



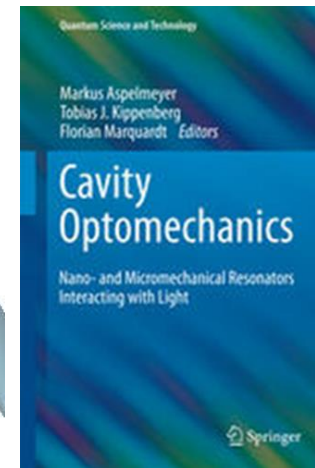
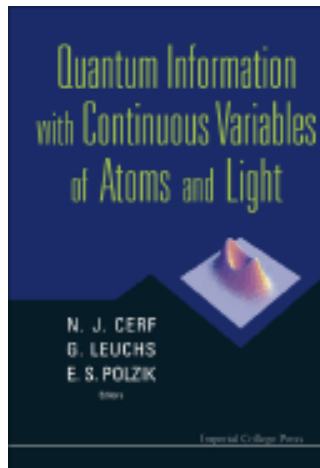
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NONCLASSICAL OPTOMECHANICS

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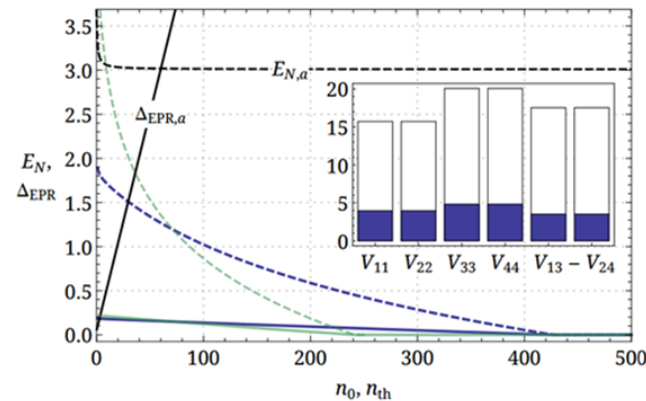




NONCLASSICAL PULSED OPTOMECHANICS

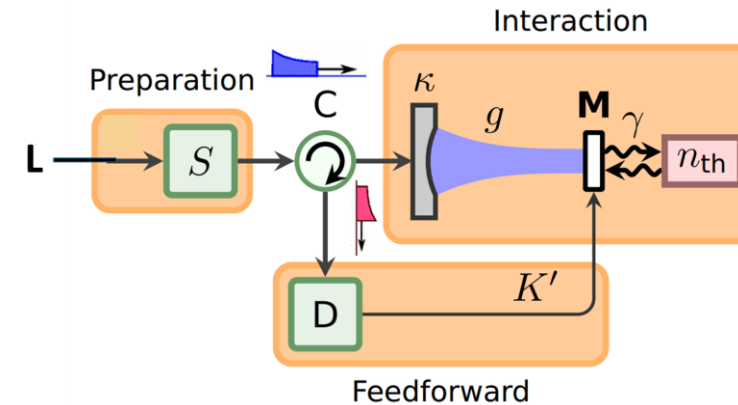
S.G. Hofer, W. Wieczorek, M. Aspelmeyer,
and K. Hammerer, Phys. Rev. A 84, 052327 (2011)

Entanglement with thermal mechanical oscillator



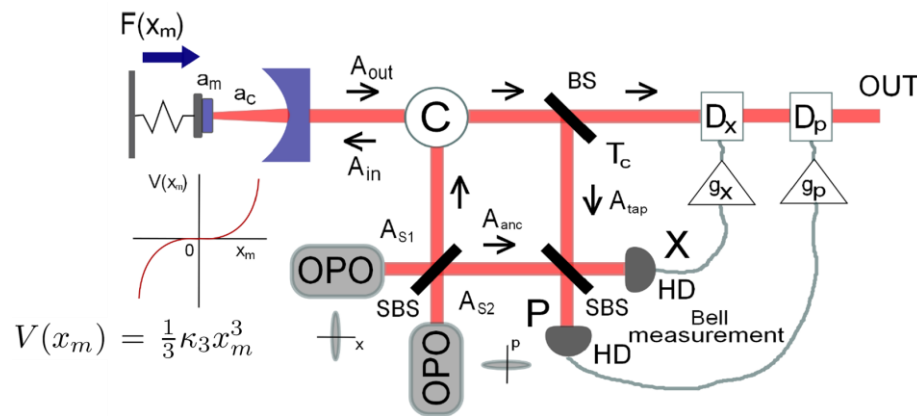
A. Rakhubovsky and R. Filip, Phys. Rev. A 91, 062317 (2015).

Squeezer-based quantum interfaces



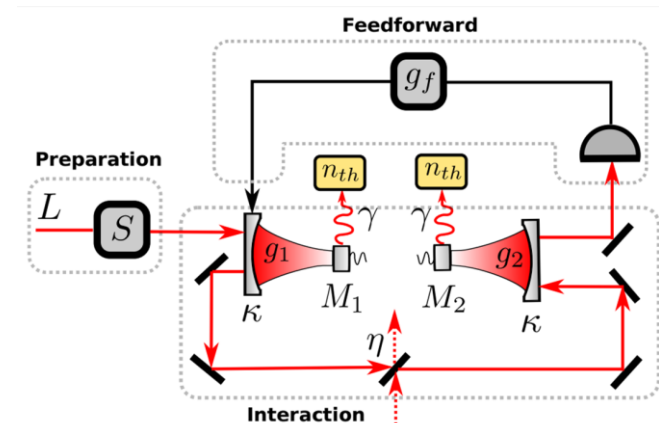
A. Rakhubovsky, N. Vostrosablin and R. Filip, submitted

High-fidelity release of mechanical state



R. Filip and A. Rakhubovsky, Phys. Rev. A 92, 053804 (2015).

Quantum interaction of mechanical oscillators



N. Vostrosablin, A. Rakhubovsky and R. Filip, submitted.



EXPERIMENTAL ACTIVITIES

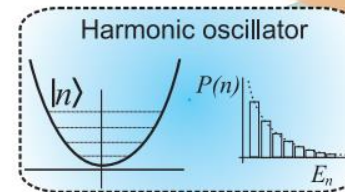
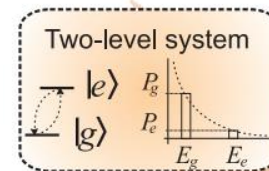
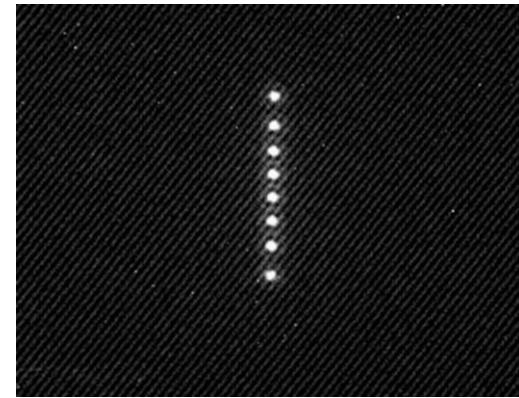
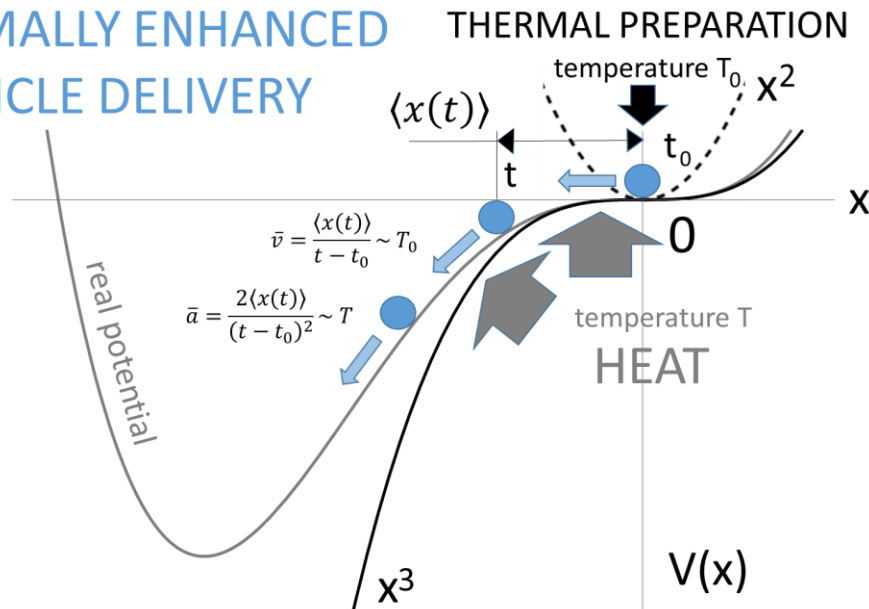
nonlinear

$$M\ddot{X} = -\nabla U(X) - \gamma\dot{X} + \sqrt{2\gamma k_B T} R(t)$$

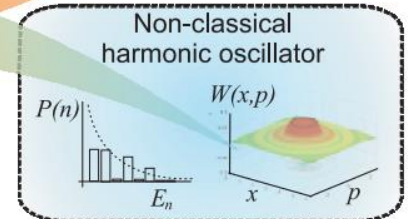
oscillator

thermal noise

THERMALLY ENHANCED PARTICLE DELIVERY



Jaynes-Cummings interaction



R. Filip and P. Zemánek, submitted

L. Slodička, P. Marek and R. Filip, Deterministic nonclassicality from thermal states, submitted