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Deflection of gravitational waves by astrophysical objects

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What happens when gravitational waves encounter a massive astrophysical object? Gravitational lensing, traditionally seen with light, bends and distorts gravitational waves as a result of the object's gravity. Gravitational lensing can be a useful tool to learn more about the nature and the properties of these astrophysical objects (termed gravitational lenses). Although ~150 gravitational wave events have been detected since 2015, a gravitationally-lensed signal has not been observed yet, but it is expected to arrive at any moment. I will discuss how these events can be modelled: in particular, how interference and diffraction around the lens affect the signal, giving rise to characteristic features. I will also discuss how lensing of gravitational waves in their formation environment can help us distinguish their origin.

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