

Whispers from the Dark Universe - Particles & Fields in the Gravitational Wave Era

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WHISPERS FROM THE DARK UNIVERSE – PARTICLES & FIELDS IN THE GRAVITATIONAL WAVE ERA

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Exorcising the ghost condensate dark energy with a sextic dispersion relation

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The universe's current acceleration is a pretty recent phenomenon in cosmological time scales. This means that the modes that have left our horizon since the beginning of the contemporary acceleration phase, have not really reached the exact IR limit. Noting this observation, we reconsider the possibility of having a ghost condensate as dark energy with a sixth-order dispersion relation. Looking at the three-point function of such a theory, we obtain the constraints on the coefficient of the sixth-order dispersion relation to avoid strong coupling. Such a ghost condensate if coupled to the standard model fields, induces a constant Lorentz-violating spin-dependent force, which can gravitate or anti-gravitate.

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