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Reducing the Sign Problem with simple Contour Deformation

Thursday, 3 August 2023 16:00 (20 minutes)

We apply constant imaginary offsets to the path integral for a reduction of the sign problem in the Hubbard model. These straightforward transformations enhance the quality of results from HMC calculations without compromising the speed of the algorithm. This method enables us to efficiently calculate systems that are otherwise inaccessible due to a severe sign problem. To support this claim, we present observables of the C_{20} and C_{60} fullerenes. Furthermore, we demonstrate that at a certain offset, the sign problem is completely lifted in the limit of large chemical potential.

Topical area

Algorithms and Artificial Intelligence

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