Contribution ID : **50**   Type : **Oral Presentation**

Measuring SU(3) monopole witn non-Abelian charge in lattice QCD

Thursday, 4 December 2025 16:30 (0:20)

Content

Dual superconductivity is a popular scenario to describe the property of confinement in QCD. Even though it has been successfully proved in compact QED, the same cannot be said for SU(N) Yang-Mills, and one important obstacle is the difficulty of reproducing the property of N-ality with Abelian monopoles alone. It is clear that non-Abelian information must be included when performing ensembles of topological defects that aim to reproduce the phenomenology of confinement.

In this presentation, we would like to motivate a modification of the usual deGrand-Toussaint method to measure monopoles that takes into account the non-Abelian nature of SU(N) by assigning roots to the monopole charges. This is in consonance with the usual representation of non-oriented center vortices in the continuum, where the vortices carry fundamental charges while the attached monopoles carry adjoint ones. Additionally, we hope that such modification will lead to a more streamlined way to study correlations of oriented and non-oriented center vortices as well as provide important insights to guide future proposals of ensembles of these topological defects.

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