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Title:	Expected behavior of quantum thermodynamic machines with prior information
Authors:	Thomas, George (/jspui/browse?type=author&value=Thomas%2C+George) Johal, Ramandeep S. (/jspui/browse?type=author&value=Johal%2C+Ramandeep+S.)
Keywords:	Classical thermodynamics Expected values ncomplete information
Issue Date:	2012
Publisher:	American Physical Society
Citation:	Physical Review E - Statistical, Nonlinear, and Soft Matter Physics, 85 (4), art. no. 041146
Abstract:	We estimate the expected behavior of the quantum model of a heat engine when we have incomplete information about external macroscopic parameters such as the magnetic field controlling the intrinsic energy scales of the working medium. We explicitly derive the prior probability distribution for these unknown parameters a i(i=1,2). Based on a few simple assumptions, the prior probability distribution is found to be of the form $\Pi(a_i) 1/a_i$. By calculating the expected values of various physical quantities related to this engine, we find that the expected behavior of the quantum model exhibits thermodynamiclike features. This leads us to a surprising proposal that incomplete information quantified as an appropriate prior distribution can lead us to expect classical thermodynamic behavior in quantum models
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