

# **Finite time corrections to the efficiency of the Carnot engine**

Subhash Chaturvedi

*Indian Institute of Science Education and Research (IISER),  
Bhopal, Madhya Pradesh 462030, India*

In view of the enormous experimental and theoretical interest in microscopic heat engines modelled after a colloidal particle in a trap, we present a formalism that not only permits us to compute their efficiencies both in the classical and quantum regimes but also permits us to go beyond standard thermodynamics. In particular, we show how it can be used to calculate finite time corrections to the Carnot cycle and study their effect on the efficiency of the Carnot engine.