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Towards experimental optomechanical entanglement between a movable mirror and a cavity field.

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The quantum regime of mechanical systems offers fascinating new possibilities for both applied and fundamental physics. Quantum optics provides a well-developed tool box to help entering and controlling this regime as is evidenced by the recent successes in laser-cooling of micromirrors that promise cooling capabilities to the mechanical quantum ground state. I will discuss the prospects and challenges to generate (opto-mechanical) quantum entanglement, which is an important resource for quantum information processing and is also at the heart of Schrödinger's "cat paradox."