



e-conversion



Seminarankündigung

**Freitag, 26. Juli 2019
13:00 Uhr**

ZNN, Seminarraum EG 0.001

“An optical tweezer phonon laser”

Abstract: Phonon lasers are mechanical analogs of the ubiquitous optical laser. In this talk I will describe the theoretical proposal (from my group) and experimental realization (in the group of our collaborator A.N.Vamivakas at the University of Rochester) of a phonon laser based on the center of mass oscillation of a nanoparticle optically trapped in vacuum [Nat. Phot. 13, 1 (2019)]. Our technique relies only on position measurement of the nanoparticle and offers full control of laser gain and nonlinearity via optical feedback. I will report on threshold behavior, coherence, subthermal number squeezing, time dynamics, phase space characterization, and the role of stimulated emission in our single mode phonon laser. Based on this discussion I will conclude that our device provides a pathway for engineering a coherent source of phonons on the mesoscale that can be applied to both fundamental problems in quantum mechanics as well as tasks of precision metrology.

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