

Tests of general relativity with GW170817

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With the first observation of gravitational waves from a binary neutron star system by Advanced LIGO and Advanced Virgo, we perform tests of the strong-field regime of general relativity in the presence of matter. We place constraints on the dipole radiation and possible deviations from relativity in the post-Newtonian coefficients that govern the inspiral portion of the signal. Additionally, we obtain bounds on modifications to the dispersion of gravitational waves, and, in combination with the observed electromagnetic counterpart, we also constrain effects that would arise from large extra dimensions. Finally, we study the polarization content of the gravitational wave signal. All tests indicate good agreement with GR.