Contribution ID: **74** Type: **Parallel**

Leading isospin breaking effects in the hadronic vacuum polarisation with open boundaries

Tuesday 18 June 2019 14:20 (20 minutes)

We discuss leading isospin breaking effects in the hadronic vacuum polarisation required for the investigation of the hadronic contribution to $(g-2)_\mu$. The calculation proceeds by expanding the relevant correlation functions around the isosymmetric limit. Isosymmetric observables are evaluated on CLS gauge ensembles with $N_f = 2+1$, $O(a)$ improved Wilson fermions and open boundary conditions. A particular emphasis is placed on the relevant quark-disconnected diagrams required for a complete treatment of leading isospin breaking effects in the valence quark sector. We provide a detailed discussion of the renormalisation of the vector current in QCD+QED taking operator mixing into account.

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Session Classification: Hadron structure

Track Classification: Hadron structure