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# Einladung zum Physikalischen Kolloquium

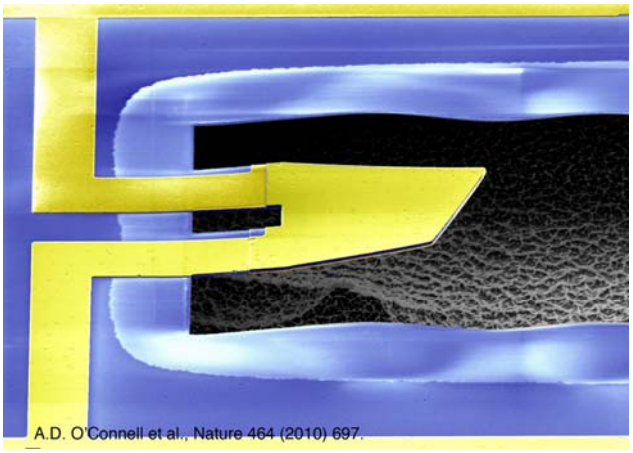
**Montag, 09.01.2012**
**16:15 Uhr in N24/H13**


## Professor Miles Blencowe

Department of Physics & Astronomy
Dartmouth College


## Mechanical Systems in the Quantum Regime


Abstract: Recently, several groups have demonstrated cooling of the vibrational motion of nano-to-mesoscale mechanical systems down to their quantum ground states. And one group has even demonstrated for the first time ever the generation and detection of single vibrational quanta of a mechanical system. These experimental breakthroughs and accompanying theoretical work show great promise for using mesoscopic mechanical systems to understand at a deeper level the emergence of classical from quantum dynamics. In this colloquium, we shall begin with an introductory survey of the various electromechanical and optomechanical schemes under investigation, and then give an elementary description of the physics behind the cooling and quantum-limited detection methods that are employed in these schemes. In the third part of the talk, we describe work in progress to understand the emergence of classicality for actual mechanical systems, due to their dominant environmental degrees of freedom. We end by speculating on the possible role gravity might play in enforcing classicality as the ultimate, unavoidable macroscopic mechanical system environment.


Ab 15.45 Uhr Kaffee, Tee und Kekse vor dem Hörsaal H13

**Organisation: Prof. Marti, Tel.: 23011**
**Dr. Retzker, Tel.: 22902**
**Host: Prof. Ankerhold, Tel.: 22913**