

# Joint 20th International Workshop on Hadron Structure and Spectroscopy and 5th workshop on Correlations in Partonic and Hadronic Interactions



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## The LHCspin project

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The goal of LHCspin is to develop innovative solutions and cutting-edge technologies to advance the field of spin physics over the next few years, by exploring a unique kinematic regime and exploiting new reaction processes. To achieve this, a polarized gaseous target, operated in combination with high-energy, high-intensity LHC beams and the highly performing LHCb particle detector, has the potential to open new physics frontiers and deepen our understanding of the complexities of the strong interaction in the non-perturbative regime of QCD. This configuration, with center of mass energies up to 115 GeV, using both proton and heavy-ion beams, covers a broad backward rapidity region, including the poorly explored high Bjorken- $x$  and high Feynman- $x$  regimes. This ambitious task is based on the recent installation of an unpolarized gas target (SMOG2) in the LHCb spectrometer, not only making it a unique project but also providing a valuable playground for its polarized upgrade. LHCspin is expected to start data taking in the LHC IR4 in few years, as an independent system before going to LHCb. Here, an overview of the physics potential and a description of the LHCspin experimental setup are presented.

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