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Quantisation Across Bubble wall and Friction

Wednesday, 3 July 2024 13:00 (5 minutes)

I will start by explaining why it is interesting and how one can quantise from first principles field theories living on the background of a bubble wall in the planar limit, i.e. a domain wall, with a particular focus on the case of spontaneous breaking of gauge symmetry. Using the tools I introduced, we can compute the average momentum transfer from transition radiation, which denotes the soft emission of radiation by a high-energetic particle passing across the wall, with a particular focus on the longitudinal polarisation of vector bosons. We find this latter one to be comparable to transverse polarisations in symmetry-breaking transitions with mild super-cooling, and dominant in broken to broken transitions with thin walls. Our results have phenomenological applications for the expansion of bubbles during first-order phase transitions. Our general framework allows for the calculation of any particle processes of interest in such translation breaking backgrounds.

Title of the Poster/Talk

Quantisation Across Bubble wall and Friction

Related Papers/Preprints

https://arxiv.org/abs/2310.06972

Primary author: BARNI, Giulio (Istituto Nazionale di Fisica Nucleare)

Presenter: BARNI, Giulio (Istituto Nazionale di Fisica Nucleare)

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