

Abstract Submitted
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Effects of quantum fluctuations on the pulsating instability of a BEC in an optical lattice¹ UTTAM SHRESTHA, JUHA JAVANAINEN, University of Connecticut, Storrs CT-06269, JANNE RUOSTEKOSKI, University of Southampton, SO17 1BJ, United Kingdom — We study the effects of quantum fluctuations on the dynamics of a classically unstable weakly interacting Bose-Einstein condensate in an optical lattice. We incorporate the quantum effects approximately within the truncated Wigner approximation. We observe that the pulsating dynamical instability, in which atoms nearly periodically collect together and subsequently disperse back to the initial homogeneous state, survives for a single realizations that represents a typical experimental outcome. However, ensemble averages of various physical properties manifest the effect of quantum fluctuations. The quantum effects become more prominent when the effective interaction strength is increased.

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Uttam Shrestha
University of Connecticut

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