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Performance of two-level methods for the glueball spectrum in pure gauge theory

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The computation of the glueball spectrum is particularly challenging due to the rapid decay of the signal-to-noise ratio of the correlation functions. To address this issue, advanced techniques such as gauge link smearing and the variational method are commonly employed to identify the spectrum before the signal diminishes significantly. However, a significant improvement in the signal-to-noise ratio can be achieved by utilising multilevel techniques. In this talk, we present a study of the glueball spectrum in pure gauge theory with a two-level algorithm. Specifically, we explore the relation between noise reduction and the various multilevel parameters, such as the width of the dynamical regions and the number of two-level configurations.

Topical area

Algorithms and Artificial Intelligence

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