

Obinna Cosmas ABAH (Queens University, UK)

Title: Irreversibility in a driven-dissipative optomechanical system

Abstract: We investigate the role of nonlinearity via optical parametric oscillator on the entropy production rate and quantum correlations in a hybrid optomechanical system. Specifically, we derive the modified entropy production rate of an optical parametric oscillator placed in the optomechanical cavity which is well described by the two-mode Gaussian state. Our analysis shows that the system irreversibility can be reduced by choosing the appropriate phase of the self-induced nonlinearity. We further present the influence of magnon-photon coupling on the entropy production rate of magnomechanical cavity setup.