PHYSICS AND ASTRONOMY
COLLOQUIUM

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"Studying Many-body States with Quantum Noise"

Abstract

The probabilistic character of measurement processes is one of the most fascinating aspects of quantum mechanics. In many-body systems, quantum noise can reveal the non-local correlations and multiparticle entanglement in the underlying states. In this talk I will review recent theoretical and experimental progress in applications of the quantum noise analysis to the study of many body states of ultracold atoms. Examples include Hanbury-Brown--Twiss correlations and detection of magnetic phases in optical lattices, analysis of fluctuations in interference fringe contrast as a probe of prethermalization in one dimensional condensates. I will also discuss the possibility of observing the dynamical Casimir effect and Unruh-type thermal correlations in dynamically split condensates.

Wednesday, October 23, 2013
3:30 p.m.
Bob Wright Centre
Room A104