Shohini Bhattacharya

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Education and Professional Appointments

01/2025 – Present	**Assistant Professor of Physics, University of Connecticut**
02/2024 – 12/2024	**J. Robert Oppenheimer Fellow, Los Alamos National Laboratory**
10/2021 – 02/2024	**Postdoctoral Research Associate, Brookhaven National Laboratory (BNL) and RIKEN BNL Research Center**
08/2021 – 10/2021	**Adjunct Research Assistant Professor, Temple University**
08/2015 – 08/2021	**Ph.D., Temple University**, Theoretical Nuclear Physics Thesis: *A comprehensive study of the proton structure: From PDFs to Wigner Functions*
2014 – 2015	**Visiting Scholar, Vivekananda University**
2012 – 2014	**M.Sc. Physics, Indian Institute of Technology (IIT) Delhi**
2009 – 2012	**B.Sc. Physics, University of Calcutta**

Research Focus and Proficiencies

Research Focus	Quantum Chromodynamics (QCD); Electron-Ion Collider physics; Hadron spin & mass structure; Perturbative QCD; QCD factorization; Higher twist effects; Phenomenology of lepton- and hadron-induced scattering processes; Multi-dimensional imaging of hadrons; Developing formalisms to calculate various non-perturbative quantities in Lattice QCD and establish connections to phenomenology; Investigating anomalies in field theories; Global analysis of data; Testing of Standard Model and fundamental symmetries
Proficiencies	Python (Pandas, Matplotlib, Jupyter, Numpy, Scipy, data analysis/visualization), Mathematica, LaTeX, Microsoft Office, Operating Systems: Linux (Ubuntu), Windows

Awards and Accolades

2024	Recipient of the prestigious **Oppenheimer Distinguished Postdoctoral Fellowship**, a 3-year award granted by Los Alamos National Laboratory
2022	Awarded the **Gary McCartor Fellowship Award** by the International Light Cone Advisory Committee, Inc. (ILCAC)
2021	Awarded **Doctoral Dissertation Completion Grant** for the Summer 2021 term by the Graduate Board Fellowship Committee of Temple University
2020	Recipient of the 2020 **Outstanding Research by a Graduate Student** in the College of Science and Technology, Temple University
2019-2020	Recipient of the 2019/2020 **Peter Havas Humanitarian Scholarship for Outstanding Graduate Students** from the Physics Department, Temple University
2018	Awarded **First Best student's talk** at the 33rd annual Hampton University Graduate Studies (HUGS 2018) Program held at Jefferson Lab for the talk titled as "*Accessing parton Orbital Angular Momentum through Generalized TMDs*"
	Received **HUGS fellowship** for the 33rd annual HUGS 2018 Program held at Jefferson Lab
2017	Recipient of the 2017 **Outstanding Teaching by a Graduate Student** in the College of Science and Technology, Temple University

Awards and Accolades (continued)

2012 Secured an **All India Rank of 74 (among 50,000+ contenders)** in Joint Admission test for M.Sc. (Indian Institute of Technology/IIT JAM-2012), a national-level examination for admission to master's degree program in Physics at IITs

Research Publications

I have authored **24 original papers** published in peer-reviewed scientific journals, such as Physical Review Letters, Physical Review D, and Physics Letters B. Furthermore, I have played an active role in shaping **3 community white papers**, and my research has been showcased in **25 publications featured in the proceedings of prominent conferences, 8 of which underwent peer review**. A comprehensive list of my publications is provided below.

Journal Articles

1. Bhattacharya, S., Hatta, Y., & Schoenleber, J. (2024, November). *Nonlocal chiral anomaly and generalized parton distributions*. (Submitted for publication). arXiv: 2411.07024 [hep-ph]
2. Bhattacharya, S., Cichy, K., Constantinou, M., Gao, X., Metz, A., Miller, J., … Zhao, Y. (2024, October). *Moments of Axial-Vector GPD from Lattice QCD: Quark Helicity, Orbital Angular Momentum, and Spin-Orbit Correlation*. (Submitted for publication). arXiv: 2410.03539 [hep-lat]
3. Bhattacharya, S., Boussarie, R., & Hatta, Y. (2024a, April). *Exploring orbital angular momentum and spin-orbit correlation for gluons at the Electron-Ion Collider*. (Submitted for publication). arXiv: 2404.04209 [hep-ph]
4. Bhattacharya, S. et al. (2024). *Generalized parton distributions from lattice QCD with asymmetric momentum transfer: Axial-vector case*. doi:10.1103/PhysRevD.109.034508. arXiv: 2310.13114 [hep-lat]
5. Bhattacharya, S., Boussarie, R., & Hatta, Y. (2024b). *Spin-orbit entanglement in the Color Glass Condensate*. doi:10.1016/j.physletb.2024.139134. arXiv: 2404.04208 [hep-ph]
6. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Nurminen, N., & Steffens, F. (2024). *Generalized parton distributions from the pseudodistribution approach on the lattice*. doi:10.1103/PhysRevD.110.054502. arXiv: 2405.04414 [hep-lat]
7. Bhattacharya, S., Zheng, D., & Zhou, J. (2024a). *Accessing the gluon GTMD F1,4 in exclusive π^0 production in ep collisions*. doi:10.1103/PhysRevD.109.096029. arXiv: 2304.05784 [hep-ph]
8. Bhattacharya, S., Zheng, D., & Zhou, J. (2024b). *Probing the Quark Orbital Angular Momentum at Electron-Ion Colliders Using Exclusive π^0 Production*. doi:10.1103/PhysRevLett.133.051901. arXiv: 2312.01309 [hep-ph]
9. Bhattacharya, S., Cichy, K., Constantinou, M., Dodson, J., Metz, A., Scapellato, A., & Steffens, F. (2023). *Chiral-even axial twist-3 GPDs of the proton from lattice QCD*. doi:10.1103/PhysRevD.108.054501. arXiv: 2306.05533 [hep-lat]
10. Bhattacharya, S., Cichy, K., Constantinou, M., Gao, X., Metz, A., Miller, J., … Zhao, Y. (2023). *Moments of proton GPDs from the OPE of nonlocal quark bilinears up to NNLO*. doi:10.1103/PhysRevD.108.014507. arXiv: 2305.11117 [hep-lat]
11. Bhattacharya, S., Hatta, Y., & Vogelsang, W. (2023b). *Chiral and trace anomalies in deeply virtual Compton scattering*. doi:10.1103/PhysRevD.107.014026. arXiv: 2210.13419 [hep-ph]
12. Bhattacharya, S., Hatta, Y., & Vogelsang, W. (2023c). *Chiral and trace anomalies in deeply virtual Compton scattering. II. QCD factorization and beyond*. doi:10.1103/PhysRevD.108.014029. arXiv: 2305.09431 [hep-ph]

13. Bhattacharya, S., Boussarie, R., & Hatta, Y. (2022). *Signature of the Gluon Orbital Angular Momentum*. (**DOE Highlight**). doi:10.1103/PhysRevLett.128.182002. arXiv: 2201.08709 [hep-ph]

14. Bhattacharya, S., Cichy, K., Constantinou, M., Dodson, J., Gao, X., Metz, A., … Zhao, Y. (2022). *Generalized parton distributions from lattice QCD with asymmetric momentum transfer: Unpolarized quarks*. (**DOE Highlight**). doi:10.1103/PhysRevD.106.114512. arXiv: 2209.05373 [hep-lat]

15. Bhattacharya, S., Kang, Z.-B., Metz, A., Penn, G., & Pitonyak, D. (2022b). *First global QCD analysis of the TMD g_{1T} from semi-inclusive DIS data*. doi:10.1103/PhysRevD.105.034007. arXiv: 2110.10253 [hep-ph]

16. Bhattacharya, S., & Metz, A. (2022). *Burkhardt-Cottingham-type sum rules for light-cone and quasi-PDFs*. doi:10.1103/PhysRevD.105.054027. arXiv: 2105.07282 [hep-ph]

17. Bhattacharya, S., Metz, A., Ojha, V. K., Tsai, J.-Y., & Zhou, J. (2022). *Exclusive double quarkonium production and generalized TMDs of gluons*. doi:10.1016/j.physletb.2022.137383. arXiv: 1802.10550 [hep-ph]

18. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2021). *Parton distribution functions beyond leading twist from lattice QCD: The $h_L(x)$ case*. doi:10.1103/PhysRevD.104.114510. arXiv: 2107.02574 [hep-lat]

19. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2020a). *Insights on proton structure from lattice QCD: The twist-3 parton distribution function $g_T(x)$*. (**Editor's Suggestion**). doi:10.1103/PhysRevD.102.111501. arXiv: 2004.04130 [hep-lat]

20. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2020b). *One-loop matching for the twist-3 parton distribution $g_T(x)$*. doi:10.1103/PhysRevD.102.034005. arXiv: 2005.10939 [hep-ph]

21. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2020c). *The role of zero-mode contributions in the matching for the twist-3 PDFs $e(x)$ and $h_L(x)$*. doi:10.1103/PhysRevD.102.114025. arXiv: 2006.12347 [hep-ph]

22. Bhattacharya, S., Cocuzza, C., & Metz, A. (2020b). *Exploring twist-2 GPDs through quasidistributions in a diquark spectator model*. doi:10.1103/PhysRevD.102.054021. arXiv: 1903.05721 [hep-ph]

23. Bhattacharya, S., Cocuzza, C., & Metz, A. (2019a). *Generalized quasi parton distributions in a diquark spectator model*. doi:10.1016/j.physletb.2018.09.061. arXiv: 1808.01437 [hep-ph]

24. Bhattacharya, S., Metz, A., & Zhou, J. (2017a). *Generalized TMDs and the exclusive double Drell–Yan process*. [Erratum: Phys.Lett.B 810, 135866 (2020)]. doi:10.1016/j.physletb.2017.05.081. arXiv: 1702.04387 [hep-ph]

Community White papers

1. Boer, D. et al. (2024, September). *Physics case for quarkonium studies at the Electron Ion Collider*. **Note:** In this article, I contributed by authoring a section that provides a comprehensive review of the current state of observables sensitive to Wigner functions. Additionally, I explored potential avenues and prospects for accessing these functions through quarkonia-pair production at the Electron-Ion Collider. arXiv: 2409.03691 [hep-ph]

2. Chapon, E. et al. (2022). *Prospects for quarkonium studies at the high-luminosity LHC*. **Note:** In this article, I made a contribution by authoring a section that extensively reviewed the current state of observables sensitive to Wigner functions. Furthermore, I discussed the potential avenues and prospects for accessing these functions through quarkonia-pair production at the high-luminosity LHC. doi:10.1016/j.ppnp.2021.103906. arXiv: 2012.14161 [hep-ph]

3. Abdul Khalek, R. et al. (2021, March). *Science Requirements and Detector Concepts for the Electron-Ion Collider: EIC Yellow Report*. **Note:** In this article, my substantial contributions encompassed editing the

section on Wigner functions and compiling comprehensive tables that sought to elucidate the connections between Electron-Ion collider science and various categories of measurements. Furthermore, I took on the task of standardizing all mathematical notations throughout the document to ensure consistency with those used in the White Paper and the NAS Report. arXiv: 2103.05419 [physics.ins-det]

Peer-reviewed Conference Proceedings

1. Bhattacharya, S., Kang, Z.-B., Metz, A., Penn, G., & Pitonyak, D. (n.d.). First global extraction of the worm-gear tmd. In *Proceedings of the 24th international spin symposium (spin2021)*. doi:10.7566/JPSCP.37.020125. eprint: https://journals.jps.jp/doi/pdf/10.7566/JPSCP.37.020125

2. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2022a). Relating Euclidean correlators and light-cone correlators beyond leading twist. (Vol. LATTICE2021, p. 105). doi:10.22323/1.396.0105

3. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2022b). Twist-3 partonic distributions from lattice QCD. (Vol. 8, p. 057). doi:10.21468/SciPostPhysProc.8.057. arXiv: 2107.12818 [hep-lat]

4. Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2022c). Zero modes and matching for the twist-3 PDFs. (p. 56). doi:10.21468/SciPostPhysProc.8.056

5. Bhattacharya, S., Kang, Z.-B., Metz, A., Penn, G., & Pitonyak, D. (2022a). Extraction of the worm-gear TMD g_{1T} from COMPASS, HERMES and JLab data on semi-inclusive DIS. (Vol. PANIC2021, p. 361). doi:10.22323/1.380.0361

6. Constantinou, M., Bhattacharya, S., Cichy, K., Metz, A., Scapellato, A., & Steffens, F. (2022). First study of twist-3 PDFs for the proton from lattice QCD. (Vol. LATTICE2021, p. 391). doi:10.22323/1.396.0391. arXiv: 2111.01056 [hep-lat]

7. Bhattacharya, S., Cocuzza, C., & Metz, A. (2020a). What can we learn about twist-2 GPDs through quasi-distributions? (Vol. 1643, p. 012183). doi:10.1088/1742-6596/1643/1/012183

8. Bhattacharya, S., Metz, A., Ojha, V. K., Tsai, J.-Y., & Zhou, J. (2018). Accessing generalized TMDs through double Drell-Yan and double η_Q production processes. (Vol. DIS2018, p. 149). doi:10.22323/1.316.0149

Not peer-reviewed Conference Proceedings

1. Bhattacharya, S., Zheng, D., & Zhou, J. (2025). Probing quark orbital angular momentum in electron-proton collisions, *DIS2024*, 241. doi:10.22323/1.469.0241

2. Miller, J., Bhattacharya, S., Cichy, K., Constantinou, M., Gao, X., Metz, A., … Zhao, Y. (2024, March). Proton Helicity GPDs from Lattice QCD. arXiv: 2403.05282 [hep-lat]

3. Constantinou, M., Bhattacharya, S., Cichy, K., Dodson, J., Metz, A., Steffens, F., & Scapellato, A. (2024). Twist-3 axial GPDs of the proton from lattice QCD, *LATTICE2023*, 315. doi:10.22323/1.453.0315

4. Nurminen, N., Bhattacharya, S., Chomicki, W., Cichy, K., Constantinou, M., Metz, A., & Steffens, F. (2024). Unveiling Generalized Parton Distributions through the Pseudo-Distribution Approach, *LATTICE2023*, 318. doi:10.22323/1.453.0318. arXiv: 2311.18502 [hep-lat]

5. Bhattacharya, S., Hatta, Y., & Vogelsang, W. (2023a, August). Unraveling anomalies in Deeply Virtual Compton Scattering. *30th International Workshop on Deep-Inelastic Scattering and Related Subjects*. arXiv: 2308.15377 [hep-ph]

6. Bhattacharya, S., Boussarie, R., & Hatta, Y. (2023). Probing the Gluon Orbital Angular Momentum at the EIC, *16.7*, 7–A16. doi:10.5506/APhysPolBSupp.16.7-A16

7. Bhattacharya, S., Cichy, K., Constantinou, M., Dodson, J., Gao, X., Metz, A., … Zhao, Y. (2023). GPDs in asymmetric frames. *Proceedings of the 39th international symposium on lattice field theory — pos(lattice2022), 430*, 095. doi:10.22323/1.430.0095

8. Cichy, K. et al. (2023). Generalized Parton Distributions from Lattice QCD, *16.7*, 7–A6. doi:10.5506/APhysPolBSupp.16.7-A6. arXiv: 2304.14970 [hep-lat]

9. Constantinou, M., Bhattacharya, S., Cichy, K., Dodson, J., Gao, X., Metz, A., … Zhao, Y. (2023). Accessing proton GPDs in asymmetric frames: Numerical implementation. *Proceedings of the 39th international symposium on lattice field theory — pos(lattice2022), 430*, 096. doi:10.22323/1.430.0096

10. Bhattacharya, S. (2022, September). Observable for gluon orbital angular momentum. doi:10.5281/zenodo.7103955

11. Dodson, J., Bhattacharya, S., Cichy, K., Constantinou, M., Metz, A., Scapellato, A., & Steffens, F. (2022). First Lattice QCD Study of Proton Twist-3 GPDs, *LATTICE2021*, 054. doi:10.22323/1.396.0054. arXiv: 2112.05538 [hep-lat]

12. Hatta, Y. et al. (2020, February). Proceedings, Probing Nucleons and Nuclei in High Energy Collisions: Dedicated to the Physics of the Electron Ion Collider: Seattle (WA), United States, October 1 - November 16, 2018. doi:10.1142/11684. arXiv: 2002.12333 [hep-ph]

13. Bhattacharya, S., Cocuzza, C., & Metz, A. (2020c). Model Calculations of Euclidean Correlators. *Probing Nucleons and Nuclei in High Energy Collisions: Dedicated to the Physics of the Electron Ion Collider*, 55–58. doi:10.1142/9789811214950_0011

14. Bhattacharya, S., Cocuzza, C., & Metz, A. (2019b). Going off the light-cone - a model study of quasi-GPDs, *LC2019*, 027. doi:10.22323/1.374.0027

15. Bhattacharya, S., Cocuzza, C., & Metz, A. (2019c). Studying twist-2 GPDs through quasi-distributions in a scalar diquark model, *DIS2019*, 169. doi:10.22323/1.352.0169

16. Bhattacharya, S., Metz, A., & Zhou, J. (2018). Generalized TMDs in the exclusive double Drell-Yan process, *DIS2017*, 238. doi:10.22323/1.297.0238

17. Bhattacharya, S., Metz, A., & Zhou, J. (2017b). Observables for Generalized TMDs of Quarks, *QCDEV2017*, 006. doi:10.22323/1.308.0006

Talks

I have disseminated my research findings through a total of **78 talks and seminars**. Among them, **57 were invitations** to speak at conferences, workshops, national laboratories, and universities, both within and outside the United States. An additional **21 were valuable contributed talks** that I presented at both national and international conferences.

Invited Talks/Seminars

2025
- TBD (talk) - 11^{th} International Conference on Physics Opportunities at an ElecTron-Ion Collider (POETIC XI)
  February 24-28, 2025 - Florida International University, Miami, USA

2024
- EIC Theory Overview (**Plenary Talk**) - Uncovering New Laws of Nature at the EIC
  November 20, 2024 - Brookhaven National Laboratory, Upton, USA
- Uncovering Anomalies in Parton Distributions (seminar) - T-2 seminar
  November 14, 2024 - Los Alamos National Laboratory, USA
- Connections between Quantum Anomalies and Generalized Parton Distributions (seminar) - Theory seminar
  October 30, 2024 - Ecole Polytechnique, France

Talks (continued)

- Computing GPDs in Asymmetric Frames: A New Perspective (talk) - Multidimensional Hadron Structure (MDHS) workshop
  October 24, 2024 - Institut Pascal of the Universite Paris-Saclay, France
- Exploring the Cosmic Core of Nucleons with the Electron-Ion Collider (seminar) - Graduate student seminar series
  October 18, 2024 - University of Connecticut, Storrs, USA
- Quantum Anomalies in (Generalized) Parton Distributions (seminar) - Pizza Lunch Seminar
  September 18, 2024 - University of California, Los Angeles, USA
- Lattice calculations of GPDs and higher-twist PDFs (talk) - Heavy Ion Physics in the EIC Era (INT-24-2b)
  August 12, 2024 - Seattle, Washington, USA
- Probing quark and gluon orbital angular momentum (talk) - Towards improved hadron tomography with hard exclusive reactions
  August 5, 2024 - ECT*, Trento, Italy
- Hadron structure via GPDs (**Plenary Talk**) - The 41^{st} Lattice Conference
  August 2, 2024 - Liverpool, UK
- Recent advances in GPD calculations from Lattice QCD (**Plenary Talk**) - 10th International Conference on Quarks and Nuclear Physics (QNP2024)
  July 11, 2024 - Institute of Cosmos Sciences of the University of Barcelona, Spain
- Observables for Generalized TMDs (talk) - Transversity 2024 Workshop
  June 5, 2024 - Trieste, Italy
- State-of-the-art of observables for Generalized TMDs (talk) - QCD Evolution workshop
  May 30, 2024 - University of Pavia, Pavia, Italy
- Unraveling quantum anomalies in Generalized Parton Distributions (seminar) - Physics Division Seminar
  April 15, 2024 - Argonne National Laboratory, Lemont, USA
- Unveiling the "cosmic" interior of nucleons at the Electron-Ion Collider (colloquium) - Nuclear Theory talk
  April 4, 2024 - New Mexico State University, New Mexico, USA
- A comprehensive insight into nucleons at the Electron-Ion Collider (seminar) - Nuclear Physics Seminar
  March 26, 2024 - University of Connecticut, Storrs, USA
- Unveiling the "cosmic" interior of nucleons at the Electron-Ion Collider (colloquium) - Nuclear Theory talk
  February 20, 2024 - Florida International University, Miami, USA
- A comprehensive insight into nucleons at the Electron-Ion Collider (seminar) - CFNS Seminar
  February 7, 2024 - CFNS, Stony Brook University, USA
- A comprehensive insight into nucleons at the Electron-Ion Collider (seminar) - Nuclear Theory Seminar
  February 2, 2024 - Temple University, Philadephia, USA

2023

- Uncovering anomalies in Generalized Parton Distributions (seminar) - Nuclear Theory Seminar
  November 9, 2023 - University of Maryland, College Park, Maryland, USA
- Axial and trace anomalies in DVCS (talk) - EINN2023
  November 1, 2023 - Athens, Greece, Europe
- Generalized TMDs and GPDs: Recent Advances (seminar) - Hadron Ion Tea (HIT) Seminar Series
  October 31, 2023 - Lawrence Berkeley National Laboratory, California, USA

Talks (continued)

- Generalized Parton Distributions from Lattice QCD (talk) - 1st CFNS Postdoc Meet
  October 19, 2023 - CFNS, Stony Brook University, USA
- What are GPDs and how to access them on Lattice QCD? (**Plenary Talk**) - SPIN 2023
  September 29, 2023 - Duke University, North Carolina, USA
- Imprints of Chiral and Trace Anomalies in GPDs (talk) - Workshop: Precision QCD predictions for ep Physics at the EIC (11)
  September 20, 2023 - CFNS, Stony Brook University, USA
- Chiral and trace anomalies in Generalized Parton Distributions (seminar) - High Energy Theory Seminars
  September 15, 2023 - Brookhaven National Laboratory, Upton, USA
- Quark GPDs from non-symmetric frames (talk) - Lattice QCD and Probes of New Physics
  August 8, 2023 - Santa Fe, New Mexico, USA
- Calculating GPDs in Lattice QCD: Recent developments (talk) - International Workshop on Hadron Structure and Spectroscopy - 2023 (IWHSS-2023)
  June 27, 2023 - Prague, Czechia
- Anomalies in Deep Virtual Compton Scattering (talk) - 10^{th} International Conference on Physics Opportunities at an ElecTron-Ion Collider (POETIC 2023)
  May 5, 2023 - São Paulo, Brazil
- Manifestation of anomalies in Deep Virtual Compton Scattering (seminar) – Jefferson Lab Theory Seminars
  April 10, 2023 - Jefferson Lab, Virginia, USA
- Chiral and trace anomalies in DVCS (talk) - CFNS Monthly Postdoc Meetings
  March 10, 2023 - CFNS, Stony Brook University, USA
- Computing PDFs and GPDs in Lattice QCD: Recent Progress (seminar) - Center for Nuclear Theory seminar
  February 22, 2023 - Stony Brook University, USA
- Primary observables to access orbital angular momentum of partons (seminar) - Nuclear Physics Seminar
  February 13, 2023 - University of Illinois Urbana-Champaign, Illinois, USA
- Hunting for gluon orbital angular momentum at the EIC (talk) - XXIX Cracow Epiphany Conference on Physics at the EIC and Future Facilities
  January 18, 2023 - Cracow, Poland

2022

- Probing gluon orbital angular momentum through exclusive dijet production at the EIC (talk) – QCD with Electron Ion Collider workshop (QEIC 11)
  December 19, 2022 - IIT Delhi, New Delhi, India
- A full tomographic picture of hadronic matter at the Electron-Ion Collider (seminar) - Rising Researchers Seminar Series
  December 6, 2022 - Institute of Nuclear Physics/University of Washington, USA
- Generalized TMDs and parton Orbital Angular Momentum (seminar) - UCLA Nuclear Theory Group Seminar
  November 14, 2022 - ZOOM
- GTMDs and GPDs: Perspectives from experiments and lattice QCD (seminar) - T-2 Seminar
  September 27, 2022 - Los Alamos National Laboratory, USA
- Signature(s) of gluon orbital angular momentum (talk @ McCartor Award Session) - Light Cone 2022: Physics of Hadrons on the Light Front
  September 21, 2022 - ZOOM

Talks (continued)

- Lattice calculations of GPDs (talk) - INT 22-83 Workshop on Parton distributions and nucleon structure
  September 16, 2022 - Seattle, Washington, USA
- A novel approach to calculate GPDs from lattice QCD from non-symmetric frames (talk) - QNP2022 - The 9th International Conference on Quarks and Nuclear Physics
  September 5, 2022 - ZOOM (Florida State University)
- GTMDs and Wigner functions (talk) - International Workshop on Hadron Structure and Spectroscopy - 2022 (IWHSS-2022)
  August 30, 2022 - CERN, Geneva, Switzerland
- Global fit for g_{1T} TMD (talk) - Workshop: Precision QCD predictions for ep Physics at the EIC
  August 3, 2022 - CFNS, Stony Brook University, USA
- Exploring twist-3 PDFs and GPDs from lattice QCD (talk) - Towards improved hadron femtography with hard exclusive reactions
  July 21, 2022 - Virginia Tech, Virginia, USA
- Twist-3 PDFs from lattice QCD with a phenomenological component (talk) - CFNS Workshop: High Luminosity-EIC (EIC-Phase II)
  June 23, 2022 - CFNS, Stony Brook University, USA
- Global analysis of worm-gear function g_{1T} (talk) - TMD Collaboration Meeting
  June 15, 2022 – ZOOM
- DSA as a simultaneous probe for gluon OAM and its helicity (talk) - EIC Jets meeting
  June 6, 2022 – CFNS, Stony Brook University, USA
- GTMDs and Wigner distributions: Recent developments (talk) - Transversity 2022 Workshop
  May 25, 2022 - Pavia, Italy
- A novel observable for gluon orbital angular momentum (talk) - QCD Evolution Workshop 2022
  May 13, 2022 - University of Virginia, Virginia, USA
- First lattice study of twist-3 functions from quasi-PDF approach (seminar) - Virtual Lattice Field Theory Colloquium Series
  April 14, 2022 – MIT, USA
- g_{1T} extraction (talk) – Correlations in Partonic and Hadronic Interactions workshop (CPHI-2022)
  March 7, 2022 – ZOOM
- First global QCD analysis of the worm-gear TMD $g_{1T}(x, \vec{k}_\perp^2)$ (seminar) – RIKEN BNL Research Center (RBRC) Seminars/ Nuclear Theory (NT) Seminars
  February 3, 2022 – Brookhaven National Laboratory, Upton, USA

2021

- An exploratory study of twist-3 PDFs using quasi-PDF approach (seminar) - Jefferson Lab Theory Seminars
  May 17, 2021 – Jefferson Lab, Virginia, USA
- Exploring twist-3 PDFs $g_T(x)$, $e(x)$, and $h_L(x)$ in lattice QCD using quasi-PDF approach (seminar) – The International Light Cone Advisory Committee (ILCAC) Seminar
  February 3, 2021 – ZOOM

2020

- Exclusive double quarkonium production and generalized TMDs of gluons (talk) – Quarkonia as Tools 2020
  January 14, 2020 – Centre Paul Langevin, Aussois, France

2019

- Quasi-distribution approach to unveil GPDs: A discussion within and beyond models (seminar) – Department Seminar
  September 24, 2019 – University of Pavia, Pavia, Italy

Talks (continued)

- Quasi-GPDs for quarks: Model results and beyond (seminar) – Jefferson Lab Theory Seminars
  July 15, 2019 – Jefferson Lab, Virginia, USA

Contributed Talks

2024
- Probing quark orbital angular momentum in ep collisions - 31^{st} International Workshop on Deep Inelastic Scattering and Related Subjects
  April 9, 2024 - Maison MINATEC, Grenoble, France

2023
- Anomalies in GPDs - QGT Collaboration meeting
  September 9, 2023 - Temple University, Philadelphia, USA
- A new approach for computing GPDs from asymmetric frames - The 40^{th} International Symposium on Lattice Field Theory
  August 3, 2023 - Fermilab, Batavia, Illinois, USA
- A novel approach for calculating GPDs from asymmetric frames - The 2023 Meeting on Lattice Parton Physics from Large Momentum Effective Theory (LaMET2023)
  July 26, 2023 - University of Regensburg, Germany
- Theoretical aspects of a Lorentz-invariant decomposition for GPDs - QGT Collaboration meeting
  June 9, 2023 - ZOOM
- Unraveling anomalies in Deep Virtual Compton Scattering - 30^{th} International Workshop on Deep Inelastic Scattering and Related Subjects
  March 28, 2023 - Michigan State University, Michigan, USA

2022
- GPDs in non-symmetric frames - The 39^{th} International Symposium on Lattice Field Theory
  August 11, 2022 - Hörsaalzentrum Poppelsdorf, Germany
- Observable for gluon orbital angular momentum – 29^{th} International Workshop on Deep Inelastic Scattering and Related Subjects
  May 5, 2022 - Santiago de Compostela, Spain
- Global analysis of g_{1T} TMD – APS April Meeting 2022
  April 10, 2022 - ZOOM

2021
- First global extraction of the worm-gear TMD – 24^{th} International Spin Symposium (SPIN 2021)
  October 22, 2021 - ZOOM
- Role played by the zero modes in the matching for the twist-3 PDFs – 24^{th} International Spin Symposium (SPIN 2021)
  October 21, 2021 – ZOOM
- Extraction of the worm-gear TMD $g_{1T}(x, \vec{k}_\perp^2)$ COMPASS, HERMES and JLab data on semi-inclusive DIS – Particles and Nuclei International Conference (PANIC) 2021
  September 8, 2021 – ZOOM
- Zero modes and Matching for the twist-3 PDFs – 28^{th} International Workshop on Deep Inelastic Scattering and Related Topics
  April 14, 2021 – ZOOM
- Non-trivialities in the Matching for the twist-3 PDFs – 9^{th} workshop of the APS topical Group on Hadronic Physics
  April 13, 2021 – ZOOM

2020
- Matching for the twist-3 PDFs $g_T(x)$, $e(x)$, and $h_L(x)$: Success or failure? – The 2020 Meeting on Lattice Parton Physics from Large-Moment Effective Theory (LaMET2020)
  September 11, 2020 – ZOOM

2019
- Going off the light-cone – a model study of quasi-GPDs – Light Cone 2019
  September 18, 2019 – Ecole Polytechnique, Palaiseau, France

Talks (continued)

- What can we learn about twist-2 GPDs through quasi-distributions? – International Nuclear Physics Conference (INPC) 2019
  July 30, 2019 – Scottish Event Campus, Glasgow, UK
- Studying twist-2 GPDs through quasi-distributions in a scalar diquark model – 27^{th} International Workshop on Deep Inelastic Scattering and Related Topics
  April 10, 2019 – University of Torino, Torino, Italy

2018

- Generalized TMDs in hadronic collisions – Light Cone 2018
  May 17, 2018 – Jefferson Lab, Virginia, USA
- Accessing Generalized TMDs through double Drell-Yan and double charmonium production processes – 26^{th} International Workshop on Deep Inelastic Scattering and Related Topics
  April 19, 2018 – Kobe University Convention Center, Kobe, Japan

2017

- Generalized TMDs in the exclusive double Drell-Yan process – 25^{th} International Workshop on Deep Inelastic Scattering and Related Topics
  April 5, 2017 – University of Birmingham, Birmingham, UK

Research Spotlight: Media Coverage and DOE Highlights

2023

- Calculations Reveal High-Resolution View of Quarks Inside Protons
- Theory Offers a High-Resolution View of Quarks Inside Protons

2022

- Theorists Propose a Novel Way to Measure Gluons' Orbital Motion

Teaching Experience

2015 – 2017

- **Teaching Assistant, Temple University**
  Instructed, supervised, and graded labs for introductory physics courses for undergraduate students

Synergistic Endeavors

Academic Engagement

2025

- Organizer of the '*11th Biennial Workshop of the APS Topical Group on Hadronic Physics (GHP2025)*' (14-16 March) in Anaheim, California

2024

- Organizer of the workshop on '*From quarks and gluons to the internal dynamics of hadrons*' (15-17 May) at the CFNS, Stony Brook University
- Organizer of the workshop on '*Generalized parton distributions for nucleon tomography in the EIC era*' (17-19 January) at BNL

2023

- Organizer of the workshop on '*TMDs: Towards a Synergy between Lattice QCD and Global Analyses*' (21-23 June) at the CFNS, Stony Brook University
- Scientific Reviewer for Physical Review Letters, Physical Review D, Physics Letters B, European Physical Journal C, European Physical Journal Plus, Nuclear Physics A

2021 – 2024

- Organizer of seminars for the Center for Frontiers in Nuclear Science (CFNS) at Stony Brook University

Synergistic Endeavors (continued)

Diversity, Equity, and Inclusion and Outreach Initiatives

Jan. 8, 2024

I received an invitation to deliver a presentation on my career journey to the 2024 summer interns at BNL. This audience comprised underrepresented undergraduate students from around the world. The title of my talk was *'My Career in Physics and Beyond'*, with my primary goal being to inspire and motivate them to pursue STEM.

Nov. 15, 2023

I presented a talk titled *'Engaging the Next Generation in Science'* at the Office of Educational Programs at BNL. During this presentation, I engaged with undergraduate Fall interns from around the world, discussing my career journey, the factors that ignited my interest in STEM, the path that eventually brought me to BNL, and introducing them to my research. My primary aim was to inspire them, with a particular emphasis on underrepresented groups, to consider STEM as a future pursuit.

Nov. 11, 2023

The Women in Science and Engineering (WISE) Program at Stony Brook University is dedicated to increasing the representation of individuals from underrepresented groups in STEM fields through outreach, recruitment, and retention initiatives. As part of my commitment to WISE, I instructed sophomore participants in the program on the fundamentals of QCD and guided them through one of my research projects conducted at BNL. The selected project was titled *'Decoding Nature's Blueprints: Unveiling Quarks through Data Analysis'*. This hands-on project focused on extracting crucial parton distribution functions, particularly those of quarks, from experimental data. I taught them how to employ advanced data analysis and modeling techniques with the goal of uncovering the intricate quark patterns within protons and neutrons. My initiative was spotlighted in an article by the BNL Media and Communications Office, as well as by the Stony Brook University News. This initiative was also highlighted in the DOE Office of Science Research News.