

International workshop on CLAS12 physics and future perspectives at JLab



mardi 21 mars 2023 - vendredi 24 mars 2023

CNRS headquarters

Programme Scientifique

The CLAS12 detector at Jefferson Lab has recently started an experimental program to deepen our understanding of Quantum Chromodynamics using the upgraded 12-GeV polarized electron beam produced by the CEBAF accelerator. A wealth of results is starting to be released, covering various aspects of the study of QCD: nucleon structure (with the measurement of Generalized Parton Distributions – GPDs - and Transverse Momentum Dependent Parton Distribution Functions - TMDs), light-quark meson spectroscopy (with a special focus on hybrids, exotics, penta-quarks), and nuclear structure (in particular short-range correlations and medium effects).

On top of focusing on completing the several, already approved experiments of the 12-GeV program, the hadron physics community is considering various upgrade options, for both the CLAS12 detector and the CEBAF accelerator, to further exploit the potentialities of this unique fixed-target facility. For instance, an increase in the luminosity capabilities of CLAS12 could allow the measurement of processes with very small cross section. This upgrade, combined to the possible addition of muon detection systems, could allow CLAS12 to explore, for the first time, reactions such as the double-DVCS – which is one of the missing pieces to solve the puzzle of nucleon structure in terms of GPDs. A strong pluri-disciplinary interest, going from nucleon structure to spectroscopy, to physics beyond the Standard Model, has also been building, recently, around the possibility to have a beam of polarized positrons for CEBAF. Finally, the perspective of a possible energy upgrade for the CEBAF accelerator opens possible new avenues for hadron spectroscopy, and could sensibly expand the kinematics accessible for nucleon-structure studies.

The “International Workshop on CLAS12 Physics and future perspectives at JLab” aims at bringing together the experts and young researchers in the field of hadronic physics (both experiment and theory) and to have in-depth discussions on the current research activities at CLAS12 and the possible long-term perspectives for the community.