

Problematic systematics in neutron-star merger simulations

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With the next generation of gravitational-wave observatories, the Einstein Telescope and Cosmic Explorer, we will have the opportunity to peer deeper into the gravitational-wave signal from merging neutron-star binaries and extract valuable information about the state of ultra-dense nuclear matter. In order to conduct this parameter inference reliably, we require waveform models that faithfully capture the correct physics. The early inspiral waveform is accurately described using the post-Newtonian approximation. However, close to merger, full, non-linear general relativity must be solved with numerical simulations. In this presentation, I will explore how artificial thermal effects associated with the neutron-star surface impact on the tidal dynamics and the inferred properties.

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