

BRANDON MANLEY

191 West Woodwuff Avenue, M2041, Columbus, OH 43210
📞 734-865-0452 ✉ manley.329@osu.edu 🌐 brandonmanley.github.io

EDUCATION

The Ohio State University

Aug. 2021 – Present

Ph.D in Physics

Columbus, Ohio, USA

- Advisor: Prof. Yuri Kovchegov

M.S. in Physics

Aug. 2021 – Aug. 2023

- Thesis: Soft and Collinear Interactions in an Effective Field Theory

B.S. in Physics, Magna Cum Laude

Aug. 2017 – May 2021

- Honors Thesis Advisor: Prof. Stuart Raby
- Honors Thesis: Symmetries in Physical Theories

RESEARCH INTERESTS AND EXPERTISE

- Quantum chromodynamics at high energies: small- x evolution and gluon saturation
- Spin physics: nucleon spin puzzle, orbital angular momentum, helicity parton distribution functions
- Phenomenology for the future Electron Ion Collider

PUBLICATIONS

1. *Orbital Angular Momentum Small- x Evolution: Exact Results in the Large- N_c Limit*
Brandon Manley
[JHEP 04 \(2024\) 055](#)
2. *Orbital Angular Momentum at Small x Revisited*
Yuri V. Kovchegov, **Brandon Manley**
[JHEP 02 \(2024\) 060](#)
3. *Sensitivity to millicharged particles and future proton-proton collisions at the LHC with the milliQan detector*
A. Ball et al. (incl. **Brandon Manley**)
[Phys.Rev.D 104 \(2021\) 3, 032002](#)
4. *Search for millicharged particles in proton-proton collisions at $\sqrt{s} = 13$ TeV*
A. Ball et al. (incl. **Brandon Manley**)
[Phys.Rev.D 102 \(2020\) 3, 032002](#)

PROCEEDINGS

1. *Orbital Angular Momentum at Small x Revisited*
Brandon Manley
Contribution to DIS 2023 proceedings
[arXiv:2307.09544 \(2023\)](#)

PRESENTATIONS

- **Mar. 2024: Hayes Research Forum**, Ohio State University, OH, USA
Contributed talk: Proton Structure at High Energies
- **Sep. 2023: SPIN 2023**, Durham, NC, USA
Contributed talk: Orbital Angular Momentum at Small x Revisited
- **Jun. 2023: SURGE Collaboration Meeting**, Brookhaven National Lab, NY, USA
Contributed talk: Updates on OAM at Small x
- **Mar. 2023: DIS 2023**, Lansing, MI, USA
Contributed talk: Orbital Angular Momentum at Small x Revisited
- **Mar. 2022: HUGS Summer School**, Jefferson Lab, VA, USA
Contributed talk: Orbital Angular Momentum at Small x
- **Apr. 2020: Spring Undergraduate Research Festival**, Ohio State University, OH, USA
Poster: [Machine Learning Approach to Solve the Chaotic N-Body Problem](#)
- **Aug. 2020: Autumn Undergraduate Research Festival**, Ohio State University, OH, USA
Contributed talk: Search for millicharged particles in proton-proton collisions at $\sqrt{s} = 13$ TeV
- **Sep. 2020: Boston University Symposium**, Boston, MA, USA
Invited talk: Search for Millicharged Particles with the MilliQan Detector

RESEARCH EXPERIENCES

- | | |
|--|--|
| The Ohio State University
<i>Graduate Research Assistant</i>
Advisor: Prof. Yuri Kovchegov (Department of Physics, OSU) | Aug. 2021 – Present
Columbus, OH, USA |
| <ul style="list-style-type: none">• Small x contribution of the OAM distributions to the nucleon spin rule• Small x evolution of polarized dipole amplitudes and their moments• Numerical analysis of the helicity PDFs and orbital angular momentum distributions at small x• Singular behavior of twist-3 GPDs near $x = 0$ | |
| The Ohio State University
<i>Undergraduate Research Assistant</i>
Advisor: Prof. Chris Hill (Department of Physics, OSU) | Aug. 2017 – May 2021
Columbus, OH, USA |
| <ul style="list-style-type: none">• Data analysis for the milliQan experiment in the search for millicharged particles• Detector design and benchmark testing for the milliQan experiment• GUI for the next generation pixel detector for the CMS experiment | |
| The Ohio State University
<i>Undergraduate Research Assistant</i>
Advisor: Prof. Stuart Raby (Department of Physics, OSU) | Aug. 2020 – May 2021
Columbus, OH, USA |
| <ul style="list-style-type: none">• General symmetry structure of gauge theories and their application to isospin symmetry breaking | |
| Kent State University
<i>Research Assistant</i>
Advisor: Prof. Oleg Lavrentovich (Department of Physics, KSU) | May 2016 – Aug. 2016
Kent, OH, USA |
| <ul style="list-style-type: none">• Structures and anisotropies of lyotropic chromonic liquid crystals | |

TEACHING EXPERIENCE AND SERVICE

Department of Physics, OSU

Graduate Teaching Assistant

Aug. 2021 – Present

Columbus, OH, USA

- Introductory Physics – Electromagnetism, Optics, Modern Physics (Head TA)
- Intermediate Classical Mechanics
- Quantum Field Theory

Department of Mathematics, OSU

Undergraduate Teaching Assistant

Aug. 2019 – May 2021

Columbus, OH, USA

- Precalculus
- Trigonometry

Student Athlete Support Services Office, OSU

Tutor

Aug. 2018 – May 2019

Columbus, OH, USA

- Calculus I, II, and III
- Introductory Physics – Electromagnetism, Optics, Modern Physics
- Intermediate Classical Mechanics

SERVICE

Society of Physics Students

Volunteer for Adopt-a-Physicist program

Oct. 2023 – Present

Columbus, OH, USA

Believe in Ohio

Volunteer Judge

Apr. 2023 – Present

Columbus, OH, USA

HONORS AND AWARDS

- **2023: Third place in Hayes Research Forum**, OSU, Columbus, OH, USA
- **2020: Summer Research Scholarship**, OSU, Columbus, OH, USA
- **2019: Summer Research Scholarship**, OSU, Columbus, OH, USA
- **2017: Maximus Merit Scholarship**, OSU, Columbus, OH, USA
- **2016: Believe in Ohio Scholarship**, Columbus, OH, USA

TECHNICAL SKILLS

Programming Languages: Python, C++, WolframScript, Julia

Technologies/Frameworks: Mathematica, ROOT, GitHub, tensorflow

REFERENCES

Yuri Kovchegov
Professor of Physics
The Ohio State University
kovchegov.1@osu.edu

Chris Hill
Professor of Physics
The Ohio State University
chill@physics.osu.edu

Parisa Roustazadeh
Lecturer and Course Manager
The Ohio State University
roustazadeh.1@osu.edu