

# 11th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



Beitrag ID: 231

Typ: Talk

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

*Mittwoch, 29. März 2023 15:40 (20 Minuten)*

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 close-proximity 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); KLASSEN, 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