LONGJIE CHEN

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EDUCATION

Instytut Fizyki Jadrowej PAN (IFJPAN) *March 2025 - June present*
Ph.D. in Particle Physics and Nuclear Physics

South China Normal University (SCNU) *September 2021 - June 2024*
M.S. in Particle Physics and Nuclear Physics (Advanced Study)

University of South China (USC) *September 2017 -June 2021*
B.E. in Nuclear Engineering

RESEARCH INTERESTS

Perturbative QCD & spin polarization phenomenon
Production of quarkonia in perturbative QCD
Structure function and parton distribution function
Heavy meson productions at EIC regime

RESEARCH EXPERIENCE

Twist-3 gluon contribution to Sivers asymmetry in SIDIS [1] Jan 2023 - Jan 2024
Supervisors: Prof. Yoshida and Prof. Xing SCNU

In this project we carried out calculations for the gluon Sivers type contribution to the SSA within the twist-3 framework in J/ψ productions at semi-inclusive deep inelastic scattering (SIDIS). We also performed numerical simulations for the SSA at the EIC energy in order to clarify the role of twist-3 gluon contribution in the J/ψ production via *Mathematica* & *Fortran*. Our result shows that the effect of hadronizing of final quark pair vanishes in the level of SSA. Besides, the J/ψ SSA is an ideal observable to investigate the C-even type twist-3 gluon distribution that has a direct relationship with the gluon transverse-momentum-dependent distribution function.

Study of the quarkonium at the Electron Ion Collider regime[2] Jan 2024 - Present
Supervisors: Prof. Yoshida SCNU

Quarkonium is an extremely useful tool to probe the internal structure of matter, namely one of the main goals of the Electron Ion Collider. In this review, we argue that studies of quarkonium production and correlations in (polarised) electron-proton and electron-nucleus collisions can produce unprecedented insights into the 3D structure of the nucleon 1904 and into the partonic content of the nuclei as well as help to settle the long-lasting debate on how quarkonia form.

MEETING PARTICIPATION

Poster presentation at the 15th workshop on QCD Phase Transition and Relativistic Heavy Ion Collisions (QPT2023) *14-19, Dec, 2023 in Zhuhai, China*

PUBLICATIONS

[1] **Longjie Chen**, H. Xing, and S. Yoshida, "The twist-3 gluon contribution to sivers asymmetry in J/ψ production in semi-inclusive deep inelastic scattering," *Phys. Rev. D*, 2023.
[2] D. Boer *et al.*, "Physics case for quarkonium studies at the Electron Ion Collider," Sep. 2024. arXiv: 2409.03691 [hep-ph].

ACHIEVEMENTS

First-class Graduate Academic Scholarship , awarded by South China Normal University *Fall 2023*
Second-class Graduate Academic Scholarship , awarded by South China Normal University *Fall 2022*
First-class Graduate Academic Scholarship , awarded by South China Normal University *Fall 2021*

SKILLS/HOBBIES

Programming Languages Mathematica, Fortran, MATLAB
Hobbies Jogging and Hiking