

TITLE:

"Fluctuating currents in stochastic thermodynamics"

"Abstract"

Based on an informed application of Jacobi's formula we derive closed expressions for all cumulants of all antisymmetric observables of finite Markov processes. This approach provides a fully algebraic representation of the cumulants that does not involve derivatives. The net forces and activities along the cycles play a major role in these expressions?but we also identify additional contributions. The effectiveness of the approach is demonstrated based on three examples:

- (i) cumulants of particle motion of exclusion processes of 3 particles on 6 sites (without restriction on hopping rates!)
- (ii) thermodynamic efficiency of the kinesin molecular motor,
- (iii) domain drift and diffusion in cell-polarization processes.