

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