

Sky-localization of the LIGO-Virgo events as a test of gravitational wave polarization state

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Detection of the first gravitational wave events GW150914, GW151226 and LVT151012 by Advanced LIGO antennas has opened a new possibility for the study the fundamental physics of the gravitational interaction. Here we demonstrate that very general geometrical arguments allow us to distinguish between different polarization states predicted by scalar-tensor gravitation theories. Actual localization of the source of GW on the sky by means of measurements of the arrival time delays between different antennas together with relative amplitudes of the detected signals at each antenna of the net can be used for determining the polarization state of the wave independently on the nature of the GW source.

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