

Emergence of mass in the gauge sector of QCD

It is widely accepted nowadays that gluons, while massless at the level of the fundamental QCD Lagrangian, acquire an effective mass through the non-Abelian implementation of the classic Schwinger mechanism. The key dynamical ingredient that triggers the onset of this mechanism is the formation of composite massless poles inside the fundamental vertices of the theory. These poles enter in the evolution equation of the gluon propagator, and affect nontrivially the way the Slavnov-Taylor identities of the vertices are resolved, inducing a smoking-gun displacement in the corresponding Ward identities. In this talk I will present a comprehensive review of the pivotal concepts associated with this dynamical scenario, emphasizing the synergy between functional methods and lattice simulations, and highlighting recent advances that corroborate the action of the Schwinger mechanism in QCD.

Primary author: Prof. PPAVASSILIOU, Joannis (University of Valencia)

Presenter: Prof. PPAVASSILIOU, Joannis (University of Valencia)

Track Classification: Theory for strong QCD