Brian Beaudoin, Ph.D.

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Education

University of Maryland, College Park, MD Electrical Engineering M.S. 2008
University of Maryland, College Park, MD Electrical Engineering Ph.D. 2011

Employment Summary

2025 – present Fermi National Accelerator Laboratory, Visiting Scientist on a URA Award (IOTA) at Fermilab
2025 – present American University, Washington DC, Hurst Senior Professorial Lecturer
2018 – present University of Maryland, College Park Campus, Associate Research Professor
2017 – 2018 Fermi National Accelerator Laboratory, Visiting Scientist on a URA Award, Illinois Accelerator Research Center (IARC) at Fermilab
2016 – 2017 Rutgers University, Visiting Assistant Scientist, Department of Physics and Astronomy
2014 – 2016 Fermi National Accelerator Laboratory, Visiting Scientist on a URA Award, Fermilab Accelerator Science and Technology (FAST) facility.
2014 – 2018 University of Maryland, College Park Campus, Assistant Research Scientist
2011 – 2014 University of Maryland, College Park Campus, Postdoctoral Research Associate
2003 – 2006 U.S. Naval Research Laboratories, Infrared Counter Measures Engineer
SW Washington, DC

SUMMARY

A highly versatile professional offering 20 years of diverse hands-on laboratory management and teaching/mentoring student experience.

- Teaching experience includes 9 years of teaching engineering courses in particle accelerator design, audio electronics design and fabrication, robotics. I have taught for both the University of Maryland, American University and the United States Particle Accelerator School.
- Research experience includes, working with various microwave equipment from vector network analyzers to power meters; designing and building RF/microwave devices; working with high vacuum systems; working with high voltage DC and pulsed powered sources; designing and building electron and ion sources for particle accelerator and microwave vacuum electronic devices. Experience also includes collecting and analyzing experimental data as well as writing, evaluating, and producing detailed reports on a variety of projects. Viewed as a crucial "go-to" resource providing scientific support and consultation to peers and leadership within the institute. Regularly entrusted to collaborate with senior management in planning for future project proposals. Published

over >80 manuscripts (the 80 I remember are at the end of this document) that have appeared in peer-reviewed journals, conference proceedings, and scientific international presentations and abstracts. Regularly represents the institute as part of collaborations with fellow researchers and scientists from various organizations, national laboratories as well as academia.

Expertise in both windows and Linux computing environments using Finite Element Method (FEM) codes such as High-Frequency Structure Simulator (HFSS), Maxwell and COMSOL. Significant experience analyzing experimental data and simulation results using python and MATLAB. Experience with Solidworks and Inventor for submission of projects to machine shops for construction. Experience with educating students in both Research Experience for Undergraduates (REU) program and the classroom/laboratory environments.

Total Funding as PI ($2.25M), Co-PI ($24.6M)

CORE STRENGTHS

Scientific Grant Development & Preparation · Grant and Team Management · Writing Yearly/Monthly Reviews · Designing and Building of Hardware · Paper Authoring · Scientific Information Analysis · Public Speaking & Presentation Delivery · Teaching · Budgeting & Laboratory Cost Controls

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SIGNIFICANT REASEARCH PROJECTS

Research is ongoing

Centrifugal Mirror Fusion Experiment (ARPA-E / U.S. Department of Energy):

Development of a novel linear magnetic mirror fusion concept leveraging **supersonic plasma rotation** to improve confinement, stability, and fusion accessibility.

Role: Principal Investigator (UMD Subcontract)

Technical Focus: Plasma rotation, magnetic mirror confinement, pulsed power, high-voltage systems, RF/microwave diagnostics

Contributions & Leadership

- Served as **Principal Investigator** on the UMD subcontract in collaboration with UMBC, with responsibility for experimental execution and technical deliverables.
- Led and mentored undergraduate and graduate students in **vacuum technology, pulsed power, high-voltage electronics, and RF/microwave systems**.
- Co-developed **plasma ignition hardware** enabling controlled ionization of a rapidly rotating plasma column.
- Partnered directly with the UMBC PI on experimental design decisions impacting plasma stability and confinement performance.

Outcomes / Impact

- Advanced experimental validation of **centrifugal confinement physics** in a linear magnetic mirror geometry.
- Enabled exploration of **velocity shear stabilization** and high-Mach-number operation relevant to DT fusion pathways.
- Delivered scalable experimental infrastructure supporting future fusion-relevant test campaigns.

Funding: $5.2M (UMBC); $1.2M (UMD-IREAP)
Project Dates: 2020–2024

Precision Alignment Techniques for Millimeter Wave Sources (Funded by STTR/Navy):

The Navy's objective is to produce affordable microwave vacuum electronic devices. The research in this program is focused on demonstrating repeatable mm-wave circuit stack assemblies (cathode to collector) of RF sources that demonstrate a 10X improvement in precision alignment over existing techniques.
Role: Coprincipal Investigator (UMD Subcontract)
Technical Focus: Pulsed power, high-voltage systems, RF/microwave diagnostics, measurement of magnetic confining fields for the experimental portion of the project. At the initial stages, I was working with students on the development of the 95GHz (W-band) TWT device.

Contributions & Leadership

- Served as **Coprincipal Investigator** on the UMD subcontract in collaboration with a Dymenso, with responsibility for experimental/simulation execution and technical deliverables.
- Co-developed **95GHz TWT device and the electron gun** enabling generation of microwave power.
- Led and mentored undergraduate and graduate students in **vacuum technology, pulsed power, high-voltage electronics, and RF/microwave systems**.

Outcomes / Impact

- Delivered functioning 95GHz design and fabricated it with Dymenso and then measured it in the laboratory. Designed the magnetic field, had it fabricated and measured in the laboratory.

Funding: $0.531M (UMD-IREAP)
Project Dates: 2020-2023

Ultra-Broadband Directional Infrared Radiation in the Atmospheric Window (Funded by Office of Naval Research):

The objective of this program is the development of a source of broadband infrared radiation for applications such as Infrared Counter Measures (IR-CM) and remote IR chemical/biological warfare (CBW) detection.
Role: Coprincipal Investigator
Technical Focus: Using high-power (800mJ/100ns) CO^2 lasers to study ionization of air on various material surfaces and the RF emitted spectrum. Secondary aspect of the program was to create broad-band sources of laser radiation using specifically designed hollow core fibers that can excite Orbital Angular Momentum (OAM) modes.

Contributions & Leadership

- Served as **Coprincipal Investigator** on the UMD award. Wrote and managed monthly progress reports.
- Purchased the laser, **working** with the vendor on the **specifications**.
- I set up all the optics in the laboratory, performed spectral measurements, working with students.

Outcomes / Impact

- Delivered functioning broadband radiation sources.

Funding: $0.504M (UMD-IREAP)
Project Dates: 2020-2026

Bulk Electrets Seedling (Funded by Defense Advanced Research Projects Agency):

The objective of this program is to understand the factors which affect thermal stability, quantify the mobility of the charge carriers, and to develop a greater understanding of the factors which affect the discharging rate(s) of bulk electrets.
Role: Key scientist
Technical Focus: Mentor students on measuring RF/microwave radiation with various wide-band antennas and high-bandwidth oscilloscopes.

Contributions & Leadership

- Served as **Key Scientist** on the award.
- Led and mentored undergraduate and graduate students in measuring **high-voltage electronics and RF/microwave radiated power.**

Outcomes / Impact

- Delivered measurements of broadband radiation sources. Papers published.

Funding: $1.6M (UMD-MSE)
Project Dates: 2021–2023

Accelerator Technologies Feasibility Evaluation and Training Development (Funded by Los Alamos National Laboratory-National Nuclear Security Administration):

The initial objective of this program is to experimentally design a low power test **RF structure** to demonstrate a fast increase in the **first harmonic current in a bunched electron beam**. The secondary objective of this program is to **study materials** in **high radiation environments.**
Role: Key Scientist on previous award, now PI on current award
Technical Focus: Developing the experimental test stand with the assistance of a LANL scientist to test in the laboratory and measure the output **RF at 700MHz**. In the next phase of the award, is to study material damage in various electronic components to **PMMA (polymethyl methacrylate).**

Contributions & Leadership

- Served as a **key scientist** and now **Principal Investigator** on the award. Working with LANL on funding and modifying the statement of work as needed.
- Developing the test stand and taking **RF** measurements.
- Setting up the **electron LINAC for material irradiation** and taking data.

Outcomes / Impact

- Delivered functioning experimental test stand and deliver data to the agency to understand electronic component effects.

Funding: $0.295M/$0.500M (UMD-MSE/UMD-IREAP)
Project Dates: 2019-2023/2023-2028

Demonstrations of Flat/Round Transformations of Magnetized, Angular Momentum Dominated Electron Beams (Funded by Department of Energy):

The objective of this program is to carry out an experimental demonstration of Derbenev's flat-to-round and round-to-flat optical transformations, designed to match electron beams from a high energy storage ring into a and out of a solenoidal cooling channel. We plan to do this initially with negligible space charge followed by cases with significant space charge.
Role: Co-Principal Investigator and now Principal Investigator
Technical Focus: Mentor students on setting up how to **measure magnetic** fields using automated XYZ stages and Hall effect Gaussmeters. Designing and building the small 5keV **experimental test accelerator**. Design and fabrication of the high-voltage interlock system that protects users from the high-voltage of the electron gun.

Contributions & Leadership

- Served as **Co-Principal Investigator** and now **Principal Investigator** on the award.
- Design and constructed the experiment, from the **printed circuit magnets** to the **beam pipe** to the **linear actuator**. The whole machine.

Outcomes / Impact

- Deliver results to the agency and publish papers in scientific literature.

Funding: $0.75M (UMD-IREAP)
Project Dates: 2021–2026

Engineering Materials for Spacecraft (Funded by Lockheed Martin/Sensitive Award):
The secondary objective of this program is to **study materials** in **high radiation environments.**
Role: Key scientist
Technical Focus: Understanding the **material for improved effects**.

Contributions & Leadership

- Served as **Key scientist** on the UMD award.
- Setting up the **electron LINAC for material irradiation** and taking data.

Outcomes / Impact

- Delivered data to agency and improving material understanding.

Funding: $6.2M (UMD-MSE)
Project Dates: 2023-2026

Research programs that have ended
Collaborative Research on Novel High Power Sources for the Physics of Ionospheric Modification (Funded by Air Force):
The objective of this Multidisciplinary University Research Initiative was to develop prototype EM sources for mobile ionospheric heaters based on: (i) Comprehensive understanding of the current status of IM research and applications; (ii) Combination of theoretical/modeling with laboratory experiments scaled to simulate ionospheric plasma parameters; (iii) Understanding of modern high power RF source technology and antenna engineering including meta-materials.
Role: Key scientist
Technical Focus: Mentored students on the use of **vector network analyzers (VNAs)** and high bandwidth oscilloscopes. Designed and fabricated **pi-matching network** circuits and other various **impedance matching circuits** for source to antenna **applications at 3-10 MHz**.

Contributions & Leadership

- Served as **Key scientist** on the UMD award, with responsibility for experimental execution and technical deliverables.
- Designed and built **impedance matching circuits** for **testing in the laboratory.**
- Designed the advanced **Inductive Output Tube (IOT) device**.

Outcomes / Impact

- Advanced design of an **Inductive Output Tube (IOT)** working with **Calabazas Creek Research** on an initial CAD design of the device.
- Deliver results to the agency and publish papers in scientific literature.

Funding: $7.8M (UMD-IREAP)
Project Dates: 2013–2019

University of Maryland Electron Ring (Funded by Department of Energy and the National Science Foundation):

The objective of this program was to study, scaled low-energy electron beams, cleverly accessing the intense regime of beam operation in accelerators at a much lower cost than larger and more energetic machines. These low-energy systems make an ideal testbed for experimenting in pushing up the brightness of existing and future accelerators.
Role: Co-Principal Investigator
Technical Focus: Mentored students on operating the **low energy circular accelerator**. Designed and built multiple components for the machine, from Beam Position Monitors (BPMs) to **wide band RF low-Q cavities** to **the flexible printed circuit magnets** that confine and bend the beam.

Contributions & Leadership
- Served as **Co-Principal Investigator** on the UMD award.
- Designed and built various components of the machine.
- Mentored MANY students in accelerator physics using the machine.

Outcomes / Impact
- Deliver results to the agency and publish papers in scientific literature.

Funding: $1.9M (UMD-IREAP)
Project Dates: 2013–2022

TEACHING

As a Professorial Lecturer at AU, I have taught electronics and experimental physics. I have created a new course in Engineering Renewable Systems for the 2026 fall semester.

As an Associate Research Professor at UMD, I created a new capstone course in 2023 called ENEE408J, "Audio Electronics Engineering." This course taught 4th-year undergraduates (2024, 2023) the theory and experimental implementation of musician and audio electronics that covers implementing filters with multi-channel audio amplifiers, digital signal processing, electromagnetics, and physics of the various transducers, room acoustics, etc. I mentor three

groups of 5 students per group and direct their projects as they progress through the semester with weekly class meetings and have the students present short presentations to the class of approximately 5-10 min each.

I have also co-created a capstone course and taught it every spring semester (from 2016-2022) called ENEE408T, "Building the 5 MeV Cyclotron." This course also teaches 4th-year undergraduates in the theory and operation of a particle accelerator called the cyclotron. The students learn the fundamentals of the machine, and how to simulate various aspects of the machine: from the magnetic fields to the RF fields to the proton beam physics. I mentor all student groups and direct their projects as they progress through the semester with weekly meetings and presentations to the class.

I have also continued co-teaching as an instructor for the United States Particle Accelerator School (USPAS) as part of my extracurricular activities. This 1-2 week traveling school ventures around the country educating anyone interested in particle accelerators.

In addition to this extracurricular activity, I continue to assist the Department of Energy as a proposal referee for Phase I and II SBIR/STTR proposals (unpaid activity) as well as assist various Journals (Physical Review Letters, Physical Review Accel Beams, Physics of Plasmas and Nuclear Instruments and Methods) with being a paper referee (unpaid activity).

MENTORING

RESEARCH PROGRAMS-MENTOR

I have mentored numerous graduate, undergraduate, and high school students in numerous research areas.

RESEARCH EXPERIENCES FOR UNDERGRADUATES (REU)-MENTOR FUNDED by NSF

TREND 2012 – Carlos Blanco, Purdue University, Non-Linear Wave Dynamics in Charged Particle Beam Systems

TREND 2014 – Jared Ginsberg, Cornell University, Modeling and Characterization of Soliton Trains in an Electron Beam

TREND 2017 – Joseph Betz, Widener University, X-band Microwave Accelerating Cavity

TREND 2018 – Kathleen Hamilton, University of Maryland, Longitudinal RF Confinement in UMER

TREND 2020 – Ambar C. Rodriguez Alicea, University of Puerto Rico, Predicting Cross-section Images of Particle Beams for UMER Using Neural Networks

TREND 2021 – William Matava, University of Texas at Austin, Design and Simulations of a Small-Scale Electron LINAC

TREND 2022 – Ariana Bussio, University of Maryland, Compact Ion Generation, Focusing & Filtering for Nuclear Decay Studies

TREND 2024 – Cheyenne Valles, University of Maryland, 2D PIC Simulations of Laser Beat Wave Plasma Acceleration Near Critical Density

TREND 2025 – Christian Gonzalez, University of Maryland, 2D PIC Simulations of Laser Beat Wave Plasma Acceleration Near Critical Density

GEMSTONE HONORS PROGRAM-TEAM CHARGEX-MENTOR

I also mentor a small, selected group of students enrolled into the University of Maryland College Park program, known as the Gemstone Honors Program. The group I mentor is called "ChargeX" and they are interested in developing novel devices that could be used to charge electric vehicles and electric boats. I mentor them weekly to ensure their project stays on track with Gemstone deadlines. This mentoring occurs over a period of three years where I start working with the students in their 2nd year and by the time they graduate in their 4th year, they present an undergraduate thesis and a full report that includes all the work they have done. I assist the students with this report, both in editing and guiding them with the content.

PUBLICATIONS

1. H. McCright, I.G. Abel, I. Haber, P.G. O'Shea, and **B.L. Beaudoin**, *"First Observation of Dispersive Shock Waves in an Electron Beam,"* arXiv:2510.19786 – This article was submitted for publication.

2. John Leland Ball, Shon Mackie, Jacob van de Lindt, Willow Morrissey, Artur Perevalov, Zachary Short, Nick Raoul Schwartz, Timothy W Koeth, **Brian Beaudoin**, Carlos Romero-Talamas, John E Rice and Roy Alexander Tinguely, *"Measurements of fusion yield on the Centrifugal Mirror Fusion Experiment," IAEA nuclear fusion Published 4 November (2025).*

3. Liam A. Pocher, Shiyi Wang, Kevin L. Hermstein, **Brian L. Beaudoin**, Dan T. Abell, Thomas M. Antonsen, Irving Haber, Patrick G. O'Shea, *"Investigating beam dynamics with measurement-driven initialization,"* Physics of Plasmas 32, 103106 (2025).

4. K.M. Sturge, N. Hoppis, A.M. Bussio, J. Barney, **B.L. Beaudoin**, C. Brown, B. Carlsten, C. Chun, B.C. Clifford, J. Cumings, N. Dallmann, J. Fitzgibbon, E.H. Frashure, A.E. Hammell, J. Hannan, S.L. Henderson, M.E. Hiebert, J. Krutzler, J. Lichhardt, M. Marr-Lyon, T. Montano, N. Moody, A. Mueller, P. O'Shea, R. Schneider, K. Smith, B. Tappan, C. Tiemann, D. Walter and T.W. Koeth, *"Dynamics of high-speed electrical tree growth in electron-irradiated polymethyl methacrylate,"* Science, 18 Jul 2024, Vol. 385 Issue 6706, pp. 300-304.

5. L. Dovlatyan, **B.L. Beaudoin**, S. Bernal, I. Haber, D. Sutter, and T.M. Antonsen Jr., *"Optimization of flat to round transformers with self-fields,"* Phys. Rev. Accel. Beams 25, 044002 (2022).

6. **B.L. Beaudoin**, I. Haber, R.A. Kishek, T.W. Koeth, T.M. Antonsen Jr., *"Multi-stream instability of a single long electron bunch in a storage ring,"* Physics of Plasmas, 052106 (2019).

7. **B.L. Beaudoin**, A. Ting, S. Gold, A.H. Narayan, R. Fischer, J.A. Karakkad, G.S. Nusinovich, D.B. Matthew, T.M. Antonsen Jr., *"Experimental Studies on Radio Frequency Sources for Ionospheric Heaters,"* Physics of Plasmas, 103116 (2018).

8. **B.L. Beaudoin**, G.S. Nusinovich, G. Milikh, A. Ting, S. Gold, J.A. Karakkad, A.H. Narayan, D.B. Matthew, D.K. Papadopoulos and T.M. Antonsen Jr., *"Highly Efficient, Megawatt-Class, Radio Frequency Source for Mobile Ionospheric Heaters,"* Journal of Electromagnetic Wave and Applications, Special Issue Article: Microwave Tubes and Applications **37**, pp. 1786-1801, (2017).

9. **B.L. Beaudoin**, J.C.T. Thangaraj, D. Edstrom Jr., J. Ruan, A.H. Lumpkin, D. Broemmelsiek, K.A. Carlson, D.J. Crawford, A. Romanov, J.K. Santucci, G. Stancari, R. Thurman-Keup, A. Warner, *"Longitudinal Bunch Shaping of Picosecond High-Charge MeV Electron Beams,"* Physics of Plasmas **23**, 103107 (2016).

10. **Invited: B.L. Beaudoin**, I. Haber, R.A. Kishek, S. Bernal and T. Koeth, "Long path-length experimental studies of longitudinal phenomena in intense beams," Physics of Plasmas **23**,056701 (2016).

11. **B. Beaudoin** and R.A. Kishek, *"Measurement of Tune in the Beam Ends as a Diagnostic Tool for Profiling the Momentum,"* Physical Review Special Topics – Accelerators & Beams **16**, 114201 (2013).

12. **Invited: B. Beaudoin**, S. Bernal, C. Blanco, I. Haber, R.A. Kishek, T. Koeth, and Y. Mo, *"Modeling HIF Relevant Longitudinal Dynamics in UMER,"* Nuclear Instruments and Methods A **733**, 178-181 (2014).

13. **B. Beaudoin**, I. Haber, R.A. Kishek, S. Bernal, T. Koeth, D. Sutter, P.G. O.Shea, and M. Reiser, *"Longitudinal Confinement and Matching of an Intense Electron Beam,"* Physics of Plasmas **18**, 013104 (2011).

14. J.A. Karakkad, D. Matthew, R. Ray, **B.L. Beaudoin**, A. Narayan, G.S. Nusinovich, A. Ting and T.M. Antonsen Jr., "High efficiency inductive output tubes with intense annular electron beams", Physics of Plasmas **24**, 103116, (2017).

15. G.S. Nusinovich, **B.L. Beaudoin**, C. Thompson, J.A. Karakkad, and T.M. Antonsen Jr., "Limiting current of intense electron beams in a decelerating gap", Physics of Plasmas **23**, 023114, (2016).

16. Y.C. Mo, R.A. Kishek, D. Feldman, I. Haber, **B. Beaudoin**, P.G. O'Shea, and J.C.T. Thangaraj, *"Experimental Observations of Soliton Wave Trains in Electron Beams,"* PhysicalReview Letters **110**, 084802 (2013).

17. K. Poorrezaei, R.B. Fiorito, R.A. Kishek, **B.L. Beaudoin**, *"New technique to measure emittance for beams with space charge,"* Physical Review Special Topics – Accelerators & Beams **16**, 082801 (2013).

18. **Invited:** R.A. Kishek, **B. Beaudoin**, S. Bernal, M. Cornacchia, D. Feldman, R. Fiorito, I. Haber, T.W. Koeth, Y. Mo, P.G. O'Shea, K. Poor Rezaei, D. Sutter, and H. Zhang, "The University of Maryland Electron Ring Program," Nuclear Instruments and Methods A **733**, 233-237 (2014).

19. S. Bernal, **B.L. Beaudoin**, T. Koeth, and P.G. O'Shea, *"Smooth Approximation of Dispersion with Strong Space Charge,"* Physical Review Special Topics - Accelerators & Beams **14**, 104202 (2011).

20. K. Fiuza, **B. Beaudoin**, S. Bernal, I. Haber, R.A. Kishek, P.G. O'Shea, C. Papadopoulos, D. Sutter, and C. Wu, *"Design of a scaled recirculator for Heavy Ion Inertial Fusion,"* Journal of Physics - Conference Series **244**, 032029 (2010).

21. I. Haber, S. Bernal, **B. Beaudoin**, M. Cornacchia, D. Feldman, R.B. Feldman, R. Fiorito, K. Fiuza, T.F. Godlove, R.A. Kishek, P.G. O'Shea, B. Quinn, C. Papadopoulos, M. Reiser, D. Stratakis, D. Sutter, J.C.T. Thangaraj, K. Tian, M. Walter, and C. Wu, *"Scaled electron studies at the University of Maryland,"* Nuclear Instruments and Methods A **606**, 64-68 (2009).

22. I. Haber, G. Bai, S. Bernal, **B. Beaudoin**, D. Feldman, R. Fiorito, T.F. Godlove, R. A. Kishek, P.G. O'Shea, B. Quinn, C. Papadopoulos, M. Reiser, J. Rodgers, D. Stratakis, D. Sutter, K. Tian, C.J. Tobin, M. Walter, and C. Wu, *"Scaled electron experiments at the University of Maryland,"* Nuclear Instruments and Methods A **577**, 150-156 (2007).

23. **B. Beaudoin**, T.M. Antonsen Jr., I. Haber, T.W. Koeth, A.H. Narayan, G. Nusinovich, K. Ruisard, *"Novel High Power Sources for the Physics of Ionospheric Modification"*, Proceedings of the 2015 International Particle Accelerator Conference, Richmond, VA, Paper ID WEPTY056 (2015).

24. **B. Beaudoin**, I. Haber, R.A. Kishek, "*Barrier Shock Compression with Longitudinal Space Charge*", Proceedings of the 2015 International Particle Accelerator Conference, Richmond, VA, Paper ID MOPMA044 (2015).

25. **B. Beaudoin**, D. Edstrom Jr., A.H. Lumpkin, J. Ruan, J. Thangaraj, "*Longitudinal Bunch Shaping at Picosecond Scales using Alpha-BBO Crystals at the Advanced Superconducting Test Accelerator*", Proceedings of the 2015 International Particle Accelerator Conference, Richmond, VA, Paper ID MOPMA043 (2015).

26. **B.L. Beaudoin**, I. Haber, R.A. Kishek, and T. Koeth, *"Experimental Observations of a Multi-stream Instability in a Long Intense Beam,"* Proceedings of the 2013 International Particle Accelerator Conference, Shanghai, China, May 2013, 2044 (2013).

27. **B.L. Beaudoin**, S. Bernal, K. Fiuza, I. Haber, R.A. Kishek, T. Koeth, M. Reiser, D. Sutter, and P.G. O'Shea, *"Space-Charge Effects in Bunched and Debunched Beams,"* Proceedings of the2011 IEEE Particle Accelerator Conference, New York, NY, Paper ID MOOD51 (2011).

28. **B.L. Beaudoin**, S. Bernal, I. Haber, R.A. Kishek, T. Koeth, D. Sutter, and P.G. O'Shea, *"Longitudinal Confinement of an Intense Beam Using Induction Focusing,"* Proceedings of 14th Workshop on Advanced Accelerator Concepts (AAC), Annapolis, MD, June 2010, (New York: AIP Press **1299**, 2010), p. 603.

29. **B.L. Beaudoin**, S. Bernal, M. Cornacchia, K. Fiuza, I. Haber, R.A. Kishek, T.W. Koeth, M. Reiser, D.F. Sutter, H. Zhang, and P.G. O'Shea, *"High Intensity Beam Physics at*

UMER," Proceedings of the 46th ICFA Advanced Beam Dynamics Workshop on High-Intensity, High-Brightness Hadron Beams, Morschach, Switzerland, Sep 2010, 629 (2010).

30. **B. Beaudoin**, S. Bernal, K. Fiuza, I. Haber, R.A. Kishek, P.G. O'Shea, M. Reiser, D. Sutter, and J.C.T. Thangaraj, *"Longitudinal Beam Bucket Studies for a Space-Charge Dominated Beam,"* Proceedings of the 2009 IEEE Particle Accelerator Conference, Vancouver, BC, Paper ID, FR5PFP058 (2009).

31. **B.L. Beaudoin**, S. Bernal, I. Haber, R.A. Kishek, P.G. O'Shea, M. Reiser, J.C.T. Thangaraj, K. Tian, M. Walter, and C. Wu, *"Application of Induction Module for Energy Perturbations in the University of Maryland Electron Ring,"* Proceedings of the 2007 IEEE Particle Accelerator Conference, Albuquerque, NM, ed. C. Petit-Jean-Genaz, IEEE Cat. No. 07CH37866, 2322 (2007).

32. S. Bernal, **B. Beaudoin**, H. Baumgartner, S. Ehrenstein, I. Haber, T. Koeth, E. Montgomery, K. Ruisard, D. Sutter, D. Yun, and R.A. Kishek, *"Ultra-low Current Beams in UMER to Model Space-Charge Effects in High-energy Proton and Ion Machines,"* Proceedings of the 17th Workshop on Advanced Accelerator Concepts (AAC), Washington, DC, August 2016.

33. K. Ruisard, I. Haber, T. Koeth, **B.L. Beaudoin**, D. Matthew, and H. Baumgartner, *"The University of Maryland Electron Ring distributed octupole lattice: marrying quasi-integrable optics with the FODO lattice,"* Proceedings of the 17th Workshop on Advanced Accelerator Concepts (AAC), Washington, DC, August 2016.

34. K. Ruisard, H. Baumgartner, **B. Beaudoin**, I. Haber, T.W. Koeth, and D.B Matthew, *"Early Tests and Simulation of Quasi-Integrable Octupole Lattices at the University of Maryland Electron Ring,"* Proceedings of the 57th ICFA Advanced Beam Dynamics Workshop on High- Intensity, High-Brightness and High-Power Hadron Beams, Malmo, Sweden, July 2016.

35. H. Baumgartner K. Ruisard, I. Haber, T. Koeth, D. Matthew, M. Teperman, **B.L. Beaudoin**, *"Quantification of Octupole Magnets at the University of Maryland Electron Ring,"* Proceedings of the 2016 North America Particle Accelerator Conference, Chicago, IL, October 2016, (2016).

36. K. Ruisard, H. Baumgartner, **B. Beaudoin**, I. Haber, M. Teperman, T. Koeth, *"Experimental Plans for Single-Channel Strong Octupole Fields at the University of Maryland Electron Ring,"* Proceedings of the 2016 North America Particle Accelerator Conference, Chicago, IL, October (2016).

37. K.J. Ruisard, **B. Beaudoin**, I. Haber, and T. Koeth, "*Simulations and Experiments in Support of Octupole Lattice Studies at the University of Maryland Electron Ring,"* Proceedings of the 2015 International Particle Accelerator Conference, Richmond, VA, 653 (2015).

38. S. Bernal, **B.L. Beaudoin**, I. Haber, T. Koeth, Y. Mo, E. Montgomery, K.P. Rezaei, K. Ruisard, W. Stem, D. Sutter, H. Zhang, and R.A. Kishek *"Stability of Emittance vs. Space-Charge Dominated Beams in an Electron Recirculator,"* Proceedings of the 16th Workshop on Advanced Accelerator Concepts (AAC), San Jose, CA, July 2014, p. 100003.

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