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Black hole-neutron star post-merger evolution using viscous relativistic hydrodynamics MILAD HADDADI, Washington State University, SXS COLLABORATION — The post-merger evolution of black hole-neutron star and neutron star-neutron star systems is driven by magnetohydrodynamic turbulence. Such multiscale problems are very costly to simulate. One approach is to use artificially large seed magnetic fields to resolve the magnetorotational instability. Another is to add some model of subgrid-scale effects, with subgrid angular momentum transport often being modeled as a shear viscosity. We simulate the disk from a black hole-neutron star model in both ways and compare results. We present a new implementation of the relativistic Navier-Stokes equations in the Spectral Einstein Code, with accompanying star and accretion torus tests. For the post-merger system, we analyze the combination of shocks and turbulent/viscous dissipation acting to heat the disk in the early post-merger phase.

Milad Haddadi
Washingtong State University

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