Contribution ID : **31** Type : **not specified**

Radiative decay and electromagnetic radius of heavy-light mesons

On the five ensembles generated by the CLQCD collaboration, we computed decay width of D_s^ →*D_s γ*D_ ^(+)→D_ ^+ γ and D_ ^(*0)→*D_ ^0 γ*. *Chiral extrapolation and lattice spacing extrapolation were performed, yielding significantly improved precission. The precision for D_ ^(+)→D_ ^+ γ* was improved ten times compared to previous studies, while the precision for D_ ^(*0)→D_ ^0 γ was improved fivefold. Additionally, we computed g_{D^{\ast+}D^+\gamma}/g_{D^\ast_sD_s\gamma} by leveraging statistical correlations. Throughout these calculations, systematic uncertainties arising from variations in the fitting ranges, fitting methods, and extrapolation approaches were carefully considered.

Furthermore, on six ensembles including one physical pion mass ensemble, we computed the charge radius of D_s^*D_ ^*D_s^ *D_ ^*. For the first time, both lattice spacing effects and the influence of unphysical pion masses were simultaneously taken into account, leading to high-precision preliminary results.

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