

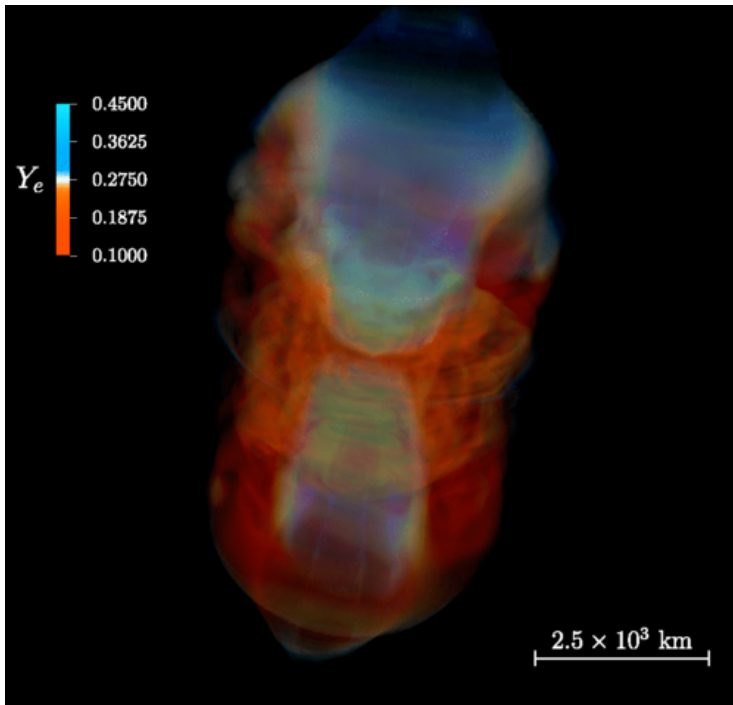
Full Transport Model of GW170817-like Disk Produces Blue Kilonova

Objectives

To make the first 3D, GR full-transport neutrino radiation/hydrodynamics model of the post-black-hole-formation disk wind, its nucleosynthesis, and its optical light curve.

Impact

This work provides the first fully-self-consistent calculations of the blue kilonova component of the disk ejecta produced by the wind off the accretion disk formed by a neutron-star merger.



Accomplishments

We present the first three-dimensional GR, full transport neutrino radiation MHD simulations of the black hole-accretion disk-wind system produced by the GW170817 merger. We show that the small but non-negligible optical depths lead to neutrino transport globally coupling the disk electron fraction, which we capture by solving transport with a Monte Carlo method. We show that nucleosynthesis in the disk wind produces a blue kilonova.

Citation: Miller et al. PRD, 100, 023008, 2019 (arXiv:905.07477)Contact : Jonah Miller (LANL)



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