

$\mathcal{N} = 1$ Supersymmetric $SU(3)$ Gauge Theory - Towards simulations of Super-QCD

Friday, 27 July 2018 17:30 (20 minutes)

$\mathcal{N} = 1$ Supersymmetric QCD (SQCD) is a possible building block of theories beyond the standard model. It describes the interaction between gluons and quarks with their superpartners, gluinos and squarks. Since supersymmetry is explicitly broken by the lattice regularization, a careful fine-tuning of operators is necessary to obtain a supersymmetric continuum limit. For the pure gauge sector, $\mathcal{N} = 1$ Supersymmetric Yang-Mills theory, supersymmetry is only broken by a non-vanishing gluino mass. If we add matter fields, this is no longer true and more operators in the scalar squark sector have to be considered for fine-tuning the theory. Guided by a one-loop calculation, we show that maintaining chiral symmetry in the light sector is nevertheless an important step. Furthermore, we present first preliminary lattice results on the fine-tuning and bound-state spectrum of SQCD.

Primary authors: Prof. WIPF, Andreas (FSU Jena); Dr WELLEGEHAUSEN, Björn (FSU Jena)

Presenter: Dr WELLEGEHAUSEN, Björn (FSU Jena)

Session Classification: Physics beyond the Standard Model

Track Classification: Physics Beyond the Standard Model