Center For Neutrino Physics Seminar

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Compact binary mergers: Electromagnetic counterparts and heavy element nucleosynthesis

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4:00pm - 5:00pm

304 Robeson Hall

With the discovery of binary black hole (BH) mergers by the Laser Interferometer Gravitational Wave Observatory (LIGO), the era of gravitational wave (GW) astronomy and multimessenger astronomy with GWs has begun. As the LIGO detectors approach design sensitivity in the next few years, exciting discoveries are expected to be made, including binary neutron star (NS) and NS–BH mergers. In this talk, I will discuss the prospects and current developments for electromagnetic (EM) transients across the EM spectrum from these systems, which provide invaluable, complementary information to the GW signal. Furthermore, these mergers provide the prime candidate astrophysical site for the production of heavy elements in the universe via r-process nucleosynthesis. New results for nucleosynthetic yields from our latest general-relativistic magneto hydrodynamics simulations are presented. I will discuss our modeling and simulation results and their implications for multimessenger astronomy.