Title:	***Strong Interactions***
Lecturers:	B. Pasquini, M. Radici
Duration:	24h - 26h
CFU:	4
Period:	March - April 2024
Content:	The goal of the course is to provide the student with a general and introductory overview on the phenomenology of Hadronic Physics, intended as the description of properties of baryons and mesons (collectively, hadrons) in terms of the elementary degrees of freedom (quarks and gluons, collectively, partons), of Quantum Chromodynamics (QCD), the theory of Strong Interactions. Since QCD is a non abelian gauge theory that displays confinement of partons at energy scales comparable to hadron masses, Hadronic Physics must rely on suitable mathematical tools to extract information about the partonic content of hadrons from experimental data, especially within the challenging, highly non-perturbative regime of QCD. The course will feature a general overview of the theory of lepton-hadron scattering, evidence of scaling and the birth of the Parton Model introducing the concept of partonic density, a short list of tests of the Parton Model in hard processes with or without polarization, the EMC experiment and the so-called "spin crisis", scaling violations and evolution equations, hints about the Operator Product Expansion (OPE), the rigorous OPE definition of partonic densities, and several other related topics that represent the forefront of current research in the field of Hadronic Physics.

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