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Abstract for an Invited Paper
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Measuring Gravitational Lensing of the Cosmic Microwave Background to Probe the Mass of the Neutrinos and the Properties of Dark Matter[1]

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In this talk I will discuss the next frontier of research on the Cosmic Microwave Background (CMB): precisely measuring the gravitational lensing of the CMB. This CMB lensing signal encodes a wealth of statistical information about the distribution of matter in the Universe, which is sensitive to the total mass of the neutrinos and the particle properties of dark matter. I will discuss recent progress in probing the sum of the neutrino masses using data from the Atacama Cosmology Telescope Polarimeter (ACTPol), and forecasts of what can be expected from the near future AdvACT, Simons Observatory, and CMB-S4 experiments. I will also discuss a novel and powerful way to probe dark matter particle properties using very high resolution CMB lensing measurements, which can distinguish between cold dark matter and alternative dark matter models that suppress small-scale structure, such as warm or fuzzy dark matter.

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