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## The Scalar Galileon and its constraints from GW170818 and GRB170817A

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The advanced Laser Interferometer Gravitational Observatory (LIGO) and the VIRGO interferometer announced the detection of gravitational waves (GW170817) from the merger of a binary neutron star, as well as the associated gamma ray burst (GRB170817A), 1.7 s after the gravity wave detection. An immediate consequence of these detections is that gravity waves propagate at light speed in one part to  $10^{15}$ . Modified gravity theories, for example the scalar Galileon one, predict, in general, modifications to the gravity waves speed. We built the action for the scalar Galileon and study the implications of the mentioned detections on this theory. The scalar Galileon is a scalar field whose action leads to field equations that are not higher than second-order. This is a necessary condition to make the Hamiltonian bounded from below, as it is required to avoid tachyonic instabilities. So, any theory that involves scalar fields and aims to describe nature must belong to the scalar Galileon action.

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