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Interglueball potential in lattice $SU(N)$ gauge theories

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The dynamics of the glueballs is important in the context of their experimental search as well as for understanding non-Abelian theories. The glueballs of the dark $SU(N)$ Yang-Mills theory are also good candidates of the dark matter [1,2].

The low energy effective Lagrangian of the 0^{++} glueball may be determined from the interglueball potential calculated on lattice. In this talk, we report on the result of the lattice calculations of the interglueball potential of the Yang-Mills theory with the color numbers $N=2,3,4$, with a detailed inspection of the systematics due to the discretization.

[1] N. Yamanaka, H. Iida, A. Nakamura, and M. Wakayama, Phys. Lett. B 813, 136056 (2021).

[2] N. Yamanaka, H. Iida, A. Nakamura, and M. Wakayama, Phys. Rev. D 102, 054507 (2020).

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