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Gravitational Lensing of Gravitational Wave Events and Their Applications

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Gravitational lensing of gravitational waves is one kind of important phenomena that the current and future gravitational wave experiments are going to discover. The gravitational lensing of gravitational waves is expected to provide a unique probe to not only the nature of gravitational waves but also the nature of dark matter and cosmology. In this talk, we will briefly summarize the theoretical prediction on the detection of lensed gravitational wave events by various gravitational wave detectors and the detectability of lensed host galaxies/electromagnetic counterparts for some of them. We will also discuss the prospects on constraining the dark matter nature and the Hubble constant via the diffractive lensing and strong lensing of compact binary merger events.

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