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Modeling Kilonova Light-Curves[1]

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Kilonovae are the transient electromagnetic emission powered by radioactive decay of elements synthesized following the merger of two neutron stars or a neutron star and black hole. A kilonova was observed definitively for the first time in August 2017, as a counterpart to gravitational waves detected by LIGO and Virgo, GW170817. Efforts to numerically synthesize the light curves and spectra for merger and ejecta models have since expanded into parameter studies of the impact of uncertainties in composition, morphology, nucleosynthesis and decay, and remnant sources. In this talk, we provide an overview of these efforts, and in particular discuss a broad grid of multidimensional kilonova models we have generated with the Monte Carlo radiative transfer code SuperNu. This grid covers a large space of mass and velocity identified in the literature, and has proven useful in constraining recent observations GW190814 and GRB 160624A.

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