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Typ: Talk

Determination of quark and gluon distributions in nuclei using correlated nucleon pairs

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Analyzing data from nuclear lepton Deep-Inelastic Scattering, Drell- Yan processes, and W and Z boson production, we show that factorizing nuclear structure into quasi-free nucleons and universally modified closeproximity Short Range Correlated (SRC) nucleon pairs allows us to fully describe the quark-gluon structure of nuclei down to very-low momentum fractions. This is the first combined extraction of the universal distribution of quarks and gluons inside SRC pairs, and the nucleus-specific fraction of nucleons in SRC pairs. The extracted SRC fractions are in good agreement with previous nuclear structure calculations and measurements. At the same time the obtained nuclear PDFs are in very good agreement with fits using conventional framework of global nuclear PDF analysis. This extraction of nuclear structure information from quark-gluon distributions thus represents a significant development toward understanding the structure of nuclei in terms of their fundamental quark-gluon constituents.

Experiment/Theory

Theory/Phenomenology

Affiliation

Institute of Nuclear Physics PAN, Krakow

Hauptautoren: KUSINA, Aleksander (Institute of Nuclear Physics PAN, Krakow); JEZO, Tomas (WWU ITP); KOVARIK, Karol (WWU Münster); KLASEN, Michael

Vortragende(r): KUSINA, Aleksander (Institute of Nuclear Physics PAN, Krakow)

Sitzung Einordnung: Parallel: Early-Time Dynamics & nPDFs

Track Klassifizierung: Early time dynamics and nuclear PDFs