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Dynamical violation of the null energy condition in finite volumes

Tuesday 26 July 2022 11:36 (18 minutes)

Tunnelling between degenerate vacuua is allowed in finite-volume Quantum Field Theory, and features remarkable energetic properties, which result from the competition of different dominant configurations in the partition function. During my talk, I will be presenting the results of our recent paper, arXiv:2203.12543, where we derive the one-loop effective potential based on two homogeneous vacuua of the bare theory, and discuss the resulting Null Energy Condition violation in O(4)-symmetric Euclidean spacetime, as a result of a non-extensive effective action.

These results have interesting implications as a possible contribution to dark energy or as a dynamical mechanism for generating a cosmological bounce. I will also discuss some preliminary results for extending these results to finite-temperature field theory.

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