

PASCOS 2016: 22nd International Symposium on Particles, Strings and Cosmology



Contribution ID: 156

Type: **not specified**

Gauge invariance in the actual calculation of a bubble nucleation rate

Tuesday, 12 July 2016 13:05 (20 minutes)

To determine bubble nucleation rates precisely, we need to evaluate functional determinants around the bounce background. In gauge theories, there appears a mixing between the would-be NG boson and the gauge boson, and it becomes quite difficult to see the gauge dependence of the functional determinant. Though the gauge independence of the effective action is proven by Nielsen at all orders, it is still unclear that the gauge dependence cancels out within the one-loop level. Furthermore, there can appear gauge zero modes, which correspond to the breaking of the global part of the gauge symmetry. In the actual calculation, we need to regularize the zero modes in a gauge invariant way.

In this talk, we prove the gauge invariance of the functional determinant in a non-trivial background, and discuss a way to regularize the gauge zero modes.

Summary

Primary authors: ENDO, Motoi (KEK); MOROI, Takeo (The University of Tokyo); SHOJI, Yutaro (ICRR, University of Tokyo); NOJIRI, mihoko (KEK)

Presenter: SHOJI, Yutaro (ICRR, University of Tokyo)

Session Classification: Parallel V

Track Classification: Inflation and alternatives, Strings, Cosmology