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Towards the Application of Skewed Detailed Balance in Lattice Gauge Theories

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Most Monte Carlo algorithms generally applied to lattice gauge theories, among other fields, satisfy the detailed balance condition (DBC) or break it in a very controlled way. While DBC is not essential to correctly simulate a given probability distribution, it ensures the proper convergence after the system has equilibrated. While being powerful from this perspective, it puts strong constraints on the algorithms.

In this talk, I will discuss how breaking DBC can accelerate equilibration and how it can be tailored to improve the sampling of specific observables. By focusing on the case of the so-called Skewed Detailed Balance Condition, I will discuss applications in lattice gauge theories and the perspective of improving sampling over topology, for theories with distinct topological sectors.

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