
From the H theorem to adiabaticity shortcuts

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Abstract

Inspired from H-theorem requirements, a novel class of exact solutions to the Boltzmann equation is uncovered, for both the classical and quantum formulations. These solutions, valid for arbitrary collision laws, hold for time-dependent confinement. We exploit them, in a reverse-engineering perspective, to work out a protocol that shortcuts any adiabatic transformation between two equilibrium states in an arbitrarily short time span, for an interacting system. Particle simulations corroborate the analytical predictions.

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