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The Spin of the Nucleon—Highlights from HERMES

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The question after the individual parton (quarks and gluons) contributions to the spin of the nucleon is even after 20 years of experimental efforts not yet solved. After several very precise measurements in polarized deep inelastic scattering it is clear, that the spin of the nucleon can not be explained by the contribution of the quarks alone. This is affirmed by the newest results from HERMES on the inclusive spin structure function g_1 and on the individual contributions from the different quark flavors from semi-inclusive deep inelastic scattering data. Recently HERMES has started to measure the gluon polarization by isolating the photon gluon fusion process in semi-inclusive deep inelastic scattering; latest results on the contribution of the gluons to the nucleon spin will be discussed. The clear experimental evidence of exclusive reactions, especially DVCS, allows in the formalism of generalized parton distributions the study of an other component of the nucleon spin the orbital angular momentum. The most recent results on indications of the size of the orbital angular momentum of quarks will be presented. To complete the picture on the spin-structure of the nucleon it is indispensable to measure the till now completely unknown spin structure function called transversity. Results from measurements with a transversely polarized hydrogen target give first insights to this quantity.