Kiersten Ruisard

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Work Experience

2018- Shull Fellow, Spallation Neutron Source, Oak Ridge National Laboratory
2012-2018 Graduate Research Assistant, Institute for Research in Electronics and Applied Optics, University of Maryland College Park

Education

2018 PhD in Physics, University of Maryland, College Park, MD
Dissertation: "Design of a Nonlinear Quasi-Integrable Lattice for Resonance Suppression at the University of Maryland Electron Ring"
2012 BSc in Physics, Rutgers University, Piscataway, NJ, graduated *summa cum laude*

Grants, honours & awards

2014-2017 National Science Foundation Graduate Research Fellow
2012-2013 University of Maryland Dean's Fellowship
2011-2012 Barry M. Goldwater Scholarship (nationally competed merit scholarship)
2016 Student Poster Prize at North American Particle Accelerator Conference
2012 Henry Rutgers Scholar Undergraduate Thesis Award (university-wide competition)

Publications & Presentations

Refereed Journal Articles

2021 **Ruisard K**, Aleksandrov A. Rapid charge redistribution leading to core hollowing in a high-intensity ion beam. *Phys Rev Accel Beams* 2021;24(1):014201.

2020 Aleksandrov A, Cousineau S, **Ruisard K**, Zhukov A. First measurement of a 2.5 MeV RFQ output emittance with 1 part-per-million dynamic range. *Nucl Instruments Methods Phys Res Sect A* 2021;987:164829.

2020 **Ruisard K**, Aleksandrov A, Cousineau S, Shishlo A, Tzoganis V, Zhukov A. High dimensional characterization of the longitudinal phase space formed in a radio frequency quadrupole. *Phys Rev Accel Beams* 2020;23(12):124201.

2019 **Ruisard K**, Komkov H B, Beaudoin B, Haber I, Matthew D, Koeth T. Single-invariant nonlinear optics for a small electron recirculator. *Phys Rev Accel Beams* 2019;22(4):41601.

Newsletter articles

2020 Aleksandrov A, Cousineau S, **Ruisard K.** Understanding beam distributions in hadron linacs in the presence of space charge. *J Instrum* 2020;15(7).

Conference Talks

Note: Full citation indicates presentation was accompanied by written proceedings.

2021 *(scheduled)* "Beyond RMS: Understanding the Evolution of Beam Distributions in High Intensity Linacs," 2021 International Particle Accelerator Conference (IPAC), remote, May 24-28 2021. **Invited Speaker**

2021 "The implications and challenges of representing the 6D distribution of high charge bunches," 2021 APS April Meeting, remote

2021 "6D measurements at an RFQ test stand," ARIES Workshop on Experiences during Hadron LINAC commissioning, remote, January 2021

2019 Ruisard KJ, Aleksandrov A, Cousineau S, Zhang Z. "Characterization and modeling of high-intensity evolution in the SNS Beam Test Facility," in *Proceedings of NAPAC2019*, Lansing, MI.

2019 "Application of SNS Beam Test Facility (BTF) to halo formation in high-intensity linacs," ICFA Space Charge Workshop, CERN, Geneva, Switzerland. **Invited Speaker**

2018 Ruisard K, Beaudoin B, Haber I, Matthew D, Koeth T. "Nonlinear Optics At Umer : Lessons Learned in Simulation," in *Proceedings of the 13th Int. Computational Accelerator Physics Conf* Key West, FL, 278-284. **Invited speaker**

2017 "The UMER nonlinear optics experiments/simulations, nonlinear insert and octupole magnet development", ICFA Space Charge Workshop, Darmstadt, Germany. **Invited Speaker**

2016 "The University of Maryland Electron Ring distributed octupole lattice: marrying quasi-integrable optics with the FODO lattice," Advanced Accelerator Concepts Workshop, Washington DC

2016 Ruisard K, Baumgartner H, Beaudoin B, Haber I, Matthews D, Koeth T. "Early tests and simulation of quasi-integrable octupole lattices at the University of Maryland Electron Ring," in *Proceedings of HB2016*. Malmo, Sweden, 511-516. **Invited Speaker**

2014 "Nonlinear optics at the University of Maryland Electron Ring," Advanced Accelerator Concepts Workshop, San Jose, CA.

2013 Ruisard K, Hine G, Koeth T, Rosenberg A. "The Rutgers cyclotron: Placing student's careers on Target," in *Proceedings of the 20th International Conference on Cyclotrons and Their Applications.* Vancouver, BC, Canada, 291-295. **Invited Speaker**

Poster Presentations (with proceedings)

2020 Ruisard K, Aleksandrov A, Shishlo A. "Virtual slit for improved resolution in longitudinal emittance measurement," in *Proceedings of IBIC2020*, remote, Sept. 14-18, 2020.

2018 Ruisard KJ, Baumgartner H, Beaudoin B, et al. "Tuning low-current beams for nonlinear quasi-integrable optics experiments at the University of Maryland Electron Ring." in *Proceedings of IPAC2018*, Vancouver, Canada, May 2018.

2016 K. J. Ruisard et al., "Experimental plans for single-channel strong octupole fields at the University of Maryland Electron Ring", in *Proceedings of the 2016 NAPAC*, Chicago, IL, October 2016. **Student Poster Prize**

2015 K. J. Ruisard, B. Beaudoin, I. Haber, T. Koeth, "Simulations and experiments in support of octupole lattice studies at the University of Maryland Electron Ring," in *Proceedings of the 2015 IPAC*, Richmond, VA, May 2015.

2013 K. J. Ruisard, S. Bernal, I. Haber, R.A. Kishek, T. Koeth, "Design and simulation of an extraction section for the University of Maryland Electron Ring", in *Proceedings of the 2013 IPAC*, Shanghai, China, May 2013.

2012 K. J. Ruisard, B. Beaudoin, I. Haber, R.A. Kishek, T. Koeth, "Design of an Electrostatic Extraction Section for the University of Maryland Electron Ring", in *Proceedings of the 2012 IPAC*, New Orleans, LA, May 2012.

Panels

2021 Panelist, "What Do Early-Career Physicists Do? A view of the Post-Doc Experience" APS March Meeting, March 15-19

Seminars

2021 *(scheduled)* "How measuring 6D beam distributions can help control losses in high power accelerators," Accelerator Science Seminar, University of Chicago, May 10, 2021

2021 "More range and more dimensions: Understanding beam distributions at the SNS Beam Test Facility," Fermilab Accelerator Physics and Technology Seminar, March 2, 2021

2018 "Design of nonlinear quasi-integrable optics for resonance suppression at the University of Maryland Electron Ring," John Adams Institute for Accelerator Science Seminar, Oxford University, Feb. 22, 2018

Teaching

2021 Co-instructor, Fundamentals of Accelerator Physics and Technology, US Particle Accelerator School
2018 Teaching assistant, Classical Mechanics and Electromagnetics, US Particle Accelerator School
2015,2017 Co-instructor, Cyclotrons and Their Design, US Particle Accelerator School
2016-2017 Teaching assistant and co-designer, Accelerator Physics - Building the Maryland 5 MeV Cyclotron, University of Maryland (Senior engineering capstone course)
2014 Teaching assistant, General Physics: Electrodynamics, Light, Relativity and Modern Physics, University of Maryland

Professional Memberships and Service

Member, American Physical Society, Division of Physics of Beams
Reviewer, DOE SBIR/STTR Phase 1 & 2

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