ID de Contribution: **42** Type: **Contributed talk**

Gravitational Lensing of Gravitational Waves

jeudi 1 juin 2017 17:35 (15 minutes)

Gravitational lensing phenomena are widespread in electromagnetic astrophysics, and in principle may also be uncovered with gravitational waves. We examine gravitational wave events in the limit of geometric optics, where we expect to see multiple signals from the same event with different arrival times and amplitudes, and wave optics, where we expect to see effects such as interference and diffraction. We estimate the rate of lensed signals in the Advanced LIGO era, and discuss the strategies to identify them. Moreover, we investigate the physics that we can extract from lensed gravitational-wave signals such as the particulars of the lens.

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Classification de Session: Binary Black Hole Science