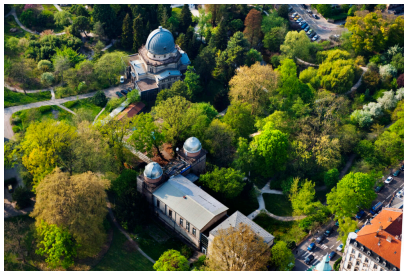

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Binary Neutron Star Merger Simulations with Microphysical Equation of State using Spritz

Wednesday 29 October 2025 15:20 (25 minutes)

We present new simulations performed with Spritz, a general-relativistic magnetohydrodynamics (GRMHD) code designed for high-precision studies of binary neutron star (BNS) mergers with realistic nuclear equations of state (EOS). We evolve both magnetized and non-magnetized equal-mass binaries, employing two tabulated EOS modeled after the GW170817 event. Our analysis focuses on the gravitational-wave (GW) signals emitted during the inspiral and merger, as well as the post-merger in the case of a long-lived remnant. In addition, we explore the possible formation of relativistic jets and massive neutron-rich outflows. These results contribute to bridging GW observations with electromagnetic counterparts, and provide insight into the role of the EOS and magnetic fields in shaping multimessenger signatures of BNS mergers.

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