

Wave nature of gravitational wave lensing and its applications

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Gravitational lensing of gravitational wave(GW), or GW lensing for short, is a unique tool that enables us to explore the ultra-small-scale matter distribution in our universe. One of the distinctive features of GW lensing is its wave nature, which arises from the long wavelength of typical GW sources. Fully utilizing the wave nature, GW lensing can probe $O(0.1) \sim O(10)$ parsec scales matter distribution, depending on the type of GW source and detector. Investigating such small scales can provide crucial insight into the dark matter properties. In this presentation, I will provide a brief overview of the essence of GW lensing and discuss its applications to dark matter structures.

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