Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Quantum critical temperature of a modulated oscillator VITTORIO PEANO, University of Erlangen-Nrnberg, LINGZHEN GUO, MICHAEL MARTHALER, Karlsruhe Institute of Technology, MARK DYKMAN, Michigan State University — We show that the rate of switching between the vibrational states of a modulated nonlinear oscillator is characterized by a quantum critical temperature $T_c \propto \hbar^2$. Above T_c there emerges a quantum crossover region where the switching rate displays a steep and characteristic temperature dependence, followed by a qualitatively different temperature dependence for higher T. In contrast to the crossover between tunneling and thermal activation in equilibrium systems, here the crossover occurs between different regimes of switching activated by quantum fluctuations. The results go beyond the standard real-time instanton technique of the large-deviation theory.

Vittorio Peano
University of Erlangen-Nrnberg

Date submitted: 06 Nov 2015 Electronic form version 1.4