Title: Optomechanical coupling between a nano oscillator and a single quantum emitter
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Abstract
Quantum optomechanics provides promising hybrid platforms for sensing applications and quantum information-and computation. Presented here is the system of an oscillating carbon nanotube (CNT) coupled to a single molecule quantum emitter through the stark effect. This setup predicts direct readout of nanomechanical motion, cooling, oscillator dependent photon statistics and topological actuation of mechanical modes[1][2]. In close correspondence with previously found experimental results [3], we find a zero phonon line width in the 50-70 MHz and GHz range stark shift. Those preliminary results are promising for the development of the proposed optomechanical system.

Example of figures

[Luminescence spectrum]

\textbf{Fig 1:} The luminescence spectrum has resonance sidepeaks spaced by $\pm \omega_m$. Here for different oscillator Q-Factors and compared to periodic Radio frequency signal driving (rf). [1]