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Overcoming ergodicity problems of HMC using radial updates

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The sensible application of the Hybrid Monte Carlo (HMC) method to the Hubbard model is hindered by the emergence of infinite potential barriers due to a vanishing fermion determinant, resulting in an ergodicity problem that needs to be resolved. This can be achieved by augmenting the HMC algorithm with radial updates, which refer to multiplicative Metropolis-Hastings updates in a radial direction of the non-compact fields. These radial updates facilitate jumps over the potential barriers, thereby restoring ergodicity while simultaneously reducing autocorrelation times at a comparably low computational cost.

Parallel Session (for talks only)

Algorithms and artificial intelligence

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