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Linear Response and the Validity of the Semiclassical Approximation in de Sitter Space¹ PAUL ANDERSON, Wake Forest University, CARMEN MOLINA-PARIS, University of Leeds, EMIL MOTTOLA, Los Alamos National Laboratory — Linearized fluctuations of quantized matter fields and the spacetime geometry around de Sitter space are considered in the case that the matter fields are conformally invariant. Taking the unperturbed state of the matter to be the de Sitter invariant Bunch-Davies state, the linear variation of the stress tensor about its self-consistent mean value serves as a source for fluctuations in the geometry through the semi-classical Einstein equations. This linear response framework is used to investigate both the importance of quantum backreaction and the validity of the semi-classical approximation in de Sitter space.

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