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Eccentrinc binary neutron star simulations[1] ROLAND HAAS, SHAWN ROSOFSKY, ELIU HUERTA, University of Illinois at Urbana-Champaign — The concurrent detection of the collision of neutron stars in gravitational waves and the electromagnetic spectrum provided a unique opportunity to constrain the equation of state of neutron star matter. With more collisions expected to be detected during LIGO's 3rd observation run, these constraints are expected to be tightened further. While the observed neutron star collision, and the majority of expected signals, were of neutron stars in circular orbit about each other, very dense environment can lead to eccentric neutron star mergers. During these mergers the stars can approach much closer than during a circular inspiral changing the gravitational wave signal and allowing new effects to be probed. I report on activity of the NCSA gravity group to simulate binary neutron star mergers on eccentric orbits using the Einstein Toolkit code.

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