Contribution ID: **29** Type: **Invited talk**

Stout smearing and Wilson flow in lattice perturbation theory (and beyond)

Thursday 13 February 2025 16:00 (30 minutes)

I present a sketch of the paper arXiv:2406.03493 (published in PRD) by Max Ammer and myself. It gives the expansion of stout smearing and the Wilson flow in lattice perturbation theory to order g_0^3, which is suitable for one-loop calculations. As the Wilson flow is generated by infinitesimal stout smearing steps, the results are related to each other by taking the appropriate limits. This yields a useful recipe for how to apply perturbative stout smearing or Wilson flow to the Feynman rules of a given lattice fermion action. This is illustrated through the self-energies of the clover-improved Wilson and Brillouin fermions. Also the upgrade of the 1-loop calculation of c_{SW} for Wilson and Brillouin fermions to stout smearing or Wilson flow will be briefly discussed. Time permitting, a few words on a non-perturbative calculation of the topological susceptibility with stout smearing and/or gradient flow, together with Gianluca Fuwa, may be added.

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