Contribution ID: **57** Type: **not specified**

Self-consistent gradient corrections to false vacuum decay for a U(1) gauge theory

Thursday 26 September 2019 17:05 (15 minutes)

Following previous work on self-consistent methods geared towards dealing with false vacuum decay in quantum field theory; a $U(1)$-gauge theory with a complex scalar is considered together with a polynomial potential which presents a metastable vacuum at tree level. Fluctuations around an inhomogeneous bounce-type background interpolating between vacua are studied and computed within a 1-PI effective action treatment and through a self-consistent prescription in order to incorporate gradients of the background. The self-consistent methodology also includes renormalization of the theory: coupling counterterms in a MS-like scheme and the wave-function renormalization obtained through a gradient expansion methodology. Corrections to the life-time of the metastable vacuum comprise: leading order contribution from the action at the tree-level bounce, plus self-energy corrections, counterterm contributions and corrections to the bounce background.

Primary author: Mr CRUZ, Juan S. (TUM)

Co-authors: Prof. GARBRECHT, Björn (Technical Univerisity Munich); Dr TAMARIT, Carlos (Technische Universität München); Dr AI, Wen-Yuan (Technical University Munich)

Presenter: Mr CRUZ, Juan S. (TUM)

Session Classification: Parallel Session: Cosmology & Astroparticle Physics

Track Classification: Cosmology & Astroparticle Physics