Piecewise deterministic Markov processes in bidimensional sphere systems

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Résumé

Markov chain Monte Carlo methods allow to sample from a given distribution. Many popular algorithms (e.g. Metropolis-Hastings algorithm) are reversible, often yielding a diffusive exploration of the support of the distribution. Conversely, Piecewise deterministic Markov processes methods are non-reversible methods. Breaking the detailed balance condition, they produce ballistic trajectories allowing for a fast exploation of the space. I will introduce these methods as well as the conditions for correctness, and apply them to bidimensional sphere systems.

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