Rebecca Rapp

Graduate Student, Carnegie Mellon University, Pittsburgh, PA, 15213

Email: rrapp@andrew.cmu.edu Phone: 724-809-1951

EDUCATION

M.S. / Ph.D. in Physics (May 2019 / Anticipated 2022)

Carnegie Mellon University, Pittsburgh, PA 15213

- → Highlighted Courses: Introductory Mathematical Physics, Quantum Mechanics I & II, Statistical Mechanics, Classical Electrodymanics I & II, Particle Physics I & II, Quantum Field Theory, Introductory Astrophysics

B.A., Physics & Mathematics (May 2017)

Washington & Jefferson College, Washington, PA 15301

- → Advisors: Michael McCracken (Physics), Faun Doherty (Math)
- ~ Honors: Summa Cum Laude, ΦBK, George Winchester Prize (Physics), Clyde Sheperd Atchison Prize (Math)

GRADUATE RESEARCH ACTIVITIES

- Member of the COHERENT Collaboration (August 2017 present)
 - Studying coherent elastic neutrino-nucleus scattering at the Spallation Neutron Source (SNS)
 - Maintainer for a Geant4 simulation predicting the neutrino production at the SNS
 - Advised Shuaixiang Zhang in his simulation of the SNS Second Target Station (Summer 2019)
 - Ongoing work with the MARS neutron monitoring subsystem (simulation and data analysis)
 - Contributing to design studies for a D₂O detector to normalize neutrino flux
 - · Investigating optimal bin edges for fits in photoelectrons detected and recoil time
 - Serving as Data Coordinator for the collaboration (January 2020 present)
- ✓ Worked with Brian Quinn to characterize photomultiplier tubes for parity-violation experiments and achieved nonlinearity on the order of 0.2% under CRex operating conditions (August - December 2018)

Publications

First constraint on coherent elastic neutrino-nucleus scattering in argon
COHERENT collaboration, Phys. Rev. D. 100. 115020 − 9 December 2019.

PREPRINTS

- ➢ First Detection of Coherent Elastic Neutrino-Nucleus Scattering on Argon COHERENT collaboration, 2020 preprint, arXiv: 2003.10630v1 [nucl-ex]
- Sensitivity of the COHERENT Experiment to Accelerator-Produced Dark Matter
 COHERENT collaboration, 2019 white paper. arXiv:1911.06422v1 [physics.hep-ex]
- ∼ COHERENT 2018 at the Spallation Neutron Source COHERENT collaboration, 2018 white paper. arXiv:1803.09183v2 [physics.ins-det]

Conference Proceedings

~ COHERENT Plans for D₂O at the Spallation Neutron Source
 American Physical Society Division of Particles & Fields Meeting 2019. arXiv: 1910.00630 [physics.ins-det]

March 27, 2020 Rapp

RECENT PRESENTATIONS

- ✓ Invited: ORNL Neutrino Flux Simulations: FTS and STS

 Magnificent CEvNS Workshop 2019, Chapel Hill, NC (11 November 2019)
- Contributed: COHERENT Plans for D₂O at the Spallation Neutron Source
 American Physical Society Division of Particles & Fields Annual Meeting, Boston, MA (1 August 2019)
- ✓ Invited: Spallation Neutron Source Neutrino Flux

 Workshop on Fundamental Physics at the Second Target Station, Oak Ridge, TN (27 July 2019)
- Contributed: Pion production at the Spallation Neutron Source
 The 15th International Conference on Meson-Nucleon Interactions and the Structure of the Nucleon,
 Pittsburgh, PA (4 June 2019)
- → Poster: Neutrino Flux Simulations at the ORNL Spallation Neutron Source
 XXVIII International Conference on Neutrino Physics and Astrophysics (Neutrino 2018),
 Heidelberg, Germany (6 June 2018)

Professional Development

- ∞ Junior Member Representative to the COHERENT Collaboration Board (January 2020 present)
- - 2020: Organization of PghCUWiP
 - Drafted initial proposal to APS to host a CUWiP site in Pittsburgh
 - Member of the national organizing committee, chaired local admissions and logistics committees
 - Led coordination of volunteers, served as primary point of contact for all participants
 - Panelist for Work/Life Balance: Personal Interests, chaired student research talk session
 - Assisted in networking events as a graduate student in 2019 (TCNJ)
 - Attended as an undergraduate in 2016 (ODU/JLab) and 2017 (Princeton)

TECHNICAL SKILLS

- - · Languages/Tools: python, Mathematica, LabVIEW, Arduino, C++, Geant4, ROOT, RooFit, coda
 - Techniques: large-scale data analysis, data visualization and fitting, Monte Carlo simulation, basic instrument interfacing, data acquisition
- ≈ Electronics: oscilloscopes, basic circuit construction, high voltage operations, PMT base design and DAQ

TEACHING EXPERIENCE

∼ Teaching Assistant for 33-121: Physics I for Science Students Department of Physics, Carnegie Mellon University

Spring 2019 - Recitation (1), Course Center (1), Grading

Fall 2018 - Recitation (2), Course Center (1.5), Grading

Spring 2018 - Recitation (2), Course Center (2), Grading

Fall 2017 - Recitation (2), Course Center (1), Grading

Math and Physics Tutor
 Peer-Assisted Learning, Washington & Jefferson College

August 2017 - May 2019

Professor: Manfred Paulini Professor: Stephen Garoff

Professors: Kunal Ghosh and Matt Walker

Professor: Stephen Garoff

August 2014 - May 2017 Supervisor: Doree Baumgart March 27, 2020 Rapp

REFERENCES

Assistant Prof. Diana Parno
Graduate Research Advisor
Carnegie Mellon University
dparno@cmu.edu

Associate Prof. Michael McCracken
Department Chair, Undergraduate Advisor
Washington & Jefferson College
mmccracken@washjeff.edu

Dr. Belkis Cabrera-Palmer Prof. Arthur Kosowsky
Radiation and Nuclear Detection Department Chair, PghCUWiP LOC Member
Sandia National Laboratories (Livermore) University of Pittsburgh kosowsky@pitt.edu

Prof. Manfred Paulini Prof. Stephen Garoff
Associate Dean for Faculty and Graduate Affairs Carnegie Mellon University paulini@cmu.edu Prof. Stephen Garoff
Course Instructor (TA Responsibilities)
Carnegie Mellon University sg2e@cmu.edu

Aria Salyapongse Diane Turnshek
Former student, PghCUWiP volunteer Special Lecturer, PghCUWiP Co-chair
Carnegie Mellon University Carnegie Mellon University
asalyapo@andrew.cmu.edu dianet@andrew.cmu.edu