Abstract Submitted
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Neutron-star mergers in scalar-tensor theories of gravity[1] ENRICO BARAUSSE, Institut d'Astrophysique de Paris/CNRS & Department of Physics, University of Guelph, CARLOS PALENZUELA, Canadian Institute for Theoretical Astrophysics, MARCELO PONCE, Department of Physics, University of Guelph, LUIS LEHNER, Perimeter Institute for Theoretical Physics & CIFAR, Cosmology & Gravity Program — Scalar-tensor theories of gravity are natural phenomenological alternatives to General Relativity. In these theories, the gravitational interaction is mediated by a scalar degree of freedom, besides the gravitons. In regions of the parameter space of these theories where constraints from both solar system experiments and binary-pulsar observations are satisfied, we show that binaries of neutron stars present marked differences from General Relativity in both the late-inspiral and merger phases. These strong-field effects are difficult to reproduce in General Relativity, even with an exotic equation of state. Further, we discuss possible detectability of these differences with Advanced LIGO/VIRGO as well as astrophysical implications in possible models for energetic electromagnetic events.

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