Implementing thermal operations

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Thermal Operations Resource Theory [1] is one of approaches to quantum thermodynamics. It establishes bounds on work extraction and distillation of a given state in presence of a thermal bath [2], , and rules for transitions between states of the system [1,3]. In its definition, Thermal Operation assume full control over the system, which may lead to doubts about their practical significance. We give a review of two main approaches addressing this issue. The first is based on the so called Crude Operations [4], which rely on the manipulation of the system energy levels and partial thermalization of a system state. The second aims at performing transitions on a d dimensional system solely by use of operations restricted to lower-dimensional space, and their convex combinations [5,6].

References:

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