Testing scalar-tensor gravity with the speed of gravitational waves

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ABSTRACT

Typical dynamical dark energy models involve the presence of an additional gravitational degree of freedom to describe the present acceleration of the Universe. In this talk, I will present how the speed of GWs could be used to place severe constraints on generic scalar-tensor theories of gravity [1]. I will describe under which circumstance an anomalous propagation speed can arise, and how it could be measured in the near future with the phase lag test for eclipsing binaries. This test will either eliminate many contender models for cosmic acceleration or wreck a fundamental pillar of general relativity.

References

[1] D. Bettoni, J. M. Ezquiaga, K. Hinterbichler, and M. Zumalacárregui, Phys. Rev. **D95**, 084029 (2017), 1608.01982.