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Vacuum Decay and New Instantons

Monday, July 10, 2023 5:35 PM (35 minutes)

The Coleman approach to the false vacuum decay is revised. An infinite class of potentials for which the Coleman instantons do not exist is constructed. For such potentials, false vacuum decay is provided by new instantons with a quantum core. For a potential unbounded from below or having a true vacuum with a depth exceeding the barrier height, the materialized bubble dominating in the vacuum decay has the thick wall and the thin-wall approximation is inapplicable. The thick-wall approximation which reproduces the leading-order results for the few known exactly solvable potentials is developed. The proposed approach is applied to the general scalar potentials in an arbitrary number of dimensions, and universal formulae for the basic physical quantities are derived.

Is this abstract from experiment?

No

Name of experiment and experimental site

NICA

Is the speaker for that presentation defined?

Yes

Details

Alexander Sorin, Joint Institute for Nuclear Research, Dubna, www.jinr.ru

Internet talk

No

Authors: MUKHANOV, Viatcheslav (Ludwig Maximillian University of Munich); RABINOVICI, Eliezer (Hebrew University of Jerusalem); SORIN, Alexander (Joint Institute for Nuclear Research, Dubna)

Presenters: SORIN, Alexander (Joint Institute for Nuclear Research, Dubna); Prof. SORIN, Alexander (Joint Institute for Nuclear Research (RU))

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