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Dynamical mass ejection from black hole-neutron star binaries

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In recent years, mass ejection from compact binary coalescences has been getting a lot more attention. Neutron-rich material ejected from neutron stars during such a coalescence event are increasingly recognized as the most promising site of the rapid process (r-process) nucleosynthesis. Mass ejection will also be the primary agent for driving electromagnetic radiation from compact binary mergers, or electromagnetic counterparts to gravitational waves. Simultaneous detection of electromagnetic counterparts with gravitational waves is eagerly desired, particularly for accurate source localization. Because mass ejection from black hole-neutron star binaries is a violent phenomenon involving disruption of neutron stars, numerical relativity is the only reliable approach for theoretical investigation. In this talk, we present our latest results for dynamical mass ejection from the black hole-neutron star binary merger obtained by numerical-relativity simulations. We also discuss possible electromagnetic counterparts from the anisotropic dynamical ejecta from black hole-neutron star binaries.

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