

Evolution of State Density during Cosmic Inflation in the Framework of Open Quantum Systems

The evolution of the scalar fluctuations via the Wigner formalism shows that the Wigner function is “squeezed”. This result leads us to interpret the inflationary dynamics within the framework of open quantum systems, using the Lindblad master equation to model the interaction of quantum perturbations with their environment. This approach provides a deep understanding of the transition from quantum coherence to classicality, with significant implications for cosmology and quantum physics in future applications.

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