

Brian Louis Beaudoin, PhD

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EDUCATION

Ph.D. in Electrical Engineering, University of Maryland, 2011.

M.S. in Electrical Engineering, University of Maryland, 2008.

SELECTED PROJECT EXPERIENCE

MW-Class Inductive Output Tube (IOT) (Ongoing Experiment) — serves as lead experimental scientist to develop a high power (MW-Class) highly-efficient radio frequency Inductive Output Tube (IOT) for the Air Force Office of Scientific Research. Design, building and testing various high frequency electronics used to illustrate fundamental concepts for the program (such as optical isolation links, radio frequency pi-circuits for impedance matching, high voltage microwave triggering circuits). Collaborated with multiple contractors on the design and construction of a low power gridded electron gun as well as a MW-class grid less high power electron gun. This involved reviewing plans, design specifications as well as cost estimates for the individual projects assuring they meet the technical needs and assuring conformance to plans and specifications of the overall project. Also constructed a low power test stand using an electron gun on loan from the Naval Research Laboratory (NRL) configured for ionospheric frequencies. Lead students as well as fellow scientists on experimental and simulation efforts resolving complex design problems associated with designing a MW-class highly efficient radio frequency IOT.

University of Maryland Electron Ring (Ongoing Experiment) — participated in this project with increasing levels of responsibility since 2006. Directs project teams, designs, builds, and tests components for the ring, including multiple microwave pulse electronics and high frequency electronic instrumentation systems used to detect and measure the high intensity electron beam circulating in a storage ring. Directs multiple teams performing inter-related experiments to increase understanding of the dynamics and evolution of the beam. Began serving as Co-PI for the project in 2014, supporting the management and administration of the project, as well as supervise fellow scientists and students.

PROFESSIONAL EXPERIENCE

2011 to present

***Institute for Research in Electronics & Applied Physics (IREAP)
University of Maryland, College Park, MD***

Associate Research Professor (July, 2018-present): Serves in leadership roles on multiple experimental and simulation grant projects, supporting both the scientific and administrative aspects of grant implementation. Supervises students and provides technical assistance and guidance appropriate to their level of education as they develop and implement projects to support major programmatic efforts, guiding and evaluating their technical progress in relation to an established schedule. Reports on progress and/or problems to lead primary investigators as required. Projects include:

Primary investigator (PI) on a collaborative project with Fermilab developing simulation tools for a compact superconducting 650 MHz microwave accelerator, a program funded by the University Research Association. Duties include:

- Manages the administrative requirements of grant implementation such as reviewing managing project budget, coordinating with the client, and writing project status reports and participating in technical meetings.
- Verifying that the existing low power design of the electron gun located in the accelerator will operate as intended using the codes MICHELLE and HFSS/Maxwell.
- Using the codes to track particle losses and deposition locations within the multi-cell microwave accelerating structure.
- Developing methods to optimize system efficiency and increase delivered beam power.

Serves as a lead experimental scientist for an experimental grant from the, Air Force Office of Scientific Research to design a high power (MW-Class) highly-efficient Inductive Output Tube (IOT) operating in class-D for ionospheric heating. Duties include:

- Serves as a member of the management team, providing input into project budgets, staffing, project implementation, and providing updates to program officers.
- Coordinated with the Naval Research Laboratory (NRL) to build a test stand at UMD using a 30 kV-6 A IOT electron gun configured to run at ionospheric heating frequencies.
- Designs, builds and tests magnetic focusing solenoid and necessary pulsed support electronics for the electron gun housed at UMD.
- Supervises and technically assists students on the design of the radio frequency extraction circuits using various microwave vector network analyzers (VNAs). Also supports students with the characterization of the electron gun.
- Writes progress reports and presents at conferences.

Co-PI on the experimental program of the University of Maryland Electron Ring (UMER), a research program funded by both the Department of Energy and the National Science Foundation, to explore the intensity limitations for future high-intensity accelerators. Duties include:

- Serves as a member of the management team, providing input into project budget, staffing, project implementation, and providing updates to the program officers as well as other stakeholders.
- Supervises students on the design of a novel nonlinear accelerator lattices.
- Supervise students' use of the UMER control system and provides support for students as they develop new software and hardware for the ring.
- Designs, builds and tests various high frequency electronics and pulsed power electronics used to perturb the beam energy and or trajectory. This can also be high frequency electronic instrumentation used to detect and measure the beam.
- Write progress reports, referred papers and presents at conferences.

Assistant Research Professor (2014-July, 2018): Served in leadership roles on multiple experimental and simulation grant projects, supporting both the scientific and administrative aspects of grant implementation. Supervised students and provided technical assistance appropriate to their level of education as they developed and implemented projects to support major programmatic efforts, guiding and evaluating their technical progress in relation to an established schedule. Reports on progress and/or problems to lead primary investigators as required. Projects include:

- Primary investigator (PI) on a collaborative project with Fermilab developing simulation tools for a compact superconducting 650 MHz microwave accelerator, a program funded by the University Research Association.

- Co-PI on the experimental program of the University of Maryland Electron Ring (UMER), a research program funded by both the Department of Energy and the National Science Foundation, to explore the intensity frontiers for future high-intensity accelerators. Write progress reports, referred papers and presents at conferences.
- Served as a lead experimental scientist for an experimental grant from the, Air Force Office of Scientific Research to design a high power (MW-Class) highly-efficient Inductive Output Tube (IOT) operating in class-D for ionospheric heating.

Research Associate (2011-2014): Provided experimental and engineering support for multiple projects. Supervised students at various levels, of education as they develop and implemented projects to support major programmatic efforts. Projects included:

- Lead a small experimental team supporting NIST researchers to assess cable degradation when exposed to radiation in nuclear power plant environments. This included designing and building the feedback controlled humidity and temperature stabilized chambers as well as designing the wire reels that are inserted into the chambers.
- Guided the experimental team on the UMER project focusing on designing new components for the ring.
- Installing a 10MeV electron accelerator for use as both an irradiator and research program including assembling the beam line, high-power pulse modulator, accelerating microwave cavity, cooling manifolds, S-band wave guides to the klystron, control electronics, etc.
- Contributing to progress reports and presenting experimental findings at conferences for the various efforts.

Faculty Research Assistant/Graduate Student (2006-2011): Provided experimental and engineering support for the UMER project. Maintained electrical systems for the experiment and conducted experiments.

2003-2006

***U.S. Naval Research Laboratories, Sachs Freeman Associates
SW Washington, DC***

Infrared Counter Measures Engineer (2003-2006): Lead experimental program to analyze the various seeker threats currently in the battlefield (held a secret clearance). Duties included:

- Conducting experiments using a number of IR lasers to create different calibrated and collimated sources for use in target and jammer scene generation.
- Designed and constructed circuits to initiate experimental runs and control/monitor of the seeker.
- Used data acquisition cards and LabVIEW to record data during experimental investigations.
- Processed and analyzed data using MATLAB, tracing real-time electronic responses from internal seeker electronics to various points within schematics to understand the requirements of a successful break-lock.

TEACHING EXPERIENCE

Lecturer, University of Maryland, ENEE408T & PHYS499T

- Accelerator Physics – Building the Maryland 5 MeV Cyclotron, 2016, 2017, 2018, ongoing yearly.
- Independent Studies – ENEE499 & PHYS499 Ongoing

Lecturer, United States Particle Accelerator School (USPAS)

- Cyclotrons, 2015, 2017
- Fundamentals of Accelerators, 2013, 2016
- Longitudinal beam dynamics on UMER, 2008

Guest Lecturer, University of Maryland

- PHYS 485 & 685, "Vacuum Electronics," 2017
- ENEE 686, "UMER's Longitudinal Dynamics and UMD's RF Source Development," 2017
- ENMA 422, "Introduction to Accelerators and Applications," 2013

RESEARCH EXPERIENCES FOR UNDERGRADUATES (REU)-MENTOR

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

COMPUTER SKILLS

MATLAB/Simulink, Maxwell, HFSS, MICHELLE, Autodesk Inventor, Python, LabView, C, Trace, Xilinx Design Suite, PowerPoint, Excel, Word

SELECTED PRESENTATIONS

B.L. Beaudoin, "*Longitudinal Dynamics in the University of Maryland Electron Ring*," Mini-Workshop on Advanced Beam Dynamics of Intense Beams, July 2017.

Invited: B.L. Beaudoin, "*Long Path Length Experimental Studies of Longitudinal Phenomena in Intense Beams*," 57th Annual Meeting of the APS Division of Plasma Physics, November 2015.

B.L. Beaudoin, "*High Power Sources for the Physics of Ionospheric Modification*," Pacific Symposium on Pulsed Power and Applications, August 2015.

B.L. Beaudoin, "*Experimental Observations of a Multi-Stream Instability in a Long Intense Beam*," International Particle Accelerator Conference, May 2013.

B.L. Beaudoin, "*Modeling HIF Relevant Longitudinal Dynamics in UMER*," 19th International Symposium on Heavy Ion Inertial Fusion, August 2012.

B.L. Beaudoin, "*Control of Longitudinal Perturbations*," Teleconference, Lawrence Berkeley National Laboratory, January 2012.

B.L. Beaudoin, "*Longitudinal Dynamics and Confinement on the University of Maryland Electron Ring*," Lawrence Berkeley National Laboratory, November 2011.

B.L. Beaudoin, "*Longitudinal Control of Intense Beams*," Princeton Plasma Physics Laboratory, October 2011.

B.L. Beaudoin, "*Longitudinal Confinement of an Intense Beam Using Induction Focusing*," 46th ICFA Advanced Beam Dynamics Workshop on High-Intensity, High-Brightness Hadron Beams, Morschach, Switzerland, September 2010.

PUBLICATIONS

Referred Journals - Authored

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*, submitted (2018).

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).

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).

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).

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).

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).

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).

Referred Journals - Coauthored

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).

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).

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*," *Physical Review Letters* **110**, 084802 (2013).

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).

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).

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).

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).

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).

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).

Conference Proceedings - Authored

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).

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).

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).

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).

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 the 2011 IEEE Particle Accelerator Conference, New York, NY, Paper ID MOOD51 (2011).

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.

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).

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).

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).

Conference Proceedings - Coauthored

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.

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.

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.

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).

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).

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).

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.

J.L. Gonski, **B.L. Beaudoin**, S. Burcher, J.E. Krutzler, T.W. Koeth, "A Novel Optical Method for Measuring Beam Phase and Width in the Rutgers 12-Inch Cyclotron," Proc. 20th International Conference on Cyclotrons and their Applications, Vancouver, Canada, Paper ID WE1PB04, September 2013.

Y.C. Mo, **B.L. Beaudoin**, D. Feldman, I. Haber, R.A. Kishek, and P.G. O'Shea, "[Experimental Study of Soliton Wave Trains in Electron Beams](#)," [Proceedings of the 2013 International Particle Accelerator Conference, Shanghai, China, May 2013](#), 1835 (2013).

S. Bernal, **B.L. Beaudoin**, M. Cornacchia, and D. Sutter, "*Stability of Emittance vs. Space-Charge Dominated Beams in an Electron Recirculator*," Proceedings of the 2013 North American Particle Accelerator Conference, Pasadena, CA, Sep/Oct 2013, TUPAC31 (2013).

R.A. Kishek, **B.L. Beaudoin**, S. Bernal, M. Cornacchia, D. Feldman, R. Fiorito, I. Haber, T. Koeth, Y.C. Mo, K. Poor Rezaei, K.J. Ruisard, W. Stem, D. Sutter, and H.D. Zhang, "*The University of Maryland Electron Ring (UMER) Program - Recent Developments*," Proceedings of the 2013 North American Particle Accelerator Conference, Pasadena, CA, Sep/Oct 2013, FROAA1 (2013).

W. Stem, **B.L. Beaudoin**, I. Haber, and T. Koeth, "*Experimental Detection of Envelope Resonance in a Space-Charge-Dominated Electron Ring*," Proceedings of the 2013 North American Particle Accelerator Conference, Pasadena, CA, Sep/Oct 2013, TUPAC32 (2013).

D.F. Sutter and **B.L. Beaudoin**, "*Measurement of Plasma Wave Speed from Electron Beam End Erosion*," Proceedings of the 2013 North American Particle Accelerator Conference, Pasadena, CA, Sep/Oct 2013, TUPAC33 (2013).

H.D. Zhang, **B.L. Beaudoin**, and R.A. Kishek, "*Experimental Study of Halo Formation in Space Charge Dominated Beam*," Proceedings of the 2013 North American Particle Accelerator Conference, Pasadena, CA, Sep/Oct 2013, FROAA6 (2013).

Invited: R.A. Kishek, **B. Beaudoin**, I. Haber, D. Feldman, T. Koeth, and Y. Mo, "*Longitudinal Space Charge Phenomena in an Intense Beam in a Ring*," Proceedings of the 52nd ICFA Advanced Beam Dynamics Workshop on High-Intensity and High-Brightness Hadron Beams, Beijing, China, Sep 2012, Paper ID, WEO1C05 (2012).

H. Zhang, **B. Beaudoin**, S. Bernal, R. Fiorito, R. Kishek, K. Poor Rezaei, and A. Shkvarunets, "*Beam Halo Measurements using Adaptive Masking Methods and Proposed Halo Experiment*," Proceedings of the 52nd ICFA Advanced Beam Dynamics Workshop on High-Intensity and High-Brightness Hadron Beams, Beijing, China, Sep 2012, Paper ID, MOP260 (2012).

S. Bernal, **B.L. Beaudoin**, M. Cornacchia, D. Sutter, and R.A. Kishek, "[Orbit Corrections for Alternative Lattices at the University of Maryland Electron Ring \(UMER\)](#)," [Proceedings of the 2012 International Particle Accelerator Conference, New Orleans, LA, USA, May 2012](#), 3993 (2012).

Yichao Mo, **B.L. Beaudoin**, D. Feldman, I. Haber, R.A. Kishek, P.G. O'Shea, and J.C.T. Thangaraj, "[Experimental Observations of Large-amplitude Solitary Waves in Electron Beams](#)," [Proceedings of the 2012 International Particle Accelerator Conference, New Orleans, LA, USA, May 2012](#), 1377 (2012).

K.J. Ruisard, **B.L. Beaudoin**, I. Haber, R.A. Kishek, and T. Koeth, "[Design of an Electrostatic Extraction Section for the University of Maryland Electron Ring](#)," [Proceedings of the 2012 International Particle Accelerator Conference, New Orleans, LA, USA, May 2012](#), 2964 (2012).

William Stem, **B.L. Beaudoin**, I. Haber, and T. Koeth, "[Recovering Measured Dynamics from a DC Circulating Space-charge-dominated Storage Ring](#)," [Proceedings of the 2012 International Particle Accelerator Conference, New Orleans, LA, USA, May 2012](#), 2967 (2012).

I. Haber, **B.L. Beaudoin**, S. Bernal, R.A. Kishek, T. Koeth, and Y.C. Mo, "[Experimental and Simulation Study of the Long-path-length Dynamics of a Space-charge-dominated Bunch](#)," [Proceedings of the 2012 Linear Accelerator Conference, Tel Aviv, Israel, Sep 2012](#), Paper ID, THPB061 (2012).

T. Koeth, **B. Beaudoin**, S. Bernal, I. Haber, R.A. Kishek, and P.G. O'Shea, "[Longitudinal Relaxation of a Space-Charge Dominated Bunch](#)," [Proceedings of the 2011 IEEE Particle Accelerator Conference, New York, NY, Paper ID, MOOB53](#) (2011).

S. Bernal, **B.L. Beaudoin**, T. Koeth, and P.G. O'Shea, "[Smooth Approximation of Dispersion with Strong Space Charge](#)," [Proceedings of the 2011 IEEE Particle Accelerator Conference, New York, NY, Paper ID, WEP101](#) (2011).

R.A. Kishek, **B.L. Beaudoin**, S. Bernal, M. Cornacchia, K. Fiuza, I. Haber, T. Koeth, P.G. O'Shea, D.F. Sutter, and H. Zhang, "[Advances in Modeling the University of Maryland Electron Ring](#)," [Proceedings of the 2011 IEEE Particle Accelerator Conference, New York, NY, Paper ID, WEP050](#) (2011).

D. Sutter, **B.L. Beaudoin**, S. Bernal, M. Cornacchia, R.A. Kishek, T. Koeth, P.G. O'Shea, and M. Reiser, "[Current Dependent Tune Shifts in the University of Maryland Electron Ring](#)," [Proceedings of the 2011 IEEE Particle Accelerator Conference, New York, NY, Paper ID, WEP102](#) (2011).

S. Bernal, D. Sutter, **B. Beaudoin**, M. Cornacchia, K. Fiuza, I. Haber, R.A. Kishek, T. Koeth, M. Reiser, and P.G. O'Shea, "[Transverse Beam Physics in UMER - Update](#)," [Proceedings of 14th Workshop on Advanced Accelerator Concepts \(AAC\), Annapolis, MD, June 2010, \(New York: AIP Press 1299, 2010\)](#), p. 580.

Timothy W. Koeth, **B. Beaudoin**, S. Bernal, I. Haber, R.A. Kishek, M. Reiser, and P.G. O'Shea, "[Measurement & Simulation of Interpenetration and DC Accumulation in the University of Maryland Electron Ring](#)," [Proceedings of 14th Workshop on Advanced Accelerator Concepts \(AAC\), Annapolis, MD, June 2010, \(New York: AIP Press 1299, 2010\)](#), p. 608.

S. Bernal, D. Sutter, M. Cornacchia, **B. Beaudoin**, I. Haber, R.A. Kishek, M. Reiser, C. Wu, and P.G. O'Shea, "[Operational Studies of the 10 keV Electron Storage Ring UMER](#)," Proceedings of 13th Workshop on Advanced Accelerator Concepts (AAC), Santa Cruz, CA, July/Aug, 2008, (New York: AIP Press **1086**, 2009), p. 738.

Jayakar C.T. Thangaraj, **Brian Beaudoin**, Donald Feldman, Rami Kishek, Santiago Bernal, David Sutter, Martin Reiser, and Patrick O'Shea, "[Generation and transport of space charge waves in the University of Maryland Electron Ring \(UMER\)](#)," Proceedings of 13th Workshop on Advanced Accelerator Concepts (AAC), Santa Cruz, CA, July/Aug, 2008, (New York: AIP Press **1086**, 2009), p. 732.

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