The 38th International Symposium on Lattice Field Theory

LATTICE 21

JULY 26-30 2021, ZOOM/GATHER@MIT

Contribution ID: **242** Type: **Oral presentation**

Stout-smearing and c_{SW} at one loop order

Tuesday 27 July 2021 07:45 (15 minutes)

The one-loop determination of the coefficient c_{SW} of the Wilson quark action has been useful, in conjunction with non-perturbative determinations of c_{SW}, to push the leading cut-off effects for on-shell quantities to $\mathcal{O}(\alpha^2 a)$, or eventually $\mathcal{O}(a^2)$, if no link-smearing is employed. These days it is common practice to include some link-smearing into the definition of the fermion action. Unfortunately, in this situation only the tree-level value $c_{SW}^{(0)} = 1$ is known, and cut-off effects start at $\mathcal{O}(\alpha a)$. We present some general techniques for calculating one loop quantities in lattice perturbation theory which continue to be useful for smeared-link fermion actions. Specifically, we discuss the application to the 1-loop improvement coefficient $c_{SW}^{(1)}$ for stout-smeared Wilson fermions.

Primary authors: AMMER, Maximilian (University of Wuppertal); DURR, Stephan (University of Wuppertal)

Presenter: AMMER, Maximilian (University of Wuppertal)

Session Classification: Theoretical developments and applications beyond particle physics

Track Classification: Theoretical developments and applications beyond particle physics