Contribution ID: **147** Type: **Oral**

Delayed Outflows from Accretion Disks formed in Neutron Star Binary Mergers

Thursday, 12 September 2013 14:40 (20 minutes)

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 ~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.

Primary author: FERNANDEZ, Rodrigo (UC Berkeley)

Co-author: METZGER, Brian (Columbia University)

Presenter: FERNANDEZ, Rodrigo (UC Berkeley)

Session Classification: Gravitational Waves II: Multi-messenger Analysis

Track Classification: Gravitational Waves