

Abstract Submitted
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Mapping current fluctuations of stochastic pumps to nonequilibrium steady states.¹ GRANT ROTSKOFF, University of California, Berkeley — We show that current fluctuations in stochastic pumps can be robustly mapped to fluctuations in a corresponding time-independent non-equilibrium steady state. We thus refine a recently proposed mapping so that it ensures equivalence of not only the averages, but also the optimal representation of fluctuations in currents and density. Our mapping leads to a natural decomposition of the entropy production in stochastic pumps, similar to the “housekeeping” heat. As a consequence of the decomposition of entropy production, the current fluctuations in weakly perturbed stochastic pumps satisfy a universal bound determined by the steady state entropy production.

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