

Stable Emergent Universe in a Jordan- Brans-Dicke Theory

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Introduction

The search for cosmological models without initial singularity has led to the development of the so-called Emergent Universe models (EU). These models are based on the assumption that the universe emerges from a past eternal Einstein static state (ES) towards an inflationary phase. The EU is an attractive scenario since it avoids the initial singularity and provides a smooth transition towards an inflationary period. In this context, it has been pointed out by Mithani-Vilenkin [1] that certain Emergent Universe scenarios which have a classically stable ES could present a semiclassical instability and collapse. In this work, presented in arXiv:2108.09524, we study the classical and quantum stability of the ES regime of Emergent Universes in the context of a Jordan-Brans-Dicke theory [2] and following the semiclassical approach that uses the Wheeler-De-Witt (WDW) equation [3]. In particular, we show that when considering these models it is possible to have in the past both, classical and semiclassical stability without taking into account the instability pointed out by Mithani-Vilenkin.

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References

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