

Delayed Outflows from Accretion Disks formed in Neutron Star Binary Mergers

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Detecting the electromagnetic counterpart of a neutron star binary merger increases the amount of information that can be extracted from the gravitational wave signal. Material ejected dynamically during the first ~ 10 milliseconds after the merger is a known source for this electromagnetic emission. A separate channel for mass ejection arises from the viscous evolution of the remnant accretion disk, on a timescale of a few seconds after the merger. Here I'll present results of two-dimensional hydrodynamic simulations of this long-term disk evaporation. The combined action of viscous heating and nuclear recombination result in the ejection of $\sim 10\%$ of the disk mass in a quasi-spherical outflow, with thermodynamic properties such that the production of heavy r-processes elements ($A > 130$) is expected. Given this composition, this material should produce an electromagnetic transient that peaks in the near infrared wavelength range, evolving on a timescale of ~ 1 week, similar to the expected emission from the dynamical ejecta.

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