

# **Mauro Paternostro**

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## **Work and cycles at the quantum level**

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I will discuss an interferometric setting for the ancilla-assisted measurement of the characteristic function of the work distribution following a time-dependent process experienced by a quantum system. I will then discuss two physical settings, based on hybrid opto-/electro-mechanical devices, where the theoretical proposals discussed in our work could find an experimental demonstration. If time allows, I will pass to the discussion of quantum strategies for the realisation of friction-free thermodynamical cycles performed using a quantum "fluid" and shortcuts to adiabaticity as a tool to quench environmental effects and thus maximise the efficiency of the cycle at full power.