


Erratum: Role of Quantum Coherence in Thermodynamics [PRX Quantum 3, 040323 (2022)]

Gilad Gour*

*Department of Mathematics and Statistics, Institute for Quantum Science and Technology, University of Calgary,
AB, Canada T2N 1N4*

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In the original article by Gour [1], it was demonstrated that by accounting for a sublinear amount of energy as “free”, the athermality theory becomes reversible in the context of pure states. However, the article inaccurately contends that a proof for the mixed-state scenario remains elusive. Contrarily, the mixed-state situation can be derived from Theorem 1 in [2], provided one additionally assumes that the dimension of the SLAR is in proportion to the dimension of $O(\sqrt{n \log n})$ qudits. To the best of the author’s understanding, it remains an unanswered question whether this dimension can be further reduced to a logarithmic scale, as accomplished in the original paper [1] for the pure-state scenario.

Furthermore, it’s important to highlight that conditions akin to those presented in Theorem III.2 of the original paper [1] were previously identified in [3], albeit in a slightly different context.

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- [1] Gilad Gour, PRX Quantum 3, 040323 (2022).
[2] Carlo Sparaciari, Jonathan Oppenheim, and Tobias Fritz, Phys. Rev. A 96, 052112 (2017).
[3] Varun Narasimhachar and Gilad Gour, Nature Communications 6, 7689 (2015).

*gour@ucalgary.ca

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