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# Renormalization Group Running Induced Cosmic Inflation

*Wednesday 30 August 2023 22:05 (5 minutes)*

In my talk I show that pre-inflationary quantum fluctuations can provide a scenario for initial conditions for the inflaton field. The proposal is based on the assumption that at very high energies (higher than the energy scale of inflation) the vacuum-expectation value (Vev) of the field is trapped in a false vacuum and then, due to renormalization-group (RG) running, the potential starts to flatten out toward low energy, eventually tending to a convex one which allows the field to roll down to the true vacuum. I argue that the proposed mechanism should apply to large classes of inflationary potentials with multiple concave regions. The findings favor a particle physics origin of chaotic, large-field inflationary models as we eliminate the need for large field fluctuations at the GUT scale. In our analysis, I provide a specific example of such an inflationary potential, whose parameters can be tuned to reproduce the existing cosmological data with good accuracy.

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**Session Classification:** Posters of wednesday (ignore time)