This PhD course deals with the fundamental theory of strong interactions, the so-called Quantum Chromodynamics or QCD for short. This field theory describes the dynamics of quarks and gluons. It is one of the pillars of the standard model (SM) of elementary particles, which is the most successful theory in physics. The course covers the following topics: the SU(3) colour group, asymptotic freedom, scaling violations in deep inelastic scattering, renormalization group functions, operator-produce expansions, anomalous dimensions, non-perturbative QCD, dispersion sum rules, the QCD vacuum, U(1)-problem, confinement; strong CP violation

Suggested reference: Quantum Chromodynamics by Walter Greiner, Stefan Schramm, Eckart Stein

Dear Student, please be informed that all information related to the course description, content, and study materials can be accessed through the Blackboard platform. I recommend regularly checking the platform for the latest updates and important content