Yuxun Guo Ph.D.

Postdoctoral Scholar, NSD, LBNL

CONTACT INFO

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Phone Number: 240-413-8190

OBJECTIVES

I am currently a postdoctoral researcher in the nuclear theory group at the Nuclear Science Division, Lawrence Berkeley National Lab, and also part of the Quark-Gluon Tomography (QGT) topical collaboration. I am interested in the 3-dimensional structure of nucleons and physics related to the generalized parton distributions (GPDs). I focus on studies related to GPDs with high energy exclusive processes such as deeply virtual Compton scattering, deeply virtual meson production and threshold heavy meson production e.t.c. My research covers from the theoretical aspects of GPDs, e.g., the nucleon spin sum rule, to more numerical studies such as developing programs for numerical extraction of GPDs.

PERSONNAL EXPERIENCE

Appointment

Postdoc — Lawrence Berkeley National Lab. Sep. 2023 – Present

Nuclear Theory Group, Nuclear Science Division

Host: Dr. Feng Yuan

Visitor — Lawrence Berkeley National Lab. Apr. 2023 – Aug. 2023

Nuclear Theory Group, Nuclear Science Division

Host: Dr. Feng Yuan

Education

Ph. D. — University of Maryland, College Park Aug. 2018 – May 2023

Maryland Center for Fundamental Phycics, Dept. of Physics

Advisor: Prof. Xiangdong Ji

Dissertation: Unraveling the Nucleon 3D Structure from Experiment, Lattice, and Global Analysis

B. S. — Tsinghua University, Beijing, China Aug. 2014 – Jul. 2018

Department of Physics

Advisor: Prof. Hong-Jian He

Average GPA: 91/100, ranking 6/52.

HONORS, AWARDS AND ACTIVITIES

HONORS AND AWARDS

CY2023 Ralph Myers & Friends of Physics Award (Outstanding Teaching Assistant)

CY2021−2022 JSA/Jefferson Lab Graduate Fellowship

CY2021−2022 Center for Nuclear Femtography Graduate Fellowship

CY2018 University of Maryland Physics Graduate Program Dean's Fellowship

CY2015−2018 Tsinghua Xuetang Talents Physics Program

ACTIVITIES

2022 Hampton University Graduate Studies (HUGS) Summer Program at JLab

2022 TMD Collaboration Winter School at Santa Fe

TEACHING AND MENTORING

MENTORING

- **Jinghong Yang (Graduate student at UMD)** Sep. 2022 – Present

  For several projects on near-threshold J/ψ photo-productions and the GUMP program for the global analysis of GPDs

- **Jinchen He (Graduate student at UMD)** Sep. 2022 – Present

  For his candidacy projects on " Effective Field Theory for Positronium in Relativistic Motion "

TEACHING ASSISTANT

Discussion+Grader	PHYS411 - Intermediate Electricity and Magnetism (2022 Fall)
Lab section	PHYS271 - General Physics III Lab. (2020 & 2021 Fall)
Lab section	PHYS271-WB - General Physics Lab. 2020 Summer
Lab section	PHYS260 - General Physics II 2020 Summer
Grader	PHYS371 - Modern Physics (2020 Spring)
Grader	PHYS420 - Principles of Modern Physics (2019 & 2020 Spring)
Grader	PHYS402 - Quantum Physics II (2019 Spring)
Lab section	PHYS261 - General Physics II Lab. (2018 & 2019 Fall)

SEMINARS AND TALKS

SEMINARS

1. **Hadron Ion Tea (HIT) Seminar at LBNL** Oct. 10th, 2023
   Probing the GFFs of the nucleon from near-threshold heavy quarkonium photo-production
2. **Zhongbo Kang Group Seminar at UCLA** Mar. 9th, 2023
   Unraveling the 3D structure of nucleon
3. **CFNS Seminar at Stony Brook University** Nov. 10th, 2022
   Unraveling the 3D structure of nucleon
4. **Nuclear Theory Seminar at University of Maryland** Oct. 13th, 2022
   Unraveling the 3D structure of nucleon
5. **JLab Theory Seminar** Apr. 25th, 2022
   GPDs and nucleon spin structures
6. **CNF Seminar** Sep. 29th, 2021
   Higher order kinematical effects in DVCS

INVITED TALKS

1. **2023 QGT collaboration meeting at Temple** Sep. 08 – 09, 2023
   Milestone progress of Global Analysis on GUMP
2. **ECT*-APCTP Joint Workshop:** Aug. 21 – 25, 2023
   Exploring resonance structure with transition GPDs
   Global GPD extraction and parametrisation
3. **CNF GPD global analysis Workshop** Jun. 12 – 14, 2023
   Moment parameterization of GPDs and global analysis
4. **3DPartons Workshop** Oct. 26 – 28, 2022
   GUMP GPDs global analysis
5. **Opp. with JLab Energy and Luminosity Upgrade at ECT*** Sep. 26 – 30, 2022
   GUMP fitting of GPDs
6. **J/Psi and Beyond at JLab** Aug. 16 – 17, 2022
   Near-Threshold J/psi Production and Gravitational Form Factors
7. **Twds impvd hadron femtography w. hard excl. reactions** Jul. 18 – 22, 2022
   GPDs through Universal Moments Parameterization
8. **The Next Generation of 3D Imaging at JLab** Jul. 07 – 08, 2022
   GPDs through Universal Moments Parameterization

Contributed talks

1. **The 25th International Spin Symposium (SPIN 2023)** Sep. 24 – 29, 2023
   Threshold heavy quarkonium production and GPDs at large skewness
2. **The 25th International Spin Symposium (SPIN 2023)** Sep. 24 – 29, 2023
   Global analysis of GPDs with GUMP program
3. **Precision QCD Predictions for ep Physics at the EIC (II)** Sep. 18 – 22, 2023
   Global analysis of GPDs with GUMP program—near forward and beyond
4. **2023 QGT collaboration meeting at Temple** Sep. 08 – 09, 2023
   Parameterization and extraction of GPDs from small to larger skewness
5. **APS April meeting virtual 2023** Apr. 24 – 26, 2023
   GPDs through Universal Moments Parameterization at non-zero skewness
6. **APS GHP workshop 2023** Apr. 12 – 14, 2023
   GPDs through Universal Moments Parameterization at non-zero skewness
7. **DIS 2023 at MSU** Mar. 27 – 31, 2023
   GPDs through Universal Moments Parameterization at non-zero skewness
8. **APS DNP meeting 2022** Oct. 27 – 30, 2022
   GPDs through Universal Moments Parameterization
9. **APS April meeting 2022** Apr. 09 – 12, 2022
   Higher order kinematical effects in DVCS
10. **APS DNP meeting 2021** Oct. 11 – 14, 2021
    QCD analysis of near-threshold photon-proton production of heavy quarkonium
11. **2nd PSQ@EIC: Precision studies on QCD at EIC** Jul. 19 – 23, 2021
    QCD analysis of near-threshold photon-proton production of heavy quarkonium
12. **QCD evolution workshop 2021 at UCLA** May 10 – 14, 2021
    QCD analysis of near-threshold photon-proton production of heavy quarkonium
13. **APS April meeting 2021** Apr. 17 – 20, 2021
    Twist-three GPDs and transverse angular momentum sum rules

PUBLICATION LIST

Check my Inspirehep.net or Google Scholar pages for the most recent updates.

Articles

1. Y. Guo, X. Ji and F. Yuan, *Proton's gluon GPDs at large skewness and gravitational form factors from near threshold heavy quarkonium photo-production*, 2308.13006

2. Y. Guo, X. Ji, Y. Liu and J. Yang, *Updated analysis of near-threshold heavy quarkonium production for probe of proton's gluonic gravitational form factors*, *Phys. Rev. D* **108** (2023) 034003 [2305.06992]

3. Y. Guo, X. Ji, M.G. Santiago, K. Shiells and J. Yang, *Generalized parton distributions through universal moment parameterization: non-zero skewness case*, *JHEP* **05** (2023) 150 [2302.07279]

4. Y. Guo, X. Ji and K. Shiells, *Generalized parton distributions through universal moment parameterization: zero skewness case*, *JHEP* **09** (2022) 215 [2207.05768]

5. Y. Guo, X. Ji, B. Kriesten and K. Shiells, *Twist-three cross-sections in deeply virtual Compton scattering*, *JHEP* **06** (2022) 096 [2202.11114]

6. K. Shiells, Y. Guo and X. Ji, *On extraction of twist-two Compton form factors from DVCS observables through harmonic analysis*, *JHEP* **08** (2022) 048 [2112.15144]

7. Y. Guo, X. Ji and K. Shiells, *Higher-order kinematical effects in deeply virtual Compton scattering*, *JHEP* **12** (2021) 103 [2109.10373]

8. Y. Guo, X. Ji and Y. Liu, *QCD Analysis of Near-Threshold Photon-Proton Production of Heavy Quarkonium*, *Phys. Rev. D* **103** (2021) 096010 [2103.11506]

9. Y. Guo, X. Ji and K. Shiells, *Novel twist-three transverse-spin sum rule for the proton and related generalized parton distributions*, *Nucl. Phys. B* **969** (2021) 115440 [2101.05243]

10. X. Chen, W.Z. Chua, Y. Guo, Y. Wang, Z.-Z. Xianyu and T. Xie, *Quantum Standard Clocks in the Primordial Trispectrum*, *JCAP* **05** (2018) 049 [1803.04412]

Contributed Reports

1. A. Accardi et al., *Strong Interaction Physics at the Luminosity Frontier with 22 GeV Electrons at Jefferson Lab*, 2306.09360

2. V.D. Burkert et al., *Precision studies of QCD in the low energy domain of the EIC*, *Prog. Part. Nucl. Phys.* **131** (2023) 104032 [2211.15746]

PERSONAL SKILLS

Languages	Mandarin(native), English (fluent)
Programming	Mathematica, Python, C++, LaTeX