Abstract Submitted
for the CUWIP22 Meeting of
The American Physical Society

Theoretical Lightcurve Predictions of Kilonovae from Component Mass Distributions GARGI MANSINGH, American University, ANDREW TOIVONEN, MICHAEL COUGHLIN, University of Minnesota, LIGO COLLABORATION — Kilonovae are dramatic explosions that can result from the merger of compact objects: two neutron stars, or a neutron star and a black hole. They can produce both a gravitational wave (GW) and an electromagnetic (EM) signal. In addition to GW observations being crucial for locating the kilonova, as they are dim and short-lived, combining these observations yields great insights. Whether or not a binary merger produces a detctable kilonova depends on the mass ejecta stripped dynamically or that forms an accretion disk around the remnant object. Kilonovae are of particular interest as they are a possible site for r-process nucleosynthesis, where the heavy elements in the universe may be formed. The mass ejecta primarily depends on the type of merger, BNS or NSBH, the component masses of the merger, and the tidal deformability of the neutron star(s) involved, which itself depends on the equation of state of neutron stars. Here, we are implementing expectations for detectable kilonovae, including low-latency estimates for kilonovae based on initial data products. In order to get the most information out of these events as possible, we must combine GW and EM observations.

Gargi Mansingh
American University

Date submitted: 11 Jan 2022 Electronic form version 1.4