

Resource Theories and Thermodynamics: Lecture 4

1.4.2020

In the previous lecture, we have shown:

We need $I_\infty(p)$ pure bits to "create" the state p within the resource theory of nonuniformity.

Interpretation: We need $I_\infty \cdot \text{kg} \cdot T$ of work to create a single copy of p with certainty (not just on average).

There is no notion of "work" in the resource theory of nonuniformity, so take this statement with a grain of salt. However, in the last part of the lecture (Thermodynamics as a resource theory), we will prove this rigorously.

For now, we can motivate this interpretation further by relating this to what we have discussed in the first lecture: Landauer erasure.

2.9. Example: T_∞ in the special case of Landauer erasure

Recall our protocol:



