The Stochastic Projected Gross-Pitaevskii equation: theory and applications in high temperature Bose gases

Ashton Bradley
School of Physical Sciences, University of Queensland, Brisbane QLD 4072, Australia
Tel: 61-733469826, email: abradley@physics.uq.edu.au

Abstract:

An overview of the stochastic Gross-Pitaevskii theory of the high temperature Bose gas will be presented, emphasizing recent developments, both formal and numerical. Since it incorporates thermal fluctuations and nonlinear interactions, the theory is well suited to describing the dynamics of defect formation during the BEC phase transition, and the decay of coherent metastable excitations such as vortices and solitons. The role of thermal and quantum fluctuations will be emphasized and a survey of recent applications will be given.