

## Abstract

In this lecture we will deal with the non-commutative field theory from both theoretical and phenomenological point of view. We show that the soft and collinear divergences are canceled in non-commutative QED. Also we introduce a mechanism to solve the UV/IR mixing problem in scalar and gauge theories. The stabilization of a fuzzy torus considered as extra dimensions is also investigated. Phenomenologically, we discussed about some nonlinear terms arise from non-commutativity in non-ommutative U(1) gauge theory. Then we show that non-commutativity can leads to a noisy effect in gravitational potential. Finally using CosmoMC and CAMB codes, we investigate the effects of non-commutativity on CMB. These effects may be detectable in future experiments.