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Beyond translational flows in non-reversible sampling

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Breaking reversibility in Monte Carlo algorithms often leads to substantial accelerations in sampling complex systems. Event-Chain Monte Carlo (ECMC) has allowed to investigate the bidimensional hard-sphere phase transition, building on non-reversible continuous translational moves. However, more general systems require rotations of some sort to thermalize.

In this work, we build on the Piecewise Deterministic Markov Process framework to introduce more general deterministic flows in ECMC, along with explicit conditions for global balance. Purely non-reversible rotational flows are then applied to hard dimers and compared to the alternative of mixing translational ECMC with reversible Metropolis rotations.

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Classification de Session: Result Communication