Contribution ID : **13** Type : **not specified**

# Centre Vortex Structure of QCD-Vacuum Fields and Confinement

*четверг, 11 ноября 2021 г. 11:30 (30)*

The non-trivial ground-state vacuum fields of QCD generate quark and gluon condensates and form the foundation of matter. Using modern visualization techniques, this presentation examines the microscopic structure of these fields. Of particular interest are the centre vortices identified within the ground-state fields of lattice QCD. This vortex structure is illustrated through renderings of oriented spatial plaquettes. Our current focus is on understanding the manner in which light dynamical fermions in the QCD vacuum alter the centre-vortex structure. The impact of dynamical fermions is not subtle, changing both the density of vortices and the complexity of the vortex structures observed. The results provide new insights into the role of centre vortices in underpinning both confinement and dynamical chiral symmetry breaking in QCD. Indeed, vortex-only models of the QCD-vacuum structure are sufficient to capture the salient features of QCD.

**Primary author(s) :** Prof. LEINWEBER, Derek (CSSM, University of Adelaide)

**Co-author(s) :** Mr BIDDLE, James (CSSM, University of Adelaide); Dr KAMLEH, Waseem (CSSM, University of Adelaide)

**Presenter(s) :** Prof. LEINWEBER, Derek (CSSM, University of Adelaide)

**Session Classification :** Morning session 7

**Track Classification :** Progress in the Confinement Problem