Azimuthal single-spin asymmetries in semi-inclusive deep-inelastic scattering on a transversely polarised hydrogen target

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In 2005 the HERMES collaboration published first evidence for azimuthal single-spin asymmetries in semi-inclusive production of charged pions on a transversely polarised hydrogen target.

The measured asymmetries are caused by both the Collins and the Sivers mechanism. Their distinctive Fourier components provide signals to previously unknown quantities: the transversity distribution in conjunction with the Collins fragmentation function (Collins mechanism/asymmetry) and the Sivers distribution (Sivers mechanism/asymmetry).

Preliminary results, which are based on nearly five times more statistics than in the publication, are consistent with the published results. The presented results for charged pions with a much higher significance than the published data will be accompanied by the first measurement of Collins and Sivers asymmetries for charged kaons.