Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Black hole-neutron star mergers with a hot equation of state and neutrino cooling FRANCOIS FOUCART, Univ of Toronto, SXS COLLABORATION — Black hole-neutron star (BHNS) and neutron star-neutron star mergers will be prime candidates for the joint detection of gravitational wave and electromagnetic (EM) signals once the Advanced LIGO/VIRGO/KAGRA detectors come online. For BHNS binaries, the result of the merger strongly depends on the parameters of the system. EM emissions from a post-merger disk (e.g. gamma-ray bursts) are only possible for low mass or high spin black holes. The amount of ejected neutron-rich material, which has important consequences for the emission of more isotropic EM signals and the production of r-process elements, can also vary by a few orders of magnitudes - with high mass, high spin black holes ejecting more than $0.1M_{\odot}$ of unbound material. I will describe recent simulations of BHNS mergers performed by the SXS collaboration, which explore the parameter space dependence of these mergers while using a hot nuclear equation of state (LS220) and approximate neutrino cooling of the post-merger accretion disk. I will discuss the qualitative differences between these mergers and earlier simulations performed with polytropic equations of state, as well as the effect of neutrino cooling on the post-merger evolution and the general properties of the neutrino radiation.

Francois Foucart
Univ of Toronto

Date submitted: 10 Jan 2014 Electronic form version 1.4