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Azimuthal asymmetries in unpolarized SIDIS at COMPASS

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The azimuthal asymmetries, given by the amplitudes of the modulations in the azimuthal angle ϕ_h of the hadrons produced in SIDIS, give access to the Transverse-Momentum-Dependent structure of the nucleon. In unpolarized SIDIS, of particular interest are the $\cos\phi_h$ and $\cos 2\phi_h$ modulations, generated by the Cahn effect and by the Boer-Mulders TMD PDF $h_1^\perp$, convoluted with the Collins fragmentation function. Additional information on $h_1^\perp$ can be gained by measuring the azimuthal asymmetries of hadron pairs.
In 2016 and 2017, the COMPASS Collaboration at CERN collected a large sample of DIS events with a longitudinally polarised 160 GeV/c muon beam scattering off a liquid hydrogen target. Part of the collected data has been analyzed to extract preliminary results for the azimuthal asymmetry of the charged hadrons and of the hadron pairs, the latter shown here for the first time.

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