Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Backreaction effects in initially contracting models of Universe with different order reduction methods applied[1] LEDA GAO, PAUL R. ANDERSON, ROBERT S. LINK, Wake Forest Univ — The effects of particle production due to a quantized massive conformally coupled scalar field on the evolution of the Universe are considered for models in which there is a positive cosmological constant and the Universe initially is in a contracting de Sitter phase. Different adiabatic in states for the field are considered. The stress-energy tensor for the massive scalar field is renormalized using adiabatic regularization. This introduces higher derivative terms in the semiclassical backreaction equations which result in extra solutions that can often be physically unrealistic. Several methods similar to that of order reduction are used to eliminate these extra solutions and a comparison of the results is made.

[1]This work was supported in part by the National Science Foundation under Grant Nos. PHY-1505875 and PHY-1912584.

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Date submitted: 07 Jan 2021 Electronic form version 1.4