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Long term evolution of binary neutron star merger and nucleosynthesis

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The merger of two neutron stars can form a system composed of a central object (either a neutron star or black hole) and a centrifugally supported disk. Inside the disk, magnetorotational instability generates a turbulent state, which then induces an effective viscosity. The viscous angular momentum transport and heating can evolve the system and trigger mass ejection from the disk on a timescale of seconds. The post-merger mass ejection contributes to the total ejecta in addition to the violent merger phase and to shaping the abundance pattern of heavy nuclei produced via the r-process. In this talk, I will present the results of our numerical simulations of such systems and their implications.

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