Dylan Brennan

SCREAM Products 5/20/18

Refereed Publications (35)

E. Hirvijoki, "A Langevin approach to multi-scale modeling," Physics of Plasmas 25, 040702 (2018).
https://doi.org/10.1063/1.5025716

C.J. McDevitt, Z. Guo, and X.Z. Tang, "Relation of the Runaway Avalanche Threshold to Momentum Space Topology" Plasma Physics and Controlled Fusion 60 (2), 024004 (2018).

Z. Guo, C.J. McDevitt, and X.Z. Tang, "Control of runaway electron energy using externally injected whistler waves," Physics of Plasmas 25 (3), 032504 (2018).

D. del-Castillo-Negrete, L. Carbajal, D. Spong and V. Izzo, "Numerical simulation of runaway electrons: 3D effects on synchrotron radiation and impurity based runaway current dissipation." Invited paper, APS-DPP. Selected as "Featured article" by the journal editors. Phys. Plasmas **25**, 056104 (2018).

C. Paz-Soldan, C.M. Cooper, P. Aleynikov, D.C. Pace, N.W. Eidietis, D.P. Brennan, R.S. Granetz, E.M. Hollmann, C. Liu, A. Lvovskiy, R.A. Moyer and D. Shiraki, "Resolving runaway electron distributions in space, time and energy," Phys. Plasmas 25, 056105 (2018).

D.A. Spong, W.W. Heidbrink, C. Paz-Soldan, X.D. Du, K.E. Thome, M.A. Van Zeeland, C. Collins, A. Lvovskiy, R.A. Moyer, D.P. Brennan, C. Liu, E. F. Jaeger, and C. Lau, "First direct observation of runaway electron-driven whistler waves in tokamaks", Phys. Rev. Lett. 120, 155002 (2018).

A. H. Boozer, "Pivotal issues on relativistic electrons in ITER," Nuclear Fusion 58, 036006 (2018).
DOI: 10.1088/1741-4326/aaa1db

J. Morales Escalante and I.M.Gamba, "Galerkin methods for Boltzmann–Poisson transport with reflection conditions on rough boundaries," J. Comput. Phys. 363, 302-328 (2018).

J. Yang, G. Zhang and W. Zhao, "A first-order numerical scheme for forward-backward stochastic differential equations in bounded domains," Journal of Computational Mathematics 36, 237-258 (2018).

I.M. Gamba and S. Rjasanow, "Galerkin-Petrov approach for the Boltzmann equation," J. Comput. Phys. 366, 341-365 (2018).

B.N. Breizman and P.B. Aleynikov, "Kinetics of relativistic runaway electrons," Nucl. Fusion **57**, 125002 (2017). https://doi.org/10.1088/1741-4326/aa8c3f

A.K. Fontanilla and B.N. Breizman, "Lifetime and universal distribution of seed runaway electrons," Phys. Plasmas **24**, 112509 (2017). https://doi.org/10.1063/1.5001931

D.I. Kiramov and B.N. Breizman, "Model of vertical plasma motion during the current quench," Phys. Plasmas **24,** 100702 (2017). https://dx.doi.org/10.1063/1.4993071

P. Aleynikov, and B. Breizman, "Generation of runaway electrons during the thermal quench in tokamaks," Nucl. Fusion **57**, 046009 (2017). https://doi:10.1088/1741-4326/aa5895

Z. Guo, X.Z. Tang and C.J. McDevitt, "Models of primary runaway electron distribution in the runaway vortex regime," Physics of Plasmas 24, 112508 (2017).

C. Paz-Soldan, C.M. Cooper, P. Aleynikov, D.C. Pace, N.W. Eidietis, D.P. Brennan, R.S. Granetz, E.M. Hollmann, C. Liu, A. Lvovskiy, R.A. Moyer and D. Shiraki, "Spatiotemporal Evolution of Runaway Electron Momentum Distributions in Tokamaks," Phys. Rev. Lett. 118, 255002 (2017).

E.M. Hollmann, N. Commaux, R.A. Moyer, P.B. Parks, M.E. Austin, I. Bykov, C. Cooper, N.W. Eidietis, M.O. Mullane, C. Paz-Soldan, D.L. Rudakov, and D. Shiraki, "Use of Ar pellet ablation rate to estimate initial runaway electron seed population in DIII-D rapid shutdown experiments," Nucl. Fusion **57**, 016008 (2017).

W. Zhao, W. Zhang and G. Zhang, "Second-order numerical schemes for decoupled forward-backward stochastic differential equations with jumps," *Journal of Computational Mathematics* 35, 213-244 (2017).

L. Carbajal and D. del-Castillo-Negrete, "On the synchrotron emission in kinetic simulations of runaway electrons in magnetic confinement fusion plasmas"

Invited paper, Sherwood International Fusion Theory Conference, Plasma Phys. and Control. Fusion **59**, 124001 (2017).

A. Bobylev, I.M. Gamba and C. Zhang, "On the rate of relaxation for the Landau kinetic equation and related models," Journal of Statistical Physics 168 (3), 535-548 (2017).

J.A. Morales Escalante, I.M. Gamba, A. Majorana, Y. Cheng, C.W. Shu, and J.R. Chelikowsky, "Discontinuous Galerkin Deterministic Solvers for a Boltzmann-Poisson model of hot electron transport using an averaged Empirical Pseudo-potential band," Comput. Methods Appl. Mech. Engrg. 321, 209-234, (2017).

E. Hirvijoki and M. F. Adams, "Conservative discretization of the Landau collision integral" Phys. Plasmas **24**, 032121 (2017).

Chang Liu, Dylan P. Brennan, Allen H. Boozer and Amitava Bhattacharjee, "Adjoint Method and Runaway Electron Avalanche," Plasma Phys. Control. Fusion **59**, 024003 (2017).

A.H. Boozer, "Runaway electrons and ITER," Nucl. Fusion **57**, 056018 (2017).

P. Aleynikov and B. N. Breizman "Generation of runaway electrons during the thermal quench in tokamaks" Nucl. Fusion **57,** 046009 (2017).

V. Izzo and P.B. Parks, "Modeling of rapid shutdown in the DIII-D tokamak by core deposition of high-Z material," Physics of Plasmas **24**, 060705 (2017).

G. Zhang, and D. del-Castillo-Negrete, "A backward Monte-Carlo method for time-dependent runaway electron simulations," Physics of Plasmas **24**, 092551 (2017).

C. Paz-Soldan, C. M. Cooper, P. Aleynikov, D. C. Pace, N. W. Eidietis, D. P. Brennan, R. S. Granetz, E. M. Hollmann, C. Liu, A. Lvovskiy, R. A. Moyer, and D. Shiraki, "Spatiotemporal Evolution of Runaway Electron Momentum Distributions in Tokamaks," Phys. Rev. Lett. **118**, 255002 (2017).

Z. Guo, C. McDevitt, X. Tang, "Phase-space dynamics of runaway electrons in magnetic fields," Plasma Phys. Control. Fusion **59**, 044003 (2017).

L. Carbajal, D. del-Castillo-Negrete, D. Spong, S. Seal, and L. Baylor, "Space dependent, full orbit effects on runaway electron dynamics in tokamak plasmas" Phys. Plasmas **24**, 042512 (2017).

C. Zhang and I.M.Gamba, "A conservative scheme for Vlasov Poisson Landau modeling collisional plasmas", arXiv:1605.05787v2, J. Comput. Physics **340**, 470 (2017).

I.M. Gamba, J.R. Haack, C.D.Hauck and J.Hu, "A fast spectral method for the Boltzmann collision operator with general collision kernels," SIAM J. Sci. Comp. 39 (4), B658-B674 (2017).

I.M. Gamba, "Deterministic Solvers for Non-Linear Kinetic flows: A Conservative Spectral scheme for Boltzmann type flows," Handb. Numer. Anal., Elsevier/North-Holland, Amsterdam, 18, 403-433 (2017).

C.Liu, "Runaway Electrons in Tokamaks" PhD Thesis, Princeton University, Completion Date: Feb 3, 2017.

M.F. Adams, E. Hirvijoki, M.G. Knepley, J. Brown, T. Isaac and R. Mills, "Landau Collision Integral Solver with Adaptive Mesh Refinement on Emerging Architectures," arXiv:1702.08880 (2017).

Manuscripts in submission (8):

Chang Liu, Lei Shi, Eero Hirvijoki, Dylan P. Brennan, Amitava Bhattacharjee, Carlos Paz-Soldan, Max E. Austin, "The effects of kinetic instabilities on the electron cyclotron emission from runaway electrons," in review Nucl. Fusion, arXiv:1803.09897 (2018).

Chang Liu, Eero Hirvijoki, Guo-yong Fu, Dylan P. Brennan, Amitava Bhattacharjee, and Carlos Paz-Soldan, "Role of kinetic instability in runaway electron avalanche and elevated critical electric fields," in review, Phys. Rev. Lett. (2018), arXiv:1801.01827.

D. Spong, L. Carbajal, D. del-Castillo-Negrete, and L. Baylor, "Simulation of runaway electrons in tokamaks with impurity dissipation and instability effects." Submitted to Nuclear Fusion (2018).

R. Alonso, I.M. Gamba and S.H. Tharkabhushaman, "Convergence and error estimates for the Lagrangian based Conservative Spectral method for Boltzmann Equations," Submitted for publication, arXiv:1611.04171 (2017).

J.A. Morales Escalante, I.M.Gamba, E. Endeve and C. Hauck, "Positivity preserving DG schemes for a Boltzmann - Poisson model of electrons in semiconductors in curvilinear momentum coordinates," arXiv:1711.03949v1, Submitted for Publication (2017).

Eero Hirvijoki, Chang Liu, Guannan Zhang, Diego del-Castillo-Negrete, Dylan Brennan, "A fluid-kinetic framework for self-consistent runaway-electron simulations," submitted Phys. Plasmas, arXiv:1802.02174 (2018).

A.H. Boozer "Tokamak current spikes and the transfer of current to relativistic electrons," submitted to Nuclear Fusion (2017).

C. McDevitt, Z. Guo, X. Tang, "*Topological dependence of runaway avalanche threshold in momentum space*," submitted to Phys. Rev. Lett. (2017).

Manuscripts in Preparation (4)

D. Daniel, W. Taitano, and L. Chacón, "A nonlinear, conservative solver for the relativistic Fokker-Planck collision operator," to be submitted to the J. Comput. Phys., 2018.

Eero Hirvijoki, Joshua W. Burby and Michael Kraus "Energy-, momentum-, density-, and positivity-preserving spatio-temporal discretizations for the nonlinear Landau collision operator with exact H-theorems," arXiv:1804.08546 (2018).

Chang Liu, Hong Qin, Eero Hirvijoki, Yulei Wang and Jian Liu "The role of magnetic moment in the collisionless pitch-angle scattering of runaway electrons," arXiv:1804.01971 (2018).

P.B. Parks, et al., "Guiding center orbit simulation of runaway electron transport induced by MHD turbulence during disruptions," in preparation for submission to Nucl. Fusion.

Conference presentations (59 total, 2 Plenary, 1 Overview, 15 invited)

R.W. Harvey, Y.V. Petrov, C.B. Forest, L.L. Lao, and P.B. Parks, "Time-Dependent Runaway Simulations: Ampere-Faraday Equation Implemented in CQL3D," 27TH IAEA Fusion Energy Conference, Gandhinagar, India, October 22-27, 2018.

D. del-Castillo-Negrete. Invited talk: "Relativistic runaway electrons in magnetically confined fusion plasmas." 19th International Congress on Plasma Physics. Vancouver, Canada. June 4-8, 2018.

I.M.Gamba, J. Haack, C.Pennie and A. Szczekutovic and Z. Zhang, "Recent progress on computational conservative solvers Boltzmann and Landau in

plasma dynamics," Computational Kinetics Seminar, LANL, Los Alamos, NM May 9, 2018.

X.Z. Tang, Plenary Talk "Transport issues in disruption modeling for itigationdDesign," U.S. Transport Task Force (TTF) Workshop, San Diego, California, May 8-11, 2018.

C.J. McDevitt, Z. Guo and X.Z. Tang, Invited Talk "Spatial Transport of Runaway Electrons," U.S. Transport Task Force (TTF) Workshop, San Diego, California, May 8-11, 2018.

Z. Guo, C.J. McDevitt and X.Z. Tang, Invited Talk "Control of runaway electron energy using externally injected whistler waves," U.S. Transport Task Force (TTF) Workshop, San Diego, California, May 8-11, 2018.

C.C. Kim, P.B. Parks, L.L. Lao, and Y. Liu, "Runaway Electron Dynamics in Disruption Mitigation Simulations with the NIMROD Code," U.S. Transport Task Force Workshop, San Diego, CA, May 8-11, 2018.

J. Morales Escalante, I.M.Gamba and S.Rjasanow, "Boundary data for the Boltzmann Poisson system with rough boundaries and new fast Galerkin-Petrov conservative methods for BTE," Kinetic and related models with applications in the natural sciences, UW-Madison, Apr 29 - May 2, 2018.

D. del-Castillo-Negrete. Invited talk: "Production rate of runaway electrons in dynamic scenarios: a probabilistic backward Monte-Carlo method." International Sherwood Fusion Theory Conference. Auburn, Alabama. April 23-25, 2018

A.K. Fontanilla and B.N. Breizman, "Ablation and expansion of high-Z pellets," Poster presentation at The Sherwood Fusion Theory Conference, Auburn, AL, April 23-25, 2018.

D.I. Kiramov and B.N. Breizman, "Plasma current profile force-free evolution in a tokamak during the current quench," Poster presentation at The Sherwood Fusion Theory Conference, Auburn, AL, April 23-25, 2018.

M.F. Adams, E. Hirvijoki and M. Knepley, "A Landau Collision Integral Solver with Adaptivity on Emerging Architectures with Coupling to PIC Vlasov Methods," 18th SIAM Conference on Parallel Processing for Scientific Computing, Tokyo, Japan, March 7, 2018

B.N. Breizman, "Runaway electrons," Joint Mechanical and Aerospace

Engineering Seminar at UCSD, February 28, 2018.

I.M.Gamba, M.J.Kang, J.Haack and S. Motsch, "Global weak solutions for space inhomogeneous Kolmogorov-Vicsek type models with orientational interactions and conservative numerics," Transport Phenomena in Mathematical Biology, Institute of Mathematics of the Polish Academy of Sciences-Banach Center, Warsaw, 22-24 January 2018.

I.M.Gamba, L. Smith and M.B. Tran, "Kinetic Weak Turbulence models for gravity driven stratified flows," MFO meeting on Classical and Quantum Mechanical Models of Many Particle Systems, Oberwolfach, Germany, Dec 4-8, 2017.

L. Chacón, W. Taitano, X. Tang, Z. Guo, C. McDevitt, "A conservative, relativistic Fokker-Planck solver for runaway electrons," 2017 APS DPP Meeting, October 23-27, 2017, Milwaukee, WI

C. Liu, E. Hirvijoki, D. Brennan, A. Bhattacharjee, G. Fu and D. Spong, "Simulation of excitation of whistler waves and mo- mentum diffusion of runaway electrons in DIII-D tokamak," Poster presentation 2017 APS DPP Meeting, October 23-27, 2017, Milwaukee, WI

D. del-Castillo-Negrete. Invited Talk: "Full-orbit and backward Monte Carlo simulation of runaway electrons." 59th Annual Meeting of the American Physical Society, Division of Plasma Physics Meeting. Milwaukee, Wisconsin. October 23-27, 2017.

J. Morales Escalante, I.M.Gamba and S.Rjasanow, "Boundary data for the Boltzmann Poisson system with rough boundaries and new fast Galerkin- Petrov conservative methods for BTE," Hypocoercivity and Sensitivity Analysis in Kinetic Equations and Uncertainty Quantification, Ki-Net Conference, The University of Wisconsin at Madison, October 2-5, 2017.

Z Guo, C McDevitt, X Tang, "Controlling runaway vortex via externally injected high-frequency electromagnetic waves," APS DPP Meeting, October 23-27, 2017, Milwaukee, WI

C McDevitt, Z Guo, XZ Tang, "Topological Depedendence of Runaway Avalanche Threshold in Momentum Space," APS DPP Meeting, October 23-27, 2017, Milwaukee, WI

D. del-Castillo-Negrete, "Runaway Electrons in Magnetically Confined Fusion Plasmas." Plenary talk. 16th Latin American Workshop on Plasma Physics. LAWPP 2017, Mexico City, Mexico, September 4-8, 2017.

M.F. Adams "Fast, robust, and scalable PDE-solver development for emerging architectures in PETSc," US-Japan Joint Institute for Fusion Theory, August

2017, Tokyo Japan

Guannan Zhang: Invited Talk: "Numerical Methods for High-Dimensional Backward Stochastic Differential Equations", Opening Workshop on SAMSI quasi-Monte Carlo program, Durham, NC, August 2017

D. del-Castillo-Negrete, "Simulation of runaway electrons: orbit effects, synchrotron emission and backward Monte-Carlo method," Theory and Simulation of Disruptions Workshop, Princeton Plasma Physics Laboratory, Princeton, NJ, July 17-19, 2017.

P.B. Parks, "A Theoretical Model for the Penetration of a Shattered-Pellet Debris Plume," Theory and Simulation of Disruptions Workshop, Princeton Plasma Physics Laboratory, Princeton, NJ, July 17-19, 2017

Chang Liu, Eero Hirvijoki, Dylan Brennan, Amitava Bhattacharjee, "Simulation of runaway electron diffusion in momentum space due to whistler wave instabilities," Theory and Simulation of Disruptions Workshop, Princeton Plasma Physics Laboratory, Princeton, NJ, July 17-19, 2017

C. McDevitt, "Topological Dependence of Runaway Avalanche Threshold in Momentum Space" Theory and Simulation of Disruptions Workshop, Princeton Plasma Physics Laboratory, Princeton, NJ, July 17-19, 2017

Z. Guo, "Controlling Runaway Vortex Via Externally Injected High-Frequency Electromagnetic Waves" Theory and Simulation of Disruptions Workshop, Princeton Plasma Physics Laboratory, Princeton, NJ, July 17-19, 2017

D. del-Castillo-Negrete, "Full-orbit effects on runaway electron dynamics and synchrotron emission in tokamak plasmas," ITER Organization, Science Division Seminar, ITER, Cadarache, France, July 7, 2017.

M.F. Adams, E. Hirvijoki and M. Knepley, "A Landau collision integral solver with adaptively on emerging architectures", Predictive Complex Computational Fluid Dynamics, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia, Dec. 2017

M.F. Adams and E. Hirvijoki, "Landau collision integral, adaptivity and emerging architectures," Invited Presentation at Cambridge University, Cambridge, England, June, 2017.

C. Liu, L. Shi, E. Hirvijoki, D. Brennan and A. Bhattacharjee, "Explanation of

prompt growth of ECE signal in tokamak runaway electron experiments," Proceedings of the IAEA Meeting on Fusion Data Processing, Validation, and Analysis, Boston, Massachusetts, May 30 - June 2, 2017.

L. Carbajal "Synchrotron emission diagnostic in kinetic simulations of runaway electrons in magnetic confinement fusion plasmas." Invited presentation Sherwood International Fusion Theory Conference. Annapolis, MD. May 1-3, 2017.

D. del-Castillo-Negrete, L. Carbajal, D. Spong, S. Seal, and L. Baylor. "Space dependent, full orbit effects on runaway electron dynamics in tokamak plasmas." Poster presentation. Sherwood International Fusion Theory Conference. Annapolis, MD, May 1-3, 2017.

Guannan Zhang and Diego Del-Castillo-Negrete. "A backward Monte Carlo method for efficient computation of runaway probabilities in runaway electron simulation." Poster presentation. Sherwood International Fusion Theory Conference. Annapolis, MD, May 1-3, 2017.

D. A. Spong, L. Carbajal Gomez, D. del Castillo Negrete, L. Baylor. "Monte Carlo simulation of runaway electron suppression by pellet injection." Poster presentation. Sherwood International Fusion Theory Conference. Annapolis, MD, May 1-3, 2017.

D.I. Kiramov and B.N. Breizman, "Force-free plasma motion in a tokamak during current decay" Poster presentation at The Sherwood Fusion Theory Conference, Annapolis, MD, May 1-3, 2017.

Christopher J. McDevitt, Zehua Guo, Xian-Zhu Tang "Topological Dependence of Runaway Avalanche Threshold in Phase Space" Invited presentation at The Sherwood Fusion Theory Conference, Annapolis, MD, May 1-3, 2017.

Chang Liu, Dylan P. Brennan, Allen H. Boozer and Amitava Bhattacharjee, "Scattering of a runaway electron beam by whistler waves," Poster presentation at The Sherwood Fusion Theory Conference, Annapolis, MD, May 1-3, 2017.

I.M.Gamba, J.Haack and C. Zhang, "Conservation and Positivity Preserving Issues for Kinetic Collisional Transport Models," SIAM-CSE, Atlanta, Georgia, March 2017.

C.Bardos, I.M.Gamba, F.Golse and C.D. Levermore, "Scattering Effect of the Boltzmann Transport Equation in All Space - Dispersion vs Dissipation," Conference on Current Developments in Mathematical Fluid Dynamics: Regularity, Instabilities, and Turbulence, ICERM Brown University, January 24 to 27, 2017

I.M.Gamba, invited "The Dynamics of Particle Systems by Boltzmann Type Models," SIAM 2017 Joint Mathematics Meetings, Atlanta, Georgia, January 2017

R. Alonso, I.M.Gamba, J.Haack, C. Zhang and S.H. Tharkabhushanam, "Conservative schemes for the Boltzmann and Landau transport equations," Conference Frontier, in Applied and Computational Mathematics, dedicated to Chi-Wang Shu on his 60th Birthday, ICERM Brown University, January 4 to 6, 2017.

M.F. Adams and E. Hirvijoki "Conservative discretization of the Landau collision integral" Invited Presentation at King Abdullah University of Science and Technology, AMCS Seminar, Thuwal, Saudi Arabia, December 5, 2016.

A.H. Boozer, "Runaway electrons and ITER" Poster presentation 58th Annual Meeting of the APS Division of Plasma Physics, San Jose, CA, October 31- November 4, 2016.

C. Liu "Radiation effects on the runaway electron avalanche," Invited presentation 58th Annual Meeting of the APS Division of Plasma Physics, San Jose, CA, October 31- November 4, 2016.

D.P. Brennan, E. Hirvijoki, C. Liu, A. Bhattacharjee and A.H. Boozer, "Progress and challenges in predictive modeling of runaway electron generation in ITER," Oral presentation at the American Physical Society 58th Annual Meeting of the Division of Plasma Physics, San Jose, CA, October 31- November 4, 2016.

A. Fontanilla and B.N. Breizman, "Lifetime of Runaway Electrons at Phase-space Attractor" Poster presentation 58th Annual Meeting of the APS Division of Plasma Physics, San Jose, CA, October 31- November 4, 2016.

D. A. Spong, L. Carbajal Gomez, D. del-Castillo-Negrete, L. Baylor, S. Seal, "Particle simulation of runaway electrons in rippled tokamaks with pellet suppression," Poster presentation 58th Annual Meeting of the APS Division of Plasma Physics, San Jose, CA, October 31- November 4, 2016.

L. Carbajal Gomez, D. del-Castillo-Negrete, D. A. Spong, S. Seal, L. Baylor, "KORC: A Kinetic Orbit Runaway Electrons code for tokamak disruptions" Poster presentation 58th Annual Meeting of the APS Division of Plasma Physics, San Jose, CA, October 31-November 4, 2016.

D. del-Castillo-Negrete, L. Carbajal Gomez, D. A. Spong, L. Baylor, S. Seal, "Full-orbit effects in the dynamics of runaway electrons in toroidal geometry," Poster presentation 58th Annual Meeting of the APS Division of Plasma Physics, San

Jose, CA, October 31- November 4, 2016.

Guannan Zhang and Diego Del-Castillo-Negrete, "A backward Monte Carlo method for efficient computation of runaway probabilities in runaway electron simulation," Poster presentation 58th Annual Meeting of the APS Division of Plasma Physics, San Jose, CA, October 31-November 4, 2016.

D.P. Brennan, E. Hirvijoki, C.Liu, A.H. Boozer and A. Bhattacharjee, "Collisional generation of runaway electron seed distributions leading to sub-criticality, avalanche, or fast transfer," Poster presentation at the International Atomic Energy Agency, 26th IAEA Fusion Energy Conference, Kyoto, Japan, October 17-22, 2016.

P. Aleynikov and B. N. Breizman, "Generation of runaway electrons during the thermal quench in tokamaks," Poster presentation 26th IAEA Fusion Energy Conference, Kyoto, Japan, October 17-22, 2016.

B.N. Breizman and P. Aleynikov, "Kinetics of relativistic runaway electrons," Overview talk OV 2-3 presented at the 26th IAEA Fusion Energy Conference, Kyoto, Japan, October 17-22, 2016.

D.P. Brennan, "Recent theoretical progress in understanding runaway electron generation and dynamics," Burning Plasma Organization (DOE) Webinar Series, Princeton, NJ, October 6, 2016.

D.P. Brennan, M. Adams, A. Bhattacharjee, A.H. Boozer, B. Breizman, L. Chacon, D. Del-Castillo- Negrete, I. Gamba, V. Izzo, L. Lao, X. Tang and G. Zhang, "Simulation center for runaway electron avoidance and mitigation: A new collaboration aimed at predictive modeling," 4th Workshop on the Theory and Simulation of Disruptions, Princeton Plasma Physics Laboratory, Princeton, NJ, July 20-22, 2016.

Diego del-Castillo-Negrete "Full orbit effects on runaway electron dynamics in tokamak plasmas," 4th Workshop on the Theory and Simulation of Disruptions, Princeton Plasma Physics Laboratory, Princeton, NJ, July 20-22, 2016.

Several additional presentations key to this project occurred shortly before the project period began, a few of which are listed below but do not appear in the Products section as they pre-date the performance period.

B. Breizman, "Production and damping of runaway electrons in a tokamak," Invited presentation at Sherwood Fusion Theory Conference, Madison, WI, April 4-6, 2016.

C. Liu, "Adjoint method and runaway electron dynamics in momentum space," Invited presentation at Sherwood Fusion Theory Conference, Madison, WI, April 4-6, 2016.

Z. Guo,"Primary runaway electron generation and saturation in a tokamak," Invited presentation at Sherwood Fusion Theory Conference, Madison, WI, April 4-6, 2016.

C. Liu and D.P. Brennan, "Cherenkov radiation of runaway electrons," Proceedings of the 4th Runaway Electron Meeting, Pertuis, France, June 6-8, 2016.