Mergers of Dark Matter Admixed Neutron Stars

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Abstract

We investigate mergers of neutron stars consisting of two non-interacting fluids minimally coupled
to the gravitational field using the numerical relativity code BAM. The first fluid represents baryonic
matter, whereas the second fluid models dark matter, which we describe using the equation of state
of a degenerate Fermi gas.
We consider different scenarios for the distribution of the dark matter, ranging from
dark matter confined to the core of the stars to scenarios in which the dark matter extends
beyond the surface of the baryonic matter forming a halo around the baryonic component of the stars.
We investigate how the dark matter impacts the binary dynamics and remnant properties.

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