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Work measurement in a quantum heat engine[1] FRANCESCO BARIANI, College of Optical Sciences, University of Arizona, Tucson, AZ, USA, KEYE ZHANG, Quantum Institute of Light and Atoms, Department of Physics, East China Normal University, Shanghai, P.R. China, YING DONG, PIERRE MEYSTRE, College of Optical Sciences, University of Arizona, Tucson, AZ, USA — We consider an optomechanical quantum heat engine operating on an Otto cycle for photon-phonon polaritons, the working substance of the engine [1]. We discuss both the average value and quantum fluctuations of its work output, concentrating in particular on the effects of quantum non-adiabaticity due to the finite duration of the cycle. We also determine the quantum back-action of both absorptive and dispersive continuous measurements of the work, and quantify their impact on the Curzon-Ahlborn engine efficiency at maximum power and its fluctuations.

[1] Keye Zhang, F. Bariani, and P. Meystre, "A Quantum Optomechanical Heat Engine," Phys. Rev. Lett. **112**, 150602 (2014).

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