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Quantum fluctuations of a 1D bosonic gas in an optical lattice
JANNE RUOSTEKOSKI, LORENZO ISELLA, University of Hertfordshire — We numerically study the quantum dynamics of a 1D bosonic gas in a shallow optical lattice for both static and time-dependent lattices. In particular, we model the strongly damped dipole oscillations which have recently been observed experimentally at NIST by Fertig et al. cond-mat/0410491. We find a qualitative agreement with the experimentally observed damping rates which can be explained as being due to zero temperature quantum fluctuations.

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