

# Coherence-enhanced quantum-dot heat engine

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We show that quantum coherence can enhance the performance of a continuous quantum heat engine in the Lindblad description. We investigate the steady-state solutions of the particle-exchanging quantum heat engine, composed of degenerate double quantum dots coupled to two heat baths in parallel, where quantum coherence may be induced due to interference between relaxation channels. We find that the engine power can be enhanced by the coherence in the nonlinear response regime, when the symmetry of coupling configurations between dots and two baths is broken. In the symmetric case, the coherence cannot be maintained in the steady state, except for the maximum interference degenerate case, where initial-condition-dependent multiple steady states appear with a dark state.