

Speaker: A. Ashoorioon

Title: Extended EFT of Dark Energy

Abstract:

We study the ghost condensate (GC) with sixth-order dispersion relation. Contrary to the GC with quartic dispersion relation, we find that the correction to the Newtonian potential explicitly depends on the space and time dependence of matter density. At late times when the Newtonian potential becomes time-independent, one obtains similar oscillatory behavior at the distance $\frac{\text{mpl}}{M^2}$, but this time at the time scale $\frac{M^4}{\text{mpl}^3}$, where M^2 is the ghost field velocity. We also show that the speed of the gravitational wave is modified in a frequency-dependent manner at momenta close to $\frac{\text{mpl}}{\sqrt{|\sigma_1|}}$, where σ_1 is the coefficient of $\gamma^{ij} \nabla_i K_{|r} \nabla_j K^{|r}$ operator in the unitary gauge action. 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.