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The imprint of ultralight vector dark matter on gravitational-wave propagation

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In this talk we analyse the effect of ultralight vector dark matter on gravitational-wave propagation. We find that the presence of the field produces an anisotropic suppression of the gravitational-wave amplitude, which depends on the mass and the abundance of the field. The effect is sizable for primordial gravitational waves, and could be detected with forthcoming cosmic microwave background B-mode polarization detectors for small masses ($m \sim 10^{-26}$ eV) and sufficiently large abundances.

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