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Thermodynamics based on optimal transport

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Over the last two decades, the relationship between optimal transport theory and stochastic thermodynamics in the context of classical diffusion systems has been widely discussed. It is well known, for example, that state evolution with minimal dissipation over a finite time period is described by optimal transport protocols. In optimal transport theory, a notable of the metric is the 2-Wasserstein distance between the initial and final distributions, which represents this minimal dissipation. This expression of minimal dissipation also leads to dissipation being decomposed into conservative and non-conservative components.
In this talk, we will present various recent findings on this subject and discuss their applications to classical systems and quantum extensions.

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