

## Testing spacetime birefringence with gravitational waves

*jeudi 15 octobre 2020 16:00 (15 minutes)*

The direct detection of gravitational waves in 2015 offered a new probe of the structure of spacetime. The study of the propagation of the gravitational waves from the coalescence of binary systems of black holes detected by LIGO and Virgo already enabled to constrain the dispersive nature of gravitational waves. This talk presents the current work towards probing the birefringent nature of spacetime. The deviation in the propagation of the gravitational wave is derived in the Standard Model Extension framework, where the new corresponding term corresponds to a mass dimension operator of 5 and induces a violation of Lorentz invariance. The deformation is implemented in the gravitational waves templates used by LIGO and Virgo in order to provide a measurement of the components of the deformation tensor with the available detections.

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**Auteur principal:** HAEGEL, Leïla (Laboratoire APC, Université Paris-Diderot / CNRS)

**Co-auteurs:** AULT-O'NEAL, Kellie; TASSON, Jay

**Orateur:** HAEGEL, Leïla (Laboratoire APC, Université Paris-Diderot / CNRS)

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