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## The mixing of $\eta_c$ and the Pseudoscalar Glueball

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The first lattice QCD study of the mixing of  $\eta_c$  and the pseudoscalar glueball is performed. We generate a large gauge configuration ensemble with  $N_f = 2$  degenerate charm quarks on an isotropic lattice. The correlation functions of the charm quark bilinear operators, both connected part and disconnected part, are computed via the distillation method. And the correlation functions of glueball operators are also computed on this ensemble and variational analysis method is adopted to obtain optimized operators. By performing a simultaneous two states fit of correlation functions  $C_{CC}(t)$ ,  $C_{GG}(t)$  and  $C_{GC}(t)$ , the mixing angle of  $\eta_c$  and pseudoscalar glueball is obtained, which is obviously nonzero but quite small. It would be helpful for understanding the properties of  $\eta_c$ .

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