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Optical Requirements for Quantum Mechanics with Micromechanical Systems[1] DUSTIN KLECKNER, BRIAN PEPPER, Physics Department, University of California, Santa Barbara, EVAN JEFFREY, PETRO SONIN, Huygens Laboratory, Universiteit Leiden, DIRK BOUWMEESTER, Physics Department, University of California, Santa Barbara and Huygens Laboratory, Universiteit Leiden — Interest in micro-optomechanical systems is motivated by the desire to test quantum mechanics on relatively massive scales. Proposals for realizing these effects have extremely challenging technical requirements, particularly with regards to optical quality. We present the results of simulations designed to determine the effects of imperfections in real systems on the maximum achievable optical finesse. Additionally, we will discuss recent progress in our efforts to fabricate novel devices with the required properties.

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