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【561】Quantum dynamics of an ultracold ion coupled to a nanomechanical oscillator

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We present the coupling of a trapped ion to a nanomechanical oscillator/nanowire in order to study new methods for the preparation of complex motional quantum states that might be challenging to produce by conventional optical means. The quantum dynamics of such a hybrid system have been studied theoretically showing possibilities of creating coherent states, as well as purely non-classical states such as cat-states and others. Here, we discuss the prospects of this approach and its experimental implementation.

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