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Title: **Time-reversal symmetry and dissipation in dynamics with memory**

Modern single-molecule experiments and computer simulations track effective, low-dimensional “reaction coordinates” projected from the full system phase space as a function of time. Examples are distances between fluorescent labels in FRET spectroscopy, molecular extensions in single-molecule force spectroscopy, or internal distance-coordinates and other coarse-grained observables in molecular dynamics simulations. It is well known that projections that couple to slow hidden degrees of freedom induce memory in the observed dynamics. However, we are only beginning to understand the implications of memory for thermodynamics, in particular in systems that are driven far from thermodynamic equilibrium. I will review our recent efforts on how to understand and describe dissipation (a.k.a. irreversibility) in systems where (not necessarily slow) degrees of freedom are ignored.