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Extracting sea quark spin distributions from a global Monte Carlo analysis of semi-inclusive DIS data

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Polarized semi-inclusive deep inelastic scattering (SIDIS) plays a crucial role in understanding sea quark contributions to the proton spin through global analyses of spin-dependent parton distribution functions (PDFs). The shape of the strange quark polarization in particular has been shown to be dramatically different between analyses that include or exclude SIDIS data. The inclusion of SIDIS data, however, requires knowledge of fragmentation functions (FFs), which up until now have been fixed in all current analyses of SIDIS data to specific parameterizations determined from single-inclusive annihilation (SIA) and other quark to hadron fragmentation processes. In this talk, I will present results from a first ever simultaneous Monte Carlo analysis of polarized PDFs and FFs using DIS, SIA, and SIDIS data. I will also discuss in detail the extent to which current pion and kaon SIDIS data can distinguish between the valence and sea spin distributions of the proton.

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