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Instantons with Quantum Core

Thursday, 2 September 2021 17:30 (30 minutes)

We consider new instantons that appear as a result of accounting for quantum fluctuations. These fluctuations naturally regularize the O(4) singular solutions abandoned in Coleman's theory. In the previous works we showed how new instantons modify the widely accepted picture of false vacuum decay in two particular examples of exactly solvable potentials. Here we generalize our consideration to arbitrary potentials and provide a general theory of these new instantons with quantum cores in which vacuum fluctuations dominate. We develop a method that allows us to determine the parameters of instantons for generic potentials not only in the thin-wall approximation but also in the cases where this approximation fails. Unlike the Coleman instantons, the instantons with quantum cores always exist in the cases where the vacuum must be unstable.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

No

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