

Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Experimentally measurable non-monotonicity for the quantum-classical transition in nonlinear nanoelectromechanical systems (NEMS)
QI LI, ADAM STEEGE, ARIE KAPULKIN, ARJENDU PATTANAYAK, Carleton College — Current experiments are exploring the quantum-classical boundary in nonlinear oscillator systems, that is, exploring the effects of changing size and changing decoherence. One such nonlinear system, the driven damped Duffing oscillator had been previously shown to display non-monotonic behavior in phase space. In this paper, we show how this behavior can be mapped to measurable quantities in experiments. These quantities show that the quantum-classical transition is nonmonotonic in the effective size of \hbar . Such a system is within experimental reach possibly for atomic systems and definitely for nanoelectromechanical systems (NEMS).

Qi Li
Carleton College

Date submitted: 27 Jan 2010

Electronic form version 1.4