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RESEARCH STATEMENT:

Currently I am a liaison for INCITE projects on Titan at the Oak Ridge Leadership Computing Facility (OLCF). I help INCITE project run efficiently on Titan and help diagnose and debug application problems at scale, as well as help projects develop code capabilities in support of their INCITE goals. Additionally I am part of the Interoperable Design of Extreme-scale Application Software (IDEAS) project, I am part of two projects within the Exascale Computing Project (ECP) program, and have a Joint Faculty Appointment with Colorado State University.

My previous research at ORNL included involvement with the Consortium for Light Water Reactors (CASL) project at ORNL where I work in both the Physics Integration and Infrastructure teams. My work in CASL includes advanced coupling of thermal-hydraulics and neutron transport and support for testing and development on the software infrastructure teams.

Prior to joining my current group I was a Wigner fellow working on developing a software infrastructure package AMP (Advanced MultiPhysics package) and adding Adaptive Mesh Refinement to an MHD code. AMP is an infrastructure package designed for solving multi-physics, multi-domain problems. It is designed to leverage existing capabilities and software packages including Trilinos, PETSc, and others. My work is primarily in the development and maintenance of the mesh and LinearAlgebra components. This includes the Mesh interface and the parallel support. The design is such that multiple domains can be separated into different MPI communicators, and the further divided across multiple processors to enable large scale parallelism and has been run successfully with 64,000 processors.

My graduate research included the development of a 2D AMR-based hydrodynamic model for simulating laser-created plasmas. This involves solving the compressible Navier-Stokes equations with a two-temperature model and fully coupled Atomic Model and Equation of State.

My computational experience includes extensive programming in C/C++, FORTRAN, and MATLAB, using pthreads, CUDA, and MPI for parallel operation. I have experience using a number of packages including BLAS, LAPACK, PETSc, Trilinos, SAMRAI, HDF5, VisIt, Totalview, and Vampir. I have some experience using JAVA, DDT, and Fluent. My research areas of interest include HPC, plasma physics, software engineering and unit testing.

EDUCATION:

- 2010 – PhD, Electrical and Computer Engineering, Colorado State University, Fort Collins, CO, GPA - 4.00
- 2006 - Masters of Science, Electrical and Computer Engineering, Colorado State University, Fort Collins, CO, GPA - 4.00
- 2003 - Bachelor of Science, Electrical and Computer Engineering, Optics Concentration, Colorado State University, Fort Collins, CO, May 2003, GPA - 3.88, minors in Mathematics & Physics

RESEARCH EXPERIENCE

- 8/2010 – Present: Computational Scientist, Oak Ridge National Laboratory. I currently work on several projects in the ORNL Computing and Computational Sciences Directorate. I am a scientific computing liaison for INCITE projects on Titan; a lead developer in the software infrastructure package AMP (Advanced MultiPhysics Package); the CS lead for the Exascale Computing Project (ECP) application on Additive Manufacturing; a member of the DOE IDEAS project; a developer on the AMR software infrastructure SAMRUtilities/SAMRSolvers; I developed an AMR (Adaptive Mesh Refinement) version of pixie3d (an MHD plasma code); and a developer with CASL.
- 3/2014 – Present: Joint Faculty Appointment (JFA) with Colorado State University (CSU). I work with research at CSU to support their current research in x-ray lasers, laser development, and x-ray radiation. I also help design new experiments and am in the process of co-authoring research proposals.
- 8/2010 – 9/2012: Wigner Fellow, Oak Ridge National Laboratory. I worked on adding Adaptive Mesh Refinement to an MHD code and the Advanced MultiPhysics package (AMP). AMP is an infrastructure package designed for solving multi-physics, multi-domain problems. It is designed to leverage existing capabilities and software packages including Trilinos, PETSc, and others. My work included the design of the Mesh interface and the parallel support.
- 8/2003 – 8/2010: Graduate Research Assistant, Colorado State University, Electrical and Computer Engineering (ECE) Department, Laser Laboratory, NSF Center for Extreme Ultraviolet Science and Technology. I developed a 1.5D Hydrodynamic/Atomic model to simulate laser created plasmas used to generate x-ray lasers, a 3D ray trace post processor, a post processor to simulate plasma spectra, and a 2D plasma model.
- 8/2002 – 7/2003: Research Assistant, Colorado State University, ECE Department, Laser Laboratory. I worked on a 1D Hydrodynamic / Atomic model to simulate plasmas created by a capillary discharge.
- 6/2002 – 7/2002: Research Experience for Undergraduates, Colorado State University, ECE Department, Laser Laboratory. I assisted in the construction of several mechanical hardware components for a multiTerawatt ultrashort pulse laser system for the excitation of soft x-ray lasers.
- 9/2000 – 5/2002: Research Assistant, Colorado State University, ECE Department, Radar and Communications Laboratory. 6/2001 – 8/2001: Research Experience for Undergraduates, Colorado State University, ECE Department, Radar and Communications Laboratory. I developed a program to allow users to remotely process acquired radar data over the internet.
- 6/2000 – 8/2000: Research Experience for Undergraduates, as part of the NSF funded STEPS-2000, Colorado State University, ECE Department, Radar and Communications Laboratory. I assisted the research team in acquiring data and performing data analysis.

AWARDS

- Awarded the Wigner Fellowship at Oak Ridge National Laboratory, 2010
- Finalist for the Lawrence Fellowship at Lawrence Livermore National Laboratory, 2010.
- Received the DOE Computational Science Graduate Fellowship in 2006.
- Received the SPIE Educational Scholarship in Optical Science and Engineering in 2005.
- Received Honorable Mention for the National Science Foundation (NSF) Graduate Research Fellowship in 2004.
- Graduated Cum Laude in May 2003.
- Received High Honors for my capillary discharge model at the Undergraduate Research Symposium in 2003
- Received an Engineering Days Award for my capillary discharge model in 2003.
- Received the Claude W. Wood Scholarship (a four year merit based undergraduate scholarship) for 1999-2003.
- Received the Harold and Sylvia Joy Scholarship in 2002 and an ECE Merit Scholarship in 1999.

PUBLICATIONS

Citations: 1744

h-index: 21

i10-index: 26

Peer Reviewed Journals:

1. R. T. Armstrong, J. E. McClure, M. A. Berrill, M. Rücker, S. Schlüter, S. Berg, "Flow Regimes During Immiscible Displacement", *Petrophysics*, **58**, pp. 10-18, 2017 (Cover Article).
2. James McClure, Mark A. Berrill, W G Gray, Cass Miller, "Influence of Phase Connectivity on the Relationship Among Capillary Pressure", *Fluid Saturation, Interfacial Area, and Euler Characteristic in Two-Fluid-Phase Porous Medium Systems*, *Physical Review E*, **033102**, 2016.
3. Bronson Messer, Ed F. D'Azevedo, Judith C. Hill, Wayne Joubert, Mark A. Berrill, Christopher J. Zimmer, "MiniApps Derived from Production HPC Applications Using Multiple Programming Models", *International Journal of High Performance Computing Applications*, Accepted, 2016.
4. Ryan T Armstrong, James E McClure, Mark A Berrill, Maja Rücker, Steffen Schlüter, Steffen Berg, "Beyond Darcy's law: The role of phase topology and ganglion dynamics for two-fluid flow", *Physical Review E*, **043113**, 2016.
5. Liang Yin, Hanchen Wang, Brendan A Reagan, Cory Baumgarten, Eric Gullikson, Mark Berrill, Vyacheslav N Shlyaptsev, Jorge J Rocca, "6.7-nm Emission from Gd and Tb Plasmas over a Broad Range of Irradiation Parameters Using a Single Laser", *Physical Review Applied*, **034009**, 2016.
6. J. E. McClure, M. A. Berrill, W. G. Gray and C. T. Miller, "Tracking interface and common curve dynamics for two-fluid flow in porous media", *Journal of Fluid Mechanics*, **796**, 211-232, 2016.
7. Steven Hamilton, Mark Berrill, Kevin Clarno, Roger Pawlowski, Alex Toth, C.T. Kelley, Thomas Evans, Bobby Philip, "An assessment of coupling algorithms for nuclear reactor core physics simulations", *Journal of Computational Physics*, **311**, 241-257, 2016.
8. Bobby Philip, Mark A. Berrill, Srikanth Allu, Steven P. Hamilton, Rahul S. Sampath, Kevin T. Clarno, Gary A. Dilts, "A parallel multi-domain solution methodology applied to nonlinear thermal transport problems in nuclear fuel pins", *Journal of Computational Physics* **286**, 143–171, 2015.
9. Joubert, Wayne, Archibald, Rick, Berrill, Mark, Brown, W Michael, Eisenbach, Markus, Grout, Ray, Larkin, Jeff, Levesque, John, Messer, Bronson, Norman, Matt, "Accelerated application development: The ORNL Titan experience", *Computers & Electrical Engineering*, **46**, 123-138, 2015.
10. Turner, John, Allu, Srikanth, Berrill, Mark, Elwasif, Wael, Kalnaus, Sergiy, Kumar, Abhishek, Lebrun-Grandie, Damien, Pannala, Sreekanth, Simunovic, Srdjan, "Safer Batteries through Coupled Multiscale Modeling *Procedia Computer Science*", **51**, 1168-1177, 2015.
11. Y. Wang, S. Wang, E. Oliva, L. Li, M. Berrill, L. Yin, J. Nejd, B. M. Luther, C. Proux, T. T. T. Le, J. Dunn, D. Ros, Ph. Zeitoun, J. J. Rocca, "Gain dynamics in a soft-X-ray laser amplifier perturbed by a strong injected X-ray field", *Nature Photonics* **8**, 381–384, 2014.
12. B. Philip, Z. Wang, M. Berrill, M. Rodriguez Rodriguez, M. Pernice, "Dynamic Implicit 3D Adaptive Mesh Refinement for Non-Equilibrium Radiation Diffusion", *Journal of Computational Physics*, Volume 262, pp 17–37, 2014
13. Brendan A. Reagan, Mark Berrill, Keith A. Wernsing, Cory Baumgarten, Mark Woolston, Jorge J. Rocca, "High-average-power, 100-Hz-repetition-rate, tabletop soft-x-ray lasers at sub-15-nm wavelengths", *Physical Review A* **89**, 053820, 2014.
14. Aaron M Phillippe, James E Banfield, Kevin T Clarno, Larry J Ott, Bobby Philip, Mark A Berrill, Rahul S Sampath, Srikanth Allu, Steven P Hamilton, "Validation Study of Pin Heat Transfer for UO₂ Fuel Based on the IFA-432 Experiments", *Nuclear Science and Engineering*, **177**, Issue 3, 275-290, 2014.
15. A. Phillippe, K. Clarno, J. Banfield, L. Ott, B. Philip, M. Berrill, R. Sampath, S. Allu, S. Hamilton, "A Validation Study of Pin Heat Transfer for MOX Fuel Based on the IFA-597 Experiments", *Nuclear Science and Engineering*, Submitted November 2012.
16. Rodriguez Rodriguez, Manuel, Philip, Bobby, Wang, Zhen, Berrill, Mark A., "Block-Relaxation Methods for

- 3D Constant-Coefficient Stencils on GPUs and Multicore CPUs*, IEEE Transactions on Parallel and Distributed Systems, submitted, 2012.
17. Urbanski, Lukasz, Marconi, Mario, Meng, L. M., Berrill, Mark A., Guilbaud, O., Klisnick, Annie, Rocca, Jorge, "Spectral linewidth of a Ne-like Ar capillary discharge soft x-ray laser and its dependence on amplification beyond gain-saturation", Physical Review A, 033837, 2012.
 18. Kevin T. Clarno, Bobby Philip, William K. Cochran, Rahul S. Sampath, Srikanth Allu, Pallab Barai, Srdjan Simunovic, Mark A. Berrill, Larry J. Ott, Sreekanth Pannala, Gary A. Dilts, Bogdan Mihaila, Cetin Unal, Gokhan Yesilyurt, Jung Ho Lee, James E. Banfield, "*The AMP (Advanced MultiPhysics) Nuclear Fuel Performance Code*", Nuclear Engineering Design, Vol **252**, pp. 108-120, 2012.
 19. D. Alessi, Y. Wang, B. M. Luther, L. Yin, D. H. Martz, M. R. Woolston, Y. Liu, M. Berrill, and J. J. Rocca, "*Efficient Excitation of Gain-Saturated Sub-9-nm-Wavelength Tabletop Soft-X-Ray Lasers and Lasing Down to 7.36 nm*", Physical Review X, **1**, 021023 (2011).
 20. M. Berrill, D. Alessi, Y. Wang, S.R. Domingue, D.H. Martz, B.M. Luther, Y.W. Liu, J.J. Rocca, "*Improved beam characteristics of solid-target soft x-ray laser amplifiers by injection seeding with high harmonic pulses*," Optics Letters, **35**, 2317, (2010).
 21. Y. Wang, M. Berrill, F. Pedaci, M.M. Shakya, S. Gilbertson, Zenghu Chang, E. Granados, B.M. Luther, M. A. Larotonda, J.J. Rocca, "*Measurement of 1 Picosecond Soft X-Ray Laser Pulses from an Injection-Seeded Plasma Amplifier*," Physical Review A, **79**, 023810, (2009).
 22. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C.S. Menoni, and J.J. Rocca, "*Warm Photoionized Plasmas Created by Soft X-Ray Laser Irradiation of Solid Targets*," Journal of the Optical Society of America B **25**, B32, (2008). (This article has been selected for publication in the Virtual Journal of Ultrafast Science 2008.)
 23. F. Pedaci, Y. Wang, M. Berrill, B. Luther, E. Granados, and J.J. Rocca, "*Highly coherent injection-seeded 13.2 nm table-top soft x-ray laser*," Optics Letters **33**, 491, (2008). (This article has been selected for publication in the Virtual Journal of Ultrafast Science 2008.)
 24. Y. Wang, E. Granados, F. Pedaci, D. Alessi, B. Luther, M. Berrill, and J.J. Rocca, "*Phase coherent, injection seeded table-top soft x-ray lasers at 18.9 and 13.9*," Nature Photonics, **2**, p. 94, (2008)
 25. M. Berrill, Y. Wang, M.A. Larotonda, B.M. Luther, V.N. Shlyaptsev, and J.J. Rocca, "*Pump pulsewidth of grazing incidence pumped transient collisional soft x-ray lasers*," Physical Review A **75**, 063821 (2007).
 26. B.A. Reagan, T. Popmintchev, M.E. Grisham, D.M. Gaudiosi, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, J.J. Rocca, and H.C. Kapteyn, "*Enhanced High Harmonic Generation from Xe, Kr, and Ar in a Capillary Discharge*," Physical Review A, **76**, 013816, (2007).
 27. Y. Wang, E. Granados, M.A. Larotonda, M. Berrill, B.M. Luther, D. Patel, C.S. Menoni, and J.J. Rocca, "*High Brightness Injection-Seeded Soft-X-Ray-Laser Amplifier Using a Solid Target*," Physical Review Letters **97**, 123901, (2006).
 28. D.M. Gaudiosi, B. Reagan, T. Popmintchev, M. Grisham, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, H.C. Kapteyn, and J.J. Rocca, "*High-Order Harmonic Generation from Ions in a Capillary Discharge*," Physical Review Letters **96**, 203001, (2006).
 29. M.A. Larotonda, Y. Wang, M. Berrill, B.M. Luther, J.J. Rocca, M.M. Shakya, S. Gilbertson, and Z. Chang, "*Pulse duration measurements of grazing incidence pumped high repetition rate Ni-like Ag and Cd transient soft x-ray lasers*," Optics Letters **31**, 3043, (2006).
 30. B. M. Luther, Y. Wang, M. A. Larotonda, D. Alessi, M. Berrill, J. J. Rocca, J. Dunn, R. Keenan, V. N. Shlyaptsev, "*High repetition rate collisional soft x-ray lasers based on grazing incidence pumping*", IEEE Journal of Quantum Electronics, **42**, 4, 2006.
 31. Y. Wang, M. A. Larotonda, B. M. Luther, D. Alessi, M. Berrill, V. N. Shlyaptsev, and J. J. Rocca, "*Demonstration of high-repetition-rate tabletop soft-x-ray lasers with saturated output at wavelengths down to 13.9 nm and gain down to 10.9 nm*", Physical Review A, **72**, 053807, 2005.
 32. J. J. Rocca, Y. Wang, M. A. Larotonda, B. M. Luther, M. Berrill, and D. Alessi, V. N. Shlyaptsev, "*Saturated 13.2 nm high-repetition-rate laser in nickellike cadmium*", Optics Letters, Vol. 30, Issue 19, pp. 2581-2583, October 1, 2005.
 33. Y. Wang, B. M. Luther, M. Berrill, M. Marconi, F. Brizuela, J. J. Rocca, and V. N. Shlyaptsev, "*Capillary*

- discharge-driven metal vapor plasma waveguides*", Phys. Rev. E, Vol. 72, 026413, 2005.
34. B. M. Luther, Y. Wang, M. Berrill, D. Alessi, M. C. Marconi, M. A. Larotonda, and J. J. Rocca, "*Highly ionized Ar plasma waveguides generated by a fast capillary discharge*", IEEE Transactions on Plasma Science, Vol. 33, Issue 2, pp. 582-583, April 2005.
 35. Y. Wang, B. M. Luther, F. Pedaci, M. Berrill, F. Brizuela, M. Marconi, M. A. Larotonda, V. N. Shlyaptsev, J. J. Rocca, "*Dense Capillary Discharge Plasma Waveguide Containing Ag Ions*", IEEE Transactions on Plasma Science, IEEE Transactions on Plasma Science, Vol. 33, Issue 2, pp. 584-585, April 2005.
 36. D. Alessi, B. M. Luther, Y. Wang, M. A. Larotonda, M. Berrill, and J. J. Rocca, "*High repetition rate operation of saturated tabletop soft x-ray lasers in transitions of neon-like ions near 30 nm*", Opt. Express, Vol. 13, pp. 2093-2098, 2005.
 37. M. A. Larotonda, B. M. Luther, Y. Wang, Y. Liu, D. Alessi, M. Berrill, A. Dummer, F. Brizuela, C. S. Menoni, M. C. Marconi, V. N. Shlyaptsev, J. Dunn, J. J. Rocca, "*Characteristics of a Saturated 18.9 nm Tabletop Laser Operating at 5-Hz Repetition Rate*", IEEE Journal of Selected Topics in Quantum Electronics, Vol. 10, Issue 6, pp. 1363-1367, 2004
 38. B. M. Luther, Y. Wang, M. A. Larotonda, D. Alessi, M. Berrill, M. C. Marconi, J. J. Rocca, V. N. Shlyaptsev, "*Saturated high-repetition-rate 18.9 nm table-top laser in nickellike molybdenum*", Optics Letters, Vol. 30, pp. 165-167, January 15, 2005.

Conference Talks

1. James McClure, Mark A. Berrill, Jan F Prins, Cass Miller, "*Asynchronous in situ connected-components analysis for complex fluid flows*", The International Conference for High Performance Computing, Networking, Storage and Analysis, 2016.
2. Mark Berrill, Luis Chacon, Bobby Philip, Zhen Wang, Manuel Rodriguez Rodriguez, "Adaptive Magnetohydrodynamics Simulations with SAMRAI", 2012 SIAM Annual Meeting, 2012.
3. Mark Berrill, Luis Chacon, Bobby Philip, "Adaptive Magnetohydrodynamics Simulations with SAMRAI", 15th SIAM Conference on Parallel Processing for Scientific Computing, 2012.
4. Mark Berrill, Luis Chacon, Bobby Philip, "Adaptive Magnetohydrodynamics Simulations with SAMRAI", 12th Copper Mountain Conference on Iterative Methods, Copper Mountain, Colorado, 2012.
5. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C. Menoni, J.J. Rocca, "Photoionized Plasmas Created by Soft X-Ray Laser Irradiation of Solid Targets," 50th Annual Meeting of the Division of Plasma Physics, Dallas, Texas, November 17-21, (2008),.
6. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C. Menoni, and J.J. Rocca, "Photoionized Plasmas Created by Soft X-Ray Laser Irradiation of Solid Targets," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference, San Jose, CA, May 7, 2008
7. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C. Menoni, A. Vinogradov, I. Artioukov, Yu.P. Pershing, V. Kondratenko, and J.J. Rocca, "Photoionized plasmas created by soft x-ray laser irradiation of solid targets," UFO-HFSW conference, Santa Fe, New Mexico, September 3, 2007.

Reports:

1. Matt Sieger, Roscoe A. Bartlett, Mark L. Baird, Mark A. Berrill, Joel A. Kulesza, Brenden T. Mervin, *VERA 3.6 - VERA Installation Guide*, ORNL report (2017).
2. Roscoe A Bartlett, Mark L. Baird, Mark A. Berrill, Joel A. Kulesza, Brenden T. Mervin, *VERA 3.5 Installation Guide*, ORNL Report (2016).
3. Mark Berrill, "*Algorithmic Challenges in Computational Science on the Path from Petascale to Exascale*", ORNL LDRD report, 2012.
4. Kevin Clarno, Steven Hamilton, Bobby Philip, Mark Berrill, Rahul Sampath, Srikanth Allu, Dave Pugmire, Gary Dilts, James Banfield, "*Integrated Radiation Transport and Nuclear Fuel Performance for Assembly-Level Simulations*", ORNL Letter Report, 2012.
5. Mark Berrill, Bobby Philip, Rahul Sampath, Srikanth Allu, Pallab Barai, Bill Cochran, Kevin Clarno, Gary Dilts, "*Fiscal Year 2011 Infrastructure Refactorizations in AMP*", ORNL Letter Report, 2011.

6. Mark Berrill, "Algorithmic Challenges in Computational Science on the Path from Petascale to Exascale", ORNL LDRD report, 2011.

Science News Articles:

1. Y. Wang, F. Pedaci, M. Berrill, D. Alessi, E. Granados, B.M. Luther, and J.J. Rocca, "Phase-Coherent Injection-Seeded Soft X-Ray Lasers at Wavelengths Down to 13.2 nm," Optics and Photonics News, "Optics in 2008," 19, 29, (2008).
2. F. Brizuela, H. Bravo, M. Berrill, G. Vaschenko, B. Longhon, E.H. Anderson, W. Chao, D.T. Attwood, O. Hamberg, S. Bloom, J.J. Rocca, and C.S. Menoni, "Ablation of Sub-100-nm Features with a Tabletop Soft X-ray Laser", Optics and Photonics News, "Optics in 2007", 18, 45, (2007).
3. Y. Wang, E. Granados, M.A. Larotonda, M. Berrill, B.M. Luther, D. Patel, C.S. Menoni, and J.J. Rocca, "High Brightness Soft X-ray Laser by Injection Seeding of a Dense Plasma Amplifier," Optics & Photonics News, "Optics in 2006," 17, 46, (2006).
4. D. Gaudiosi, B. Reagan, T. Popmintchev, M. Grisham, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, H.C. Kapteyn, and J.J. Rocca, "High Harmonic Generation from Ions in a Capillary Discharge Plasma Waveguide," Optics & Photonics News, "Optics in 2006," 17, 44, (2006).
5. Y. Wang, M.A. Larotonda, B.M. Luther, D. Alessi, M. Berrill, M.C. Marconi, V.N. Shlyaptsev, J.J. Rocca, "High Repetition Rate Tabletop Soft X-ray Lasers with Saturated Output at Wavelengths down to 13.2 nm," Optics & Photonics News, "Optics in 2005," 16, 26, (2005).

Contributed Conference Abstracts and Proceedings

1. James McClure, Mark A. Berrill, Jan F Prins, Cass Miller, "Asynchronous in situ connected-components analysis for complex fluid flows", The International Conference for High Performance Computing, Networking, Storage and Analysis, 2016.
2. R. T. Armstrong, J. E. McClure, M. A. Berill, M. Rücker, S. Schlüter, S. Berg, "Flow Regimes During Immiscible Displacement", Society of Core Analyst 30th Annual Symposium, 2016 (Best paper award)
3. Rocca, Jorge J, Reagan, BA, Baumgarten, C, Pedicone, M, Hollinger, R, Capeluto, M G, Barngrsten, C, Shlyaptsev, V N, Kaymak, V, Pukhov, A, "High Repetition Rate Soft X-Ray Lasers and Bright Table-top X-Ray Sources from Nanostructured Target Plasmas Irradiated at Relativistic Intensities", Compact EUV & X-ray Light Sources, ES3A. 4, 2016.
4. Wang, S, Wang, Y, Oliva, E, Li, L, Berrill, M, Yin, L, Nejdil, J, Luther, B, Proux, C, Le, TT Thuy, "Gain Dynamics in Injection-Seeded Soft X-Ray Laser Plasma Amplifiers", X-Ray Lasers 2014, 351-356, 2016.
5. Purvis, Michael A, Shlyaptsev, Vyacheslav N, Hollinger, Reed, Bargsten, Clayton, Pukhov, Alexander, Keiss, David, Townsend, Amanda, Wang, Yong, Wang, Shoujun, Berrill, Mark, "X-ray Generation From Ultra-High Energy Density Relativistic Plasmas by Ultrafast Laser Irradiation of Nanowire Arrays", X-Ray Lasers 2014, 139-145, 2016.
6. Reagan, Brendan A, Baumgarten, Cory, Berrill, Mark, Wernsing, Keith A, Woolston, Mark, Urbanski, Lukasz, Li, Wei, Marconi, Mario C, Slyaptsev, Vyacheslav N, Menoni, Carmen S, "Advances in High Average Power, 100 Hz Repetition Rate Table-Top Soft X-Ray Lasers", X-Ray Lasers 2014, 11-19, 2016.
7. Reagan, Brendan, Wernsing, Keith, Baumgarten, Cory, Durivage, Leon, Berrill, Mark, Curtis, Alden, Furch, Federico, Luther, Brad, Woolston, Mark, Patel, Dinesh, "High average power, high repetition rate table-top soft x-ray lasers for applications in nanoscience and nanotechnology", APS Meeting Abstracts, 24007 2014
8. B. Reagan, C. Baumgarten, M. Berrill, K. Wernsing, M. Woolston, L. Urbanski, W. Li, M. Marconi, V. Slyaptsev, C. Menoni, and J. Rocca, "Advances in High Average Power, 100 Hz Repitition Rate Table-Top Soft X-Ray Laser", Proceedings 14 th International Conference on X-Ray Lasers, Springer (2015)
9. M. Purvis, V. Sylaptsev, R. Hollinger, C. Bargten, A. Pukhov, D. Keiss, A. Townsend, Y. Wang, S. Wang, M. Berrill, B. Luther, A. Prieto, J. Rocca, "X-ray Generation for Ultra-High Energy Density Relativistic Plasmas by Ultrafast Laser Irradiation of Nanowire Arrays", Proceedings 14th International Conference on X-Ray Lasers, Springer (2015)
10. S. Wang, Y. Wang, L. Li, M. Berrill, L. Yin, J. Nejdil, B. Luther, C. Proux, T. Thuy Le, J. Dunn, D. Ros, Ph.

- Zeitoun, J.J. Rocca, "*Gain Dynamics in Injection-Seeded Soft X-Ray Laser Plasma Amplifiers*", Proceedings 14 th International Conference on X-Ray Lasers, Springer (2015)
11. J Turner, S Allu, M Berrill, W Elwasif, S Kalnaus, A Kumar, Damien Lebrun-Grandie, Sreekanth Pannala, Srdjan Simunovic, "Safer Batteries through Coupled Multiscale Modeling", ICCS 2015 / 12th Intl Wkshp on Multiscale Modelling and Simulation (2015)
 12. B. Philip, Oak Ridge National Laboratory, M. Berrill, K. Clarno, R. Sampath, S. Allu, G. Dilts, J. Turner, "*The Advanced Multi-Physics (AMP) Package*", 2nd Frontiers in Computational Physics Conference: Energy Sciences, Zurich (2015).
 13. Yehuda Braiman and Mark Berrill, "*Multisource Laser Development for Laser-Created Plasmas*", Whitepaper for Frontiers of Plasma Science Workshop (2015).
 14. John A. Turner, et. al., "Safe, high-performance electrical energy storage systems enabled by Exascale simulation", Whitepaper for Additional Exascale Apps (2015).
 15. Meng, Limin, Klisnick, A, Kozlova, M, Bohacek, K, Krus, M, Prokupek, J, Urbanski, L, Marconi, MC, Berrill, M, Rocca, JJ, "*Temporal coherence and spectral linewidth of neon-like XUV lasers pumped in the quasi-steady state regime*", X-Ray Lasers 2012, 175-180, 2014
 16. Urbanski, L, Marconi, MC, Meng, LM, Berrill, M, Guilbaud, O, Klisnick, A, Rocca, JJ, "*Spectral linewidth measurement of a Ne-like Ar capillary discharge soft x-ray laser*", X-Ray Lasers 2012, 257-261, 2014
 17. Rocca, JJ, Reagan, BA, Wang, Y, Alessi, D, Wernsing, K, Luther, BM, Curtis, MA, Berrill, M, Martz, D, Wang, S, "*Demonstration of a 100 Hz Repetition Rate Soft X-Ray Laser and Gain-Saturated Sub-10 nm Table-Top Lasers*", X-Ray Lasers 2012, 215-225, 2014
 18. S. Hamilton, K. Clarno, M. Berrill, T. Evans, R. Lefebvre, R. Sampath, G. Davidson, J. Hansel, J. Ragusa, C. Josey, "*Multiphysics Simulations for LWR Analysis*", International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2013), Sun Valley, Idaho, May 2013.
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