

JULIE ROCHE

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APPOINTMENTS

2020-Present: Director of the Institute of Nuclear and Particle Physics, Ohio University.

2018-Present: Professor, Ohio University.

2012-2018: Associate Professor, Ohio University.

2009-2012: Assistant Professor, Ohio University.

2006-2009: Assistant Professor, bridge position between Ohio University and JLab¹.

2006: Visiting scientist, JLab and Rutgers University.

EDUCATION

2003-2005: Postdoctoral Fellow, JLab. Mentor: R. Ent (JLab).

1999-2002: Postdoctoral Fellow, The College of William and Mary (based at JLab).
Mentors: D. Armstrong, T. Averett (The College of William and Mary) and A. Lung (JLab).

1995-1998: PhD in Corpuscular Physics. Université B. Pascal (France). Research location: CEA-Saclay, France. Thesis advisors: N. d'Hose (CEA-Saclay) and H. Fonvieille (CNRS). Thesis topic: "Virtual Compton Scattering at the MAMI facility and measurement of generalized polarizabilities of the proton".

RESEARCH FOCUS

My research focuses on studying the internal structure of protons and neutrons. This structure is governed by the Strong force, one of the four fundamental forces of our universe. I also study the limits of our understanding of these four forces by looking for Physics beyond the Standard Model of particle physics at the precision frontier. As an experimentalist, I measure reaction products induced by high-energy electrons impinging on proton or neutron targets. I currently work with the JLab electron beam. Still, I have the early experience of working with the electron beam at MAMI, a facility in Germany, and I will perform research at the EIC facility, which is currently in the planning phase. I am the spoke-person of four JLab experiments with scientific grading A: two completed and two that will take data within a few years.

Technical skills: experiment spoke-person, assembly and testing of scintillators arrays and EM calorimeter, data analysis coordination, data taking coordination, analysis of

¹JLab is a DOE national facility located in Virginia, USA. That facility operates a high-energy electron beam.

absolute cross-sections and helicity correlated asymmetries.

Physics skills: Hard exclusive reactions, GPDs, parity violation in electron scattering.

COLLABORATORS and STUDENTS

Collaborators and Co-editors

The collaborations I have been a significant part of are the G0, QWEAK, the Hall A DVCS, and the NPS collaborations at JLab.

I am a co-spokesperson of the following Deeply Virtual Exclusive JLab experiments: E07-007, E12-06-114 (both completed), E12-13-010 & E12-22-006 (active).

Thesis Advisor Graduation date when applicable. M for master and P for Ph.D.

R. Beminiwattha (P, 2013, 2014 JSA-JLab thesis prize winner), B. Waidyawansa (P, 2013), N. Israel (M, 2014), G. Hamad (M, 2017), M. Dlamini (P, 2018), B. Karki (P, 2020), J. Murphy (P, on-going), and P. Tiwari (M, on-going)

Postdoctoral Sponsor

J.H Lee (2009-2012), co-advised with Asst. Prof. P. King (Ohio University) and Prof. D. Armstrong (The College of William and Mary).

Research with undergraduates

I routinely work with undergraduate students for summer internships (typically eight weeks). At Ohio University, I have so far worked with 17 such interns students.

Internship director for international students

Hosted and sponsored the following French Master's students for summer internships (typically three months): S. Gregoire (2007), M. Ihaddadene (2012), and G. Daumy (2015).

AWARDS and RESEARCH SUPPORT (PAST AND CURRENT)

Presidential Research Scholar award: Ohio University, 2021.

NSF general grant: "Nuclear Physics experiments with the electro-weak probe" Co-PI: P. King. 2022-2025: \$629k and five other NSF awards between 2022 and 2007 for a total of \$2,414k.

NSF MRI Consortium: "Development of a Neutral Particle Spectrometer to Investigate the Quark Structure of the Proton at JLab 12 GeV", Co-PIs: T. Horn (CUA), C. Hyde (ODU), 2015-2018: NSF Award #1530874, OU portion: \$137k.

JSA/JLab:

2016: Hall A/JLab, Teaching buy out, 15 weeks.

2014: JSA, "Sabbatical and Research Leave Support", Travel and lodging. \$18k

2014: JLab, "Sabbatical Salary Supplement", 3 months.

2006-2009: Academic Bridge appointment between OU and JLab, ten weeks teaching buy out per year.

Ohio University, Internal grants:

Postdoctoral fellow support:

2009-2012: NSF, subcontract through the College of William and Mary, Postdoctoral fellow support, \$95k, Co-PI: P. King

SELECTED PUBLICATIONS

I have published a total of 100 papers in peer-reviewed journals. My h-index is 46. The full listing of my publications is given at the end of this document. Representative publications are listed below.

1. F. Georges *et al.* [Jefferson Lab Hall A], “Deeply Virtual Compton Scattering Cross Section at High Bjorken x_B ,” *Phys. Rev. Lett.* **128** (2022) no.25, 252002.
2. M. Dlamini *et al.*, “Deep Exclusive Electroproduction of π^0 at High Q^2 in the Quark Valence Regime,” *Phys. Rev. Lett.* **127** (2021) no.15, 152301
3. M. Benali *et al.*, “Deeply virtual Compton scattering off the neutron” , *Nat. Phys.* **16**, 191-198 (2020).
4. D. Androic *et al.* [Qweak Collaboration], “Precision measurement of the weak charge of the proton,” *Nature* **557**, no. 7704, 207 (2018).
5. M. Defurne *et al.*, “A glimpse of gluons through deeply virtual Compton scattering on the proton,” *Nature Commun.* **8**, no. 1, 1408 (2017).
6. R. D. Young, J. Roche, R. D. Carlini, and A. W. Thomas, “Extracting nucleon strange and anapole form factors from world data”, *Phys. Rev. Lett.* **97**, 102002 (2006).
7. D. S. Armstrong *et al.* [G0 Collaboration], “Strange quark contributions to parity-violating asymmetries in the forward G0 electron proton scattering experiment”, *Phys. Rev. Lett.* **95**, 092001 (2005).
8. J. Roche *et al.* [VCS Collaboration], “The first determination of generalized polarizabilities of the proton by a virtual Compton scattering experiment”, *Phys. Rev. Lett.* **85**, 708 (2000).

SELECTED PRESENTATIONS

The full list of my presentations is at the end of this document. The invited talks I presented in the past five years are listed below.

1. August 22: “New Measurements of GPDs: Results from Hall A, CLAS12 and COMPASS”, Gordon Research Conference, Holderness School, NH.
2. July 2022: “Studies of exclusive processes at JLab Hall-A/C”, APCTP Focus Program in Nuclear Physics 2022, Pohang, South Korea.

3. April 2022: “Deep Exclusive Electroproduction of π^0 at High Q^2 in the Quark Valence Regime”, Center for Nuclear Femtography, remote seminar.
4. February 2021: “Recent π^0 results”, Center for Nuclear Femtography, remote workshop.
5. February 2020: ”Building a tomographic image of the proton,” The College of William and Mary, VA.
6. October 2019: “Precision studies of the DVCS process at JLab”, DNP Fall 2019 meeting, Arlington, VA.
7. August 2019: “JLab Hall A DVCS measurements”, HIX 2019, Kolympari, Greece.
8. July 2019: “Experimental Studies of the GPDs”, INPC 2019, Glasgow, Scotland.
9. June 2018: “Pion and eta production at JLab with 6 and 12 GeV”, Next-generation GPD studies with exclusive meson production at the EIC workshop, Brookhaven, NY.
10. April 2018: “A Glimpse of Gluons through Deeply Virtual Compton Scattering on the Proton”, APS April 2018 meeting, Columbus, OH.

TEACHING EXPERIENCEIn-class teaching

G stands for graduate-level classes, while UG stands for undergraduate-level classes. All classes were taught at Ohio University.

- Research Seminar Nuclei & Particle Physics (G): Fall 2021 and 7 other times.
- Introduction to Particle Physics (G): Fall 2015 and 4 other times.
- Graduate level nuclear laboratory (G): Fall 2022.
- Junior laboratory-I atomic physics (UG): Fall 2021 and 11 other times.
- Junior laboratory-II nuclear physics(UG): Spring 2022.
- Electronics laboratory (UG): Spring 2017 and 3 other times.
- Modern Physics (UG): Spring 2021 and 3 other times.
- Scale-Up: Calculus-based Introductory Physics (UG, TA position): Fall 2013.
- Calculus-based Introductory Physics (UG): Winter 2011 and 3 other times.
- First-year seminar (UG): Fall 2022 and 4 other times.

Professional development

- Faculty Learning Community: Facilitating Student Career Development, 8 hours, 2020.
- ALPHA Laboratory immersion (Junior lab workshop), three days, 2017.
- Faculty Learning Community: Evaluating students evaluation, 8 hours, 2016.
- Conference on laboratory instruction beyond the 1st year of college, three days, 2012.
- Workshop for new physics and astronomy faculty members, APS-AAPT, three days, 2008.

ACADEMIC ADVISINGUndergraduate students

I have been an academic advisor since the Fall of 2016. I have advised up to 10 students at a time.

Member of PhD(10) - Master(6) dissertation Committees:

Not including my students. P for Ph.D. and M for Master. Unless noted, the students are from the P&A² department of OHIO U.

2022: G. Hamad (P) and T. Needham (P-engineering), 2021: J. Rowley (P), S. Khan (M-chair), 2020: H. Sears (M-chair), A. Stefanko (P, CMU), 2019: A.Pun (P), 2016: M. Burrow (M-chair), 2015: C. Desnault (P, U Paris Sud), 2014: N. Rivelli (P), D. Divaratne (P), A. Marti (P, U of Valencia), 2013: A. Richard (M), A. Karki (M-chair), 2010: T. Edwards (M, Engineering), 2009: S. Kizilgul (P).

RESEARCH ADVISING

All at Ohio University.

Undergraduate Student Honors Projects Directed

2015: R. Radloff, thesis title: "Simulation of an alternative trigger system for E12-06-114".

²P&A stands for the Department of Physics and Astronomy

Graduate students research project directed

- P. Tiwari works on proton tomography and expected Master's graduation in Spring 2023.
- J. Murphy works on Exclusive charged pion electro-production, expected graduation May 2024.
- B. Karki, Dissertation title: "Deep Exclusive π^0 Electroproduction Measured in Hall A at Jefferson Lab with the Upgraded CEBAF ", 2020.
- G. Hamad, Master thesis title: "Using the R-Function to Study the High-Resolution Spectrometer (HRS) Acceptance for the 12 GeV Era Experiment E12-06-114 ", 2017.
- M. Dlamini, Dissertation title: "Measurement of Hard Exclusive Electroproduction of Neutral Meson Cross Section in Hall A of JLab with CEBAF at 12 GeV", 2018.
- N. Israel, Master thesis title: "Commissioning of the Trigger module for the 12 GeV era experiment E12-06-114 at JLab", 2014.
- R. Beminiwattha, Dissertation title: "A Measurement of the Weak Charge of the Proton through Parity Violating Electron Scattering using the Qweak Apparatus: A 21% Result". **JSA/JLab 2014 Thesis prize winner**, 2013.
- B. Waidyawansa, Dissertation title: "A 3% Measurement of the Beam Normal Single Spin Asymmetry in Forward Angle Elastic Electron-Proton Scattering using the Qweak Setup", 2013.

Summer internship director (typically 3 months):

- G. Daumy (U. de Nantes, France, visiting student), Analysis of DIS data from E12-06-114, 2015.
- M. Ihaddadène (U. Paris VI, France, visiting student), Calorimeter calibration for the DVCS experiment, 2012.
- S. Chandavar, Data taking for the DVCS experiment, 2010.
- S. Grégoire (U. J. Fourier, France, visiting student), Measure of transmission of PbF_2 blocks for the DVCS experiment, 2007.

Research with undergraduates

The following seventeen OHIO University undergraduate students worked with me for summer internships (typically eight weeks).

2022: R. Parkes and R. Reedy, 2022-2021: A. Nemeneck, 2021: S. Nuakey, 2020: S. Fehringer, 2019: E. Conners, 2018: W. Eshbaugh and K. Boyd, 2016: Z. Bernens, 2015: J. Theibert., 2014: K. Holmes, R. Radloff, 2013: J. Hunneshagen, 2011: B. Ziegler, 2010: J. Kaisen, 2009: B. Helbig, 2008, 2007: K. Kinsley.

SERVICE within OHIO UNIVERSITY

- Member of the Faculty Senate (2022-2024)
- Director of the Institute of Nuclear and Particle Physics (2020-2025). Fourteen faculty members, five staff members, and fifteen graduate students are part of the institute.
- Founding Chair of the P&A Diversity and Inclusion Committee (2019-Present).
- Member of the P&A Advisory Committee (2019-Present).
- Member of the Council on Research, Scholarship & Creative activity (CRSCA), 2021-2024.
- Reviewer for the Ohio University Research Council (2016-2021): Evaluate 12 research proposals a semester.
- Member of P&A hiring committees: theoretical nuclear faculty member (2022), instruction laboratory director (2021), grant administrator (2020), experimental nuclear physics faculty member (2016), astrophysics faculty member (2013).
- Chair of P&A peer annual evaluation committees: about 25 dossiers are evaluated yearly. For research: chair in 2019 and 2018, regular member in 2017. For teaching: chair in 2021, a regular member in 2013.
- Reviewer of the Provost Undergraduate Research Funds (2015-2016): 31 proposals.
- Chair of the P&A Scholarship Committee (2008-2014, chair since 2011): recommended about 30 recipients per year.
- Member of the Promotion and Tenure committee College of Arts and Science (2015).
- Member of the P&A Colloquium Committee (2015-2016, 2006-2007): invite and host national-level a speaker every semester.
- Member of the Graduate Admission Committee (2009-2014): evaluated about 40 applications per year.
- Member of the Arts and Sciences Research Advisory Committee (2012-2013).
- Member of the Selection Committee for the Ohio University Postdoctoral Fellowship (2009).

SERVICE within my RESEARCH COMMUNITY

- Member of the Award Committee of the Eastern Great Lake Section of APS (2020-Present).
- OU Representative to the Southeastern University Research Association-JLab program committee (2014-Present).
- Panelist and Reviewer of research proposals for NSF and DOE: general grants & MRI (2007-Present): 19 proposals reviewed.
- Member of the Dissertation Award Committee of the DNP³ (2021-2022).
- Member of the DNP executive committee (2018-2021). Elected position.
- Chair of the Board of Directors of the JLab User Organization (2018-2019, in the chair line from 2016 to 2020). This elected board represents the interests of about 1600 users and advocates for the physics performed at JLab.

³DNP stands for Division of Nuclear Physics of the American Physical Society (APS).

- Member of the executive committee of the Ohio section⁴ of APS (2015-2018): in charge of membership, I was able to increase membership by 9% in 2016.
- Member of the JSA/JLab Graduate Fellowship Evaluation Committee (2014-2018), I evaluated about 65 proposals. The funding ratio was about 1/3.
- Member of the Committee of Visitors for the Division of Physics of NSF (2015).
- Chair (secretary the first year) of the JLab Hall A Collaboration committee (2013-2014). This elected committee represents the interests of about 300 users of one of the four end-stations at JLab.
- Chair (member the first year) of the JLab Hall C Steering Committee (2007-2008).
- Member of the JLab User Group Board of Directors (2004-2006).
- Analysis Coordinator for the forward angle data of the G0 collaboration (2003-2005).

Conference organization

- Member of the DNP/APS program committee (2017-2018). This nominated board of 12 organizes the Division of Nuclear Physics of the APS annual meetings.
- Chair of the 2018 Photo-nuclear reactions Gordon conference. Vice-chair in 2016. This is an international conference that gathers about 125 participants every other year.
- Chair of the organization committee for the 2018 Annual JLab User Group meeting. This conference gathers about 100 participants with a strong focus on JLab physics.

OUTREACH and DIVERSITY AND INCLUSION MENTORING

- Founding chair of the P&A Diversity and Inclusion Committee (2019-Present).
- Faculty Mentor of the Women in Physics and Astronomy group (2015-2021, co-mentor 2006-2013). Our most regular activity is a monthly lunch regularly attended by twelve people.
- Blogger on the web forum of the "Adopt a physicist" program (Fall 2020 and 5 other times). Over 300 exchanges with high-schoolers. Each forum lasts three weeks.
- Lead facilitator of the Physics workshop TechSavvy event organized by the Athens OH section of AAUW (June 2019 and three other times). Each workshop is one hour long; the target audience is girls in middle schools.
- Facilitator at Open house events: OU physics department (2019 and 2 other times), JLab Open house (2003, 2005).
- Science fair judge (2018: Trimble Middle School, 2013: Athens Ohio Middle School, 2007: Ohio State Science Fair, 2004 and 2006: Virginia Regional Science Bowl).
- Advisor to the Society of Physics student at Ohio University (Spring 2017).
- Guest speaker at the Women in Science and Engineering day (2012 and two other times). Target audience: girls in middle schools.
- Mentor of the Ohio University Women's center (2013 and two other times).

⁴This regional section is now the Eastern Great Lake Section

PEER REVIEWED PUBLICATIONS

I have published over 100 papers in peer-reviewed journals. Papers co-authored with OHIO University students under my supervision are shown with a * in the lists.

I make sure the inSPIRE database is up to date and accurate:

<http://inspirehep.net/author/profile/J.Roche.1>

Key publications

32. *F. Georges *et al.* [Jefferson Lab Hall A, 162 authors including J.Roche], “Deeply Virtual Compton Scattering Cross Section at High Bjorken x_B ,” *Phys. Rev. Lett.* **128** (2022) no.25, 252002 doi:10.1103/PhysRevLett.128.252002 [arXiv:2201.03714 [hep-ph]]
31. *M. Dlamini *et al.* [161 author including J.Roche], “Deep Exclusive Electroproduction of π^0 at High Q² in the Quark Valence Regime,” *Phys. Rev. Lett.* **127** (2021) no.15, 152301 doi:10.1103/PhysRevLett.127.152301 [arXiv:2011.11125 [hep-ex]].
30. *M. Benali *et al.* [99 authors including J.Roche], “Deeply virtual Compton scattering off the neutron.” *Nat. Phys.* **16**, 191:198 (2020)*. <https://www.nature.com/articles/s41567-019-0774-3>
29. *M. Defurne *et al.* [94 authors including J. Roche], “A Glimpse of Gluons through Deeply Virtual Compton Scattering on the Proton,” *Nature Communications* **8**, 1408 (2017) <https://doi.org/10.1038/s41467-017-01819-3>
28. *M. Mazouz *et al.* [Jefferson Lab Hall A Collaboration, 98 authors including J. Roche], “Rosenbluth separation of the π^0 Electroproduction Cross Section off the Neutron,” *Phys. Rev. Lett.* **118**, no. 22, 222002 (2017). <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.118.222002>
27. *M. Defurne *et al.* [Jefferson Lab Hall A Collaboration, 98 authors including J.Roche], “Rosenbluth separation of the π^0 electroproduction cross section,” *Phys. Rev. Lett.* **117**, no. 26, 262001 (2016) doi:10.1103/PhysRevLett.117.262001 [arXiv:1608.01003[hep-ex]].
26. *M. Defurne *et al.* [Jefferson Lab Hall A Collaboration, 81 authors including J. Roche], “E00-110 experiment at Jefferson Lab Hall A: Deeply virtual Compton scattering off the proton at 6 GeV,” *Phys. Rev. C* **92**, no. 5, 055202 (2015) doi:10.1103/PhysRevC.92.055202 [arXiv:1504.05453 [nucl-ex]]
25. E. Fuchey, *et al.* [80 authors including J. Roche], “Exclusive Neutral Pion Electroproduction in the Deeply Virtual Regime,” *Phys. Rev.* **C83**, 025201 (2011), <https://doi.org/10.1103/PhysRevC.83.025201> [arXiv:1003.2938 [nucl-ex]].
24. M. Mazouz *et al.* [Jefferson Lab Hall A Collaboration, 77 authors including J. Roche], “Deeply Virtual Compton Scattering off the neutron,” *Phys. Rev. Lett.* **99**, 242501 (2007), <https://doi.org/10.1103/PhysRevLett.99.242501> [arXiv:0709.0450 [nucl-ex]].

23. C. Munoz Camacho *et al.* [Jefferson Lab Hall A Collaboration, 77 authors including J. Roche], “Scaling tests of the cross section for deeply virtual Compton scattering,” *Phys. Rev. Lett.* **97**, 262002 (2006), <https://doi.org/10.1103/PhysRevLett.97.262002> [arXiv:nucl-ex/0607029].

22. *D. Androic *et al.* [Qweak, 93 authors including J. Roche], , “Determination of the ^{27}Al Neutron Distribution Radius from a Parity-Violating Electron Scattering Measurement,” *Phys. Rev. Lett.* **128** (2022) no.13, 132501 doi:10.1103/PhysRevLett.128.132501 [arXiv:2112.15412 [nucl-ex]].

21. *D. Androic *et al.* [QWeak, 94 authors including J. Roche], “Precision Measurement of the Beam-Normal Single-Spin Asymmetry in Forward-Angle Elastic Electron-Proton Scattering,” *Phys. Rev. Lett.* **125** (2020) no.11, 112502 doi:10.1103/PhysRevLett.125.112502 [arXiv:2006.12435 [nucl-ex]].

20. *D. Androic *et al.* [Qweak Collaboration], “Precision measurement of the weak charge of the proton,” *Nature* **557**, no. 7704, 207 (2018). doi:10.1038/s41586-018-0096-0

19. *T. Allison *et al.* [Qweak Collaboration, 128 authors including J. Roche], “The Q_{weak} experimental apparatus,” *Nucl. Instrum. Meth. A* **781**, 105 (2015) [arXiv:1409.7100 [physics.ins-det]].

18. *D. Androic *et al.* [Qweak Collaboration, 97 authors including J. Roche], “First Determination of the Weak Charge of the Proton,” *Phys. Rev. Lett.* **111**, no. 14, 141803 (2013) [arXiv:1307.5275 [nucl-ex]].

17. D. S. Armstrong *et al.* [Qweak Collaboration, 50 authors including J. Roche], “Qweak: A precision measurement of the proton’s weak charge,” *AIP Conf. Proc.* **698**, 172 (2004) [*Eur. Phys. J. A* **24S2**, 155 (2005)] [arXiv:hep-ex/0308049].

16. J. Roche, W. T. H. van Oers, R. D. Young, “Searches for physics beyond the Standard Model,” *J. Phys. Conf. Ser.* **299**, 012012 (2011), part of a review book titled “Jefferson Lab: A long decade of Physics”.

15. R. D. Young, R. D. Carlini, A. W. Thomas and J. Roche, “Testing the Standard Model by precision measurement of the weak charges of quarks,” *Phys. Rev. Lett.* **99**, 122003 (2007) [arXiv:0704.2618 [hep-ph]], **ON THE COVER OF PRL.**

14. R. D. Young, J. Roche, R. D. Carlini and A. W. Thomas, “Extracting nucleon strange and anapole form factors from world data,” *Phys. Rev. Lett.* **97**, 102002 (2006) [arXiv:nucl-ex/0604010].

13. D. Androic *et al.* [G0 Collaboration, 67 authors including J. Roche], “Measurement of the parity-violating asymmetry in inclusive electroproduction of π^- near the Δ^0 resonance,” *Phys. Rev. Lett.* **108**, 122002 (2012) [arXiv:1112.1720 [nucl-ex]].
12. D. Androic *et al.* [G0 Collaboration, 130 authors including J. Roche], “The G0 Experiment: Apparatus for Parity-Violating Electron Scattering Measurements at Forward and Backward Angles,” *Nucl. Instrum. Meth.* **A646**, 59-86 (2011) [arXiv:1103.0761 [nucl-ex]].
11. D. Androic *et al.* [G0 Collaboration, 69 authors including J. Roche], “Transverse Beam Spin Asymmetries at Backward Angles in Elastic Electron-Proton and Quasi-elastic Electron-Deuteron Scattering,” *Phys. Rev. Lett.* **107**, 022501 (2011) doi:10.1103/PhysRevLett.107.022501 [arXiv:1103.3667 [nucl-ex]].
10. D. Androic *et al.* [G0 Collaboration, 67 authors including J. Roche], “Strange Quark Contributions to Parity-Violating Asymmetries in the Backward Angle G0 Electron Scattering Experiment,” *Phys. Rev. Lett.* **104**, 012001 (2010) [arXiv:0909.5107 [nucl-ex]].
9. D. S. Armstrong *et al.* [G0 Collaboration, 106 authors including J. Roche], “Transverse Beam Spin Asymmetries in Forward-Angle Elastic Electron-Proton Scattering,” *Phys. Rev. Lett.* **99**, 092301 (2007) [arXiv:0705.1525 [nucl-ex]].
8. D. S. Armstrong *et al.* [G0 Collaboration, 108 authors including J. Roche], “Strange quark contributions to parity-violating asymmetries in the forward G0 electron-proton scattering experiment,” *Phys. Rev. Lett.* **95**, 092001 (2005). [nucl-ex/0506021].
7. P. Janssens *et al.* [25 authors including J. Roche], “Monte Carlo simulation of virtual Compton scattering below pion threshold,” *Nucl. Instrum. Meth. A* **566**, 675 (2006) [arXiv:physics/0608308].
6. J. Roche *et al.* [VCS and A1 Collaborations, 56 authors], “The First determination of generalized polarizabilities of the proton by a virtual Compton scattering experiment,” *Phys. Rev. Lett.* **85**, 708 (2000). [hep-ex/0007053].
5. J. M. Friedrich *et al.* [64 authors including J. Roche], “The first dedicated Virtual Compton Scattering experiment at MAMI,” *Nucl. Phys. A* **663**, 389 (2000).
4. S. Kerhoas *et al.* [62 authors including J. Roche], “The first virtual Compton scattering experiment at MAMI,” *Nucl. Phys.* **A666**, 44-47 (2000).
3. P. Bartsch *et al.* [VCS Collaboration, 64 authors including J. Roche], “Real and virtual Compton scattering (experiments),” *Few Body Syst. Suppl.* **11**, 316 (1999).
2. S. Kerhoas *et al.* [62 authors including J. Roche], “Virtual Compton scattering at MAMI $\gamma^*p \rightarrow \gamma'p'$,” *Few Body Syst. Suppl.* **10**, 523 (1999).

1. J. Roche *et al.* [62 authors], “Virtual compton scattering under π^0 threshold at $Q^2 = 0.33 \text{ GeV}^2$. Preliminary results,” Nucl. Phys. A **654**, no. 1, 547c (1999).

Other papers I contributed my general knowledge of performing experiments at JLab to the following papers.

67. A. Afanasev *et al.* Eur. Phys. J. A **57** (2021) no.10, 300 doi:10.1140/epja/s10050-021-00581-x [arXiv:2105.06540 [nucl-ex]].
66. J. Arrington *et al.* Phys. Rev. C **104** (2021) no.6, 065203 doi:10.1103/PhysRevC.104.065203 [arXiv:2110.08399 [nucl-ex]].
65. *D. Abrams *et al.* [Jefferson Lab Hall A Tritium], Phys. Rev. Lett. **128** (2022) no.13, 132003 doi:10.1103/PhysRevLett.128.132003 [arXiv:2104.05850 [hep-ex]].
64. *M. E. Christy, *et al.* Phys. Rev. Lett. **128** (2022) no.10, 102002 doi:10.1103/PhysRevLett.128.102002 [arXiv:2103.01842 [nucl-ex]].
63. A. Accardi *et al.* Eur. Phys. J. A **57** (2021) no.8, 261 doi:10.1140/epja/s10050-021-00564-y [arXiv:2007.15081 [nucl-ex]].
62. *R. Cruz-Torres *et al.* [Jefferson Lab Hall A Tritium], Phys. Rev. Lett. **124** (2020) no.21, 212501 doi:10.1103/PhysRevLett.124.212501 [arXiv:2001.07230 [nucl-ex]].
61. S. Basnet *et al.*, Phys. Rev. C **100** (2019) no.6, 065204 doi:10.1103/PhysRevC.100.065204 [arXiv:1911.11681 [nucl-ex]].
60. W. B. Li *et al.* [Jefferson Lab $F\pi$ Collaboration], Phys. Rev. Lett. **123**, no. 18, 182501 (2019) doi:10.1103/PhysRevLett.123.182501 [arXiv:1910.00464 [nucl-ex]].
59. *R. Cruz-Torres *et al.* [Jefferson Lab Hall A Tritium Collaboration], Phys. Lett. B **797**, 134890 (2019) doi:10.1016/j.physletb.2019.134890 [arXiv:1902.06358 [nucl-ex]].
58. W. Armstrong *et al.* [SANE Collaboration], Phys. Rev. Lett. **122**, no. 2, 022002 (2019) doi:10.1103/PhysRevLett.122.022002 [arXiv:1805.08835 [nucl-ex]].
57. M. Carmignotto *et al.*, Phys. Rev. C **97**, no. 2, 025204 (2018) doi:10.1103/PhysRevC.97.025204 [arXiv:1801.01536 [nucl-ex]].
56. J. D. Maxwell *et al.*, Nucl. Instrum. Meth. A **885**, 145 (2018) doi:10.1016/j.nima.2017.12.008 [arXiv:1711.09089 [physics.ins-det]].
55. V. Tvaskis *et al.*, Phys. Rev. C **97**, no. 4, 045204 (2018) doi:10.1103/PhysRevC.97.045204 [arXiv:1606.02614 [nucl-ex]].
54. G. M. Huber *et al.* [Jefferson Lab $F\pi$ Collaboration, 88 authors including J. Roche], Phys. Rev. C **91**, no. 1, 015202 (2015) [arXiv:1412.5140 [nucl-ex]].
53. *D. Wang *et al.*, Phys. Rev. C **91**, no. 4, 045506 (2015).

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43. R. Asaturyan *et al.* [80 authors including J. Roche],, Phys. Rev. C **85**, 015202 (2012) [arXiv:1103.1649 [nucl-ex]].
42. N. Fomin *et al.* [70 authors including J. Roche], Phys. Rev. Lett. **105**, 212502 (2010) [arXiv:1008.2713 [nucl-ex]].
41. S. Riordan *et al.* [118 authors including J. Roche], Phys. Rev. Lett. **105**, 262302 (2010) [arXiv:1008.1738 [nucl-ex]].
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39. *K. A. Aniol *et al.* [HAPPEX Collaboration, 115 authors including J. Roche], Phys. Lett. **B509**, 211-216 (2001). [nucl-ex/0006002]
38. K. Slifer *et al.* [Resonance Spin Structure Collaboration, 73 authors including J. Roche], Phys. Rev. Lett. **105**, 101601 (2010). [arXiv:0812.0031 [nucl-ex]].
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33. L. Tang *et al.* [E01-011/HKS Collaboration, 87 authors including J. Roche], Nucl. Phys. A **790**, 679C (2008).
32. H. P. Blok *et al.* [Jefferson Lab Collaboration, 87 authors including J. Roche], Phys. Rev. C **78**, 045202 (2008) [arXiv:0809.3161 [nucl-ex]].
31. G. M. Huber *et al.* [Jefferson Lab Collaboration, 87 authors including J. Roche], Phys. Rev. C **78**, 045203 (2008) [arXiv:0809.3052 [nucl-ex]].
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28. M. M. Dalton *et al.* [78 authors including J. Roche], Phys. Rev. C **80**, 015205 (2009) [arXiv:0804.3509 [hep-ex]].
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22. F. R. Wesselmann *et al.* [RSS Collaboration, 72 authors including J. Roche], Phys. Rev. Lett. **98**, 132003 (2007) [arXiv:nucl-ex/0608003].
21. T. Horn *et al.* [Jefferson Lab F(pi)-2 Collaboration, 54 authors including J. Roche], Phys. Rev. Lett. **97**, 192001 (2006) [arXiv:nucl-ex/0607005].
20. M. K. Jones *et al.* [Resonance Spin Structure Collaboration, 72 authors including J. Roche], [arXiv:nucl-ex/0606015].
19. G. MacLachlan *et al.* [72 authors including J. Roche], Nucl. Phys. A **764**, 261 (2006),

18. B. Plaster *et al.* [Jefferson Laboratory E93-038 Collaboration, 74 authors including J. Roche], Phys. Rev. **C73**, 025205 (2006). [nucl-ex/0511025].
17. K. A. Aniol *et al.* [HAPPEX Collaboration, 78 authors including J. Roche], Phys. Lett. B **635**, 275 (2006) [arXiv:nucl-ex/0506011].
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15. K. Kramer *et al.* [64 authors including J. Roche], Phys. Rev. Lett. **95**, 142002 (2005). [nucl-ex/0506005].
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13. L. Yuan *et al.* [HNSS Collaboration, 133 authors including J. Roche], Phys. Rev. C **73**, 044607 (2006) [arXiv:nucl-ex/0408011].
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11. K. A. Aniol *et al.* [HAPPEX Collaboration, 118 authors including J. Roche], Phys. Rev. **C69**, 065501 (2004). [nucl-ex/0402004].
10. T. Reichelt *et al.* [Jefferson Laboratory E93-038 Collaboration, 72 authors including J. Roche], Eur. Phys. J. A **18**, 181 (2003).
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7. G. Warren *et al.* [Jefferson Lab E93-026 Collaboration, 109 authors including J. Roche], Phys. Rev. Lett. **92**, 042301 (2004). [nucl-ex/0308021].
6. X. Zheng *et al.* [Jefferson Lab Hall A Collaboration, 81 authors including J. Roche], Phys. Rev. Lett. **92**, 012004 (2004). [nucl-ex/0308011].
5. R. Madey *et al.* [E93-038 Collaboration, 76 authors including J. Roche], Phys. Rev. Lett. **91**, 122002 (2003). [nucl-ex/0308007].
4. T. Miyoshi *et al.* [HNSS Collaboration, 69 authors including J. Roche], Phys. Rev. Lett. **90**, 232502 (2003). [nucl-ex/0211006].
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1. R. Hasty *et al.* [SAMPLE Collaboration, 35 authors including J. Roche], Science **290**, 2117 (2000). [nucl-ex/0102001].

INVITED RESEARCH TALKS

33. August 22: “New Measurements of GPDs: Results from Hall A, CLAS12 and COMPASS”, Gordon Research Conference, Holderness School, NH.
32. July 2022: “Studies of exclusive processes at JLab Hall-A/C”, APCTP Focus Program in Nuclear Physics 2022, Pohang, South Korea.
31. April 2022: “Deep Exclusive Electroproduction of π^0 at High Q^2 in the Quark Valence Regime”, Center for Nuclear Femtography, remote seminar.
30. February 2021: “Recent pi-0 results”, Center for Nuclear Femtography, remote workshop.
29. February 2020: “Building a tomographic picture of the nucleon”, Colloquium, College of William and Mary, Va.
28. October 2019: “Precision studies of the DVCS process at JLab”, DNP Fall 2019 meeting, Arlington, Va.
27. August 2019: “JLab Hall A DVCS measurements”, HIX 2019, Kolympari, Greece.
26. July 2019: “Experimental Studies of the GPDs”, INPC 2019, Glasgow, Scotland.
25. June 2018: “Pion and eta production at JLab with 6 and 12 GeV”, Next-generation GPD studies with exclusive meson production at the EIC workshop, Brookhaven, NY.
24. April 2018: “A Glimpse of Gluons through Deeply Virtual Compton Scattering on the Proton”, APS April 2018 meeting, Columbus, OH.
23. October 2017: “Building a tomographic picture of the nucleon”, Colloquium, Ohio University.
22. September 2017: “L/T and flavor separation in pi0 electroproduction”, INT-U of Washington program on Spatial and Momentum Tomography of Hadrons and Nuclei.
21. October 2016: “Nucleon spatial imaging”, DNP Fall 2016 meeting, Vancouver, Canada.
20. June 2016: “Nucleon spatial imaging”, 6-hour class at the JLab graduate summer school HUGS2016.
19. May 2015, “Precision studies of the DVCS process at JLab.”, Few-Body 21 conference, Chicago, IL, USA.
18. August 2014, “DVCS in the valence region.”, Gordon Research Conference (Photonuclear reactions), Holderness, NH.
17. June 2014: “DVCS in Hall A: early 12 GeV experiment.”, JLab User group meeting, Newport News, Va, USA

16. June 2012: Qweak: a search for physics beyond the Standard Model, HITES 2012, New Orleans, USA
15. September 2011: QWEAK colloquium, Ohio University, Athens OH, USA.
14. August 2010: “Deep Virtual Compton Scattering”, Gordon Research Conference (Photonuclear reactions), Tilton NH.
13. April 2009: Third Workshop of the APS Topical Group in Hadron Physics, Denver OR, “The status of Parity Violating Electron Scattering.”
12. March 2008: GPD seminar, University of Kentucky, Lexington KY, USA.
11. August 2006: Gordon Research Conference: Photonuclear Reactions, Tilton NH, “G0 experiment in Hall C @ JLab.”
10. September 2005: G0 colloquium, Ohio University, Athens OH, USA.
9. June 2005: G0 seminar, Ohio University, Athens OH, USA.
8. April 2005: G0 seminar, Laurentian University, Sudbury ON, Canada.
7. October 2004: G0 seminar, LPClermont-Ferrand, France.
6. June 2004: Guest speaker at the Hampton University Graduate School (JLab summer school for advanced graduate students and post-doctoral research associates). G0.
5. September 2002: Presentation of the G0 experiment, Accelerator Division at JLab, Newport News VA, USA.
4. November 1999: VCS@Mainz, seminar, University of Maryland, USA.
3. August 1999: VCS@Mainz, seminar, Jefferson Laboratory, USA.
2. February 1999: VCS@Mainz, seminar, SPhN-CEA-Saclay, France.
1. August 1998: INPC 1998, Paris, France, “Virtual Compton Scattering under π^0 threshold at $Q^2=0.33 \text{ GeV}^2$. Preliminary Results”.

CONTRIBUTED RESEARCH TALKS

Only those for which I was the speaker.

14. September 2014: ”Future precision studies of the DVCS process at JLab”, PANIC2014, Hamburg, Germany.
13. April 2012: “The DVCS program in Hall A at Jefferson Lab”, QNP2012, Orsay, France.

12. June 2011: “DVCS update”, Hall A summer collaboration meeting, Newport News VA, USA.
11. December 2010: “Hall A software update for helicity”, Hall A winter collaboration meeting, Newport News VA, USA.
10. April 2007: “The future of the DVCS experiments in Hall A at JLab”, Exclusive reaction workshop, Newport News VA, USA.
9. October 2004: “Status report of the G0 experiment”, SPIN 2004, Trieste, Italy.
8. October 2003: “The G0 experiment”, Fall Meeting, DNP/APS, Tucson AZ, USA.
7. June 2004: “VCS at low energies”, GDH2004 symposium, Old Dominion University, Virginia.
6. March 2002 : “The G0 experiment”, Baryons’02, Newport News VA, USA.
5. October 2001: “The G0 experiment”, Fall Meeting, DNP/APS, Maui HA, USA.
4. October 1999: VCS@Mainz, Fall meeting, DNP/APS, Monterey CA, USA.
3. September 1997: VCS@Mainz, Workshop on Chiral Dynamics 1997, Mainz, Germany.
2. December 1996 : VCS@Mainz, Journées Jeunes Chercheurs, Aussois, France.
1. June 1996: VCS@Mainz, Workshop on VCS, Clermont-Ferrand, France.

INVITED OUTREACH TALKS

7. April 2019: “Wrestling the strongest force of the universe.” SPS meeting, Ohio University.
6. September 2016: “Wrestling the strongest force of the universe.” SPS meeting, Ohio University.
5. October 2013: “First Determination of the Weak Charge of the Proton.”, SACNAS 2013, San Antonio, TX, USA.
4. October 2013: “Wrestling the strongest force of the universe.” SPS meeting, Ohio University.
3. September 2012: “So they found the Higgs, now what? How I search for Physics beyond the Standard Model.”, Bowling Green University, OH.
2. March 2008: “The strange shape of the proton”, Colloquium at DePauw University, IN, USA.
1. February 2008: “Nucleon electro-weak structure: experimental nuclear physics”, SPS meeting, Ohio University.