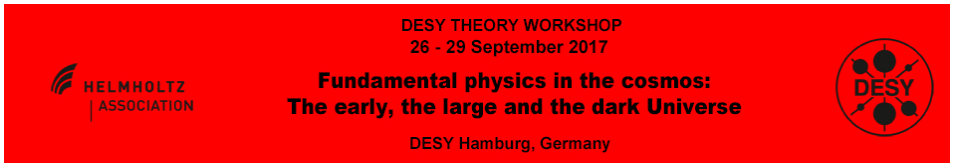

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Testing Modified Gravity with Merging Neutron Stars

Thursday 28 September 2017 16:56 (17 minutes)

The recent first direct detection of gravitational waves by the Laser Interferometer Gravitational-Wave Observatory (LIGO) has marked the dawn of a new era for probing the theory of general relativity (GR) as well as possible modifications of it. To test gravity at extreme conditions, current and future gravitational wave detectors are targeted to explore merging binary systems of black holes and/or neutron stars. Motivated by this, we study the final stages of evolution of a neutron star binary system and investigate how modifications of GR can effect the emitted gravitational wave signal. Already for the simplest $f(R)$ theory of modified gravity, R^2 gravity, we find characteristic features in the gravitational wave signal that make it clearly distinguishable from the one in GR and that should be detectable with LIGO.

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