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The nucleon spin structure at short distance

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The spin structure of the nucleon has been the basis of several surprises in the past. After the EMC experiment showed that the quark spin contribution to the nucleon spin was small, several experiments were performed to further investigate this "spin crisis." Deep inelastic scattering (DIS) experiments at CERN, SLAC, and DESY successfully confirmed the low quark spin contribution to the nucleon. Using semi-inclusive DIS, SMC, HERMES and COMPASS were also able to obtain flavor separated quark polarizations. DIS experiments are only sensitive to gluon polarization at NLO via the QCD evolution of the structure function g_1, or through di-jet/hadron production in photon-gluon fusion processes. Proton-proton collisions are sensitive to the gluon polarization at leading order. The RHIC experiments PHENIX and STAR have measured inclusive pion and jet asymmetries which exclude huge gluon polarizations but a substantial contribution to the spin of the nucleon is still possible. Another aspect of spin measurements are transverse spin phenomena. Once deemed to be vanishing in perturbative QCD recent nonzero transverse single spin asymmetries observed at RHIC and HERMES could be explained in the framework of transverse momentum dependent (TMD) distribution and fragmentation functions. One is the so-called Sivers function which requires a nonzero parton orbital angular momentum. Early global analysises were able to combine the data obtained at RHIC, COMPASS and HERMES. Another TMD function is the Collins fragmentation function, first measured at BELLE, which serves as a transverse spin analyzer to extract the quark transverse spin distribution from the SIDIS experiments. Also here a first global analysis of SIDIS and BELLE data has been successfully performed. An overview on recent spin related measurements at short distance, performed at PHENIX, STAR, BRAHMS, HERMES, COMPASS and Belle will be given.