

Publications, conference papers, and presentations

All products listed below were federally funded.

2015 Journal Publications

1. A.A. Anderson, V. V. Ivanov, D. Papp, “Visualization of the Magnetic Field and Current Path in Z-pinch and X-Pinch Plasmas”, HEDP 15, 1 (2015)
2. Hui Chen, A. Link, Y. Sentoku, P. Audebert, F. Fiuza, A. Hazi, R. F. Heeter, M. Hill, L. Hobbs, A. J. Kemp, G. E. Kemp, S. Kerr, D. D. Meyerhofer, J. Myatt, S. R. Nagel, J. Park, R. Tommasini, and G. J. Williams, “*The scaling of electron and positron generation in intense laser-solid interactions*”, Physics of Plasmas 22, 056705 (2015)
3. Hui Chen, F. Fiuza, A. Link, A. Hazi, M. Hill, D. Hoarty, S. James, S. Kerr, D. D. Meyerhofer, J. Myatt, J. Park, Y. Sentoku, and G. J. Williams, “*Scaling the Yield of Laser-Driven Electron-Positron Jets to Laboratory Astrophysical Applications*”, Physical Review Letters 114, 215001 (2015).
4. L. Hernandez, A.M. Covington, E.M. Hernandez, A. Antillon, A. Morales-Mori, K. Chartkunchand, A. Aguilar and G. Hinojosa, “*Single-photoionization of Al-like P^{2+} and Mg-like P^{3+}* ”, J. of Quant. Spect. & Rad. Trans., 159, pp 80-86 (July 2015).
5. H. Sawada, Y. Sentoku, A. Bass, B. Griffin, R. Pandit, F. Beg, H. Chen, H. McLean, A. J. Link, P. K. Patel and Y. Ping, “Characterization of intense laser-produced fast electrons using hard x-rays via bremsstrahlung”, J. Phys. B: At. Mol. Opt. Phys. 48 224008 (2015).
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2015 Submitted for Publication

1. A.A. Anderson, V. V. Ivanov, A. L. Astanovitskiy, D. Papp, P. P. Wiewior, and O. Chalyy, “Study of ablation and implosion stages in wire arrays using coupled UV and x-ray probing diagnostics”, submitted to Physics of Plasmas (2015).

2015 Conference Presentations

Papers

1. J.C. Valenzuela, G. Collins, C. Krauland, D. Marsical, T. Zick, J. Narkis, I. Krasheninnikov and F.N. Beg, “*Pulsed Power Produced Counter Propagating Supersonic Plasma Jet Collisions and the Study of Shock Wave Formation*”, **Submitted** to ICOPS 2015.
2. T.J. Awe, W.G. Yelton, E.P. Yu, S.E. Rosenthal, B. Mckenzie, B.S. Bauer, K.C. Yates, T.M. Hutchinson, S. Fuelling, and D.R. Lowe, “Direct observation of electrothermal instability structures in the skin layer of an intensely Ohmically heated conductor”, Sandia Report - SAND2015-8782 (2015).

Oral Presentation

1. A.Covington, “Recent Advances and New Directions in HEDLP at the Nevada Terawatt Facility”, Sandia National Laboratory, HEDP Seminar, June 18th, 2015. **Invited.**
2. T.Darling, E. McKee, A. Covington, “Gas puff Z-pinches with deuterium-krypton gas mixtures”, 57th Annual Meeting of the APS Division of Plasma Physics, Savannah, GA. November 16-20, 2015. **Oral Presentation.**
3. V. V. Ivanov, A. A. Anderson, B. S. Bauer, K. Yates, S. Fuelling, T. Hutchinson, J. Mei, “Study of wire-array Z pinches with UV multichannel diagnostics”, Pulsed Power Conference, Austin, TX, June 1-4, 2015. **Invited.**
4. V. V. Ivanov, R. C. Mancini, D. Papp, P. Hakel, R. Florido-Hernández, T. Durmaz, “Radiative Properties of Two-Component Plasma Produced by Implosion of the Wire-Array Z-Pinch”, The Third Radiation from High Energy Density Plasmas International Workshop, South Lake Tahoe, NV, June 9-12, 2015. **Invited.**
5. V. V. Ivanov, “Laser diagnostics for Z-pinch plasma at NTF”, seminar at NSTec, Las Vegas, NV, May 26, 2015. **Oral Presentation.**
6. R.Royle, Y. Sentoku, R. Roberto, and I. Paraschiv, “Modeling of photoionization for the intense x-ray laser - matter interaction”, The Third International Workshop on Radiation from High Energy Density Plasmas (RHEDP2015), June 12 (2015). **Oral Presentation.**
7. J.C. Valenzuela, G. Collins, C. Krauland, D. Marsical, T. Zick, J. Narkis, I. Krasheninnikov and F.N. Beg, “Pulsed Power Produced Counter Propagating Supersonic Plasma Jet Collisions and the Study of Shock Wave Formation”, **Oral Presentation** submitted to ICOPS 2015, Belek, Antalya, Turkey, May 24-28, 2015.
8. B.S. Bauer, "Microscopic Plasma Formed via Interaction of Intense Current with Surface Micro-Features," Physics Colloquium, University of Nevada, Reno, December 4, 2015. **Invited.**

2015 Posters

1. S. Haque, “Time Evolution of Magnetic Fields in Magnetized Laser Plasmas Using Zeeman Broadening Diagnostics, NIF/JLF User Group Meeting, LLNL/Livermore, CA Feb. 9-11, 2015. **Poster.**
2. S. Haque, M.S. Wallace, P. Neill, R. Presura, “Measurements of Magnetic Fields in Magnetized Plasmas Using Zeeman Broadening Diagnostics”, 57th Annual Meeting of the APS Division of Plasma Physics, Savannah, GA. November 16-20, 2015. **Poster.**
3. T.M. Hutchinson, K.C. Yates, B.S. Bauer, S. Fuelling, D.R. Lowe, T.J. Awe, and W.G. Yelton, "Early Plasma Formation on a Thick Wire Z-pinch Pulsed by Multi-MG Magnetic Field," presented (poster) at the 2015 High Energy-Density Physics Summer School, San Diego, California, August 17-21, 2015.

4. Z. McCormick, O. Chalyy, T. Darling, B. Hammel, J. Iratcabal, E. McKee, P. Wiewior and A. M. Covington, "*Laser-Based Neutron and Isotope Production at the Nevada Terawatt Facility*", JLF/NIF User's Meeting, LLNL, Livermore, Feb 9-11, 2015. **Poster.**
5. M.S Wallace, S.Haque, A.L. Kastengren, P. Neill, N.R. Pereira, and R. Presura , "Polarized Spectra from Aluminum Wire Array Z-pinch", SSAP Symposium, Santa Fe, NM, March 11-12, 2015, **Poster.**
6. M.S Wallace, S.Haque, P. Neill, A.L. Kastengren, N.R. Pereira, and R. Presura , "Single crystal X-ray Spectropolarimetry of Z-pinch Plasmas", The third RHEDP international workshop, South Lake Tahoe, NV, June 9-12, 2015. **Poster.**
7. M.S Wallace, S.Haque, A.L. Kastengren, P. Neill, N.R. Pereira, and R. Presura , "Single crystal X-ray Spectropolarimeter for HED Plasmas", 57th Annual Meeting of the APS Division of Plasma Physics, Savannah, GA, November 16-20, 2015. **Poster.**

2015 Dissertation

1. Kevin Yates, "Plasma Formation and Evolution on Cu, Al, Ti, and Ni Surfaces Driven by a Mega-Ampere Current Pulse," Ph.D. Dissertation, UNR, December 2015. Ph.D. Dissertation.

2014 Journal Publications

1. E.M. Hernandez, A.M. Juarez, A.L.D. Kilcoyne, A. Aguilar, L. Hernandez, A. Antillon, D. Malcaluso, A. Morales-Mori, O. Gonzalez-Magana, D. Hanstorp, A.M. Covington, V. Davis, D. Calabrese and G. Hinojosa, "*Absolute measurements of Chlorine cation single photoionization cross section*", J. Quant. Spect. & Rad. Trans., 151 (Online Oct. 18, 2014).
2. V. V. Ivanov, A. A. Anderson, D. Papp, B. R. Talbot, J. P. Chittenden, N. Niasse, I. A. Begishev, "*UV laser probing diagnostics for the dense Z pinch*", IEEE Trans. Plasma Sci., 42, No. 5, 1153 (2014).
3. V.V. Ivanov, R.C. Mancini, D. Papp, P. Hakel, T. Durmaz, R. Florido, "*Radiative Cooling of Two-Component Wire-Array Z-Pinch Plasma*", Physics of Plasmas, 21, 082704 (2014).
4. V.L. Kantsyrev, A.S. Chuvatin, A.S. Safronova, L.I. Rudakov, A.A. Esaulov, A.L. Velikovich, I. Shrestha, A. Astanovitsky, G.C. Osborne, V.V. Shlyaptseva, M.E. Weller, S. Keim, A. Stafford, M. Cooper, "*Radiation Sources with Planar Wire Arrays and Planar Foils for ICF and High Energy Density Physics Research*", Physics of Plasmas 21, 031204: 1-7 (2014).
5. V. L. Kantsyrev, A. S. Chuvatin, L. I. Rudakov, A. L. Velikovich, I. K. Shrestha, A. A. Esaulov, A. S. Safronova, V. V. Shlyaptseva, G. C. Osborne, A. L. Astanovitsky, M. E.

Weller, A. Stafford, K. A. Schultz, M. C. Cooper, M. E. Cuneo, B. Jones, R. A. Vesey,” *Compact hohlraum configuration with parallel planar-wire-array x-ray sources at the 1.7-MA Zebra generator*”, Physical Review E 90, 063101:1-5 (2014).

6. A.J. Kemp, F. Fiuza, A. Debayle, T. Johzaki, W.B. Mori, P.K. Patel, Y. Sentoku and L.O. Silva, “*Laser–plasma interactions for fast ignition*”, Nuclear Fusion 54, 054002 (2014)
7. P. Leblanc, Y. Sentoku, “*Scaling of resistive guiding of laser-driven fast-electron currents in solid targets*”, Phys. Rev. E 89, 023109 (2014).
8. Y. Sentoku, I. Paraschiv, R. Royle, R.C. Mancini, T. Johzaki, “*Kinetic effects and nonlinear heating in intense x-ray-laser-produced carbon plasmas*”, Phys. Rev. E 90, 051102(R) (2014).
9. D. Mariscal, C. McGuffey, J. Valenzuela, F.N. Beg, M.S. Wei, J.P. Chittenden, N. Niasse, R. Presura, S. Haque, M. Wallace, A. Arias, H. Sawada P. Wiewior and A.M. Covington, “*Measurement of Pulse-Power-Driven Magnetic Fields via Proton Deflectometry*”, Appl. Phys. Lett. 105, 224103 (2 Dec 2014).
10. N.D. Quart, J.L. Giuliani, A. Dasgupta, A.S. Safronova, V.L. Kantsyrev, A.A. Esaulov, I. Shrestha, M.E. Weller, V. Shlyaptseva, G.C. Osborne, A. Stafford, S. Keim, J.P. Apruzese, R.W. Clark, “*Inner-shell radiation from wire array implosions on the Zebra generator*”, Physics of Plasmas 21, 031207: 1-8 (2014).
11. N.R. Pereira, R. Presura, M. Wallace, A. Kastengren, “*X-ray polarization splitting by a single crystal evaluated with synchrotron x-rays*”, Rev. of Sci. Instrum., 85, 073502 (2014).
12. A.S. Safronova, V.L. Kantsyrev, A.A. Esaulov, A.S. Chuvatin, M.E. Weller, V.V. Shlyaptseva, I. Shrestha, S.F. Keim, A. Stafford, C.A. Coverdale, J.P. Apruzese, N.D. Quart, J.L. Giuliani, A.S. Chuvatin, “*Radiation from mixed Multi-Planar Wire Arrays*”, Physics of Plasmas 21, 031205: 1-7 (2014).
13. A. S. Safronova, V. L. Kantsyrev, A. A. Esaulov, U. I. Safronova, V. V. Shlyaptseva, I. Shrestha, G. C. Osborne, M. E. Weller, A. Stafford and M. Lorange, “*Radiative signatures of Z-pinch plasmas at UNR: from X-pinch to wire arrays*”, International Journal of Modern Physics: Conference Series 32, 1460316: 1-10 (2014).
14. H. Sawada, M.S. Wei, S. Chawla, A. Morace, K. Akli, T. Yabuuchi, N. Nakanii, M.H. Key, P.K. Patel, A.J. Mackinnon, H.S. McLean, R.B. Stephens, F.N. Beg, “*Investigation of fast electron –induced $K\alpha$ x-rays in laser-produced blow-off plasma*”, Phys. Rev. E, 89, 033105 (2014).
15. H. Sawada, S. Fujioka and T. Hosoda, “*High density plasma measurements using high-power, laser-produced monochromatic x rays*”, Journal of Plasma and Fusion Research, 90, 672 (2014).

16. V. V. Shlyaptseva, V. L. Kantsyrev, A. S. Safronova, A. A. Esaulov, I. Shrestha, M. E. Weller, G. C. Osborne, S. F. Keim, “*Gold planar wire array radiation sources at university scale generators and their applications*”, International Journal of Modern Physics: Conference Series **32**, 1460324: 1-9 (2014).
17. A. Stafford, A.S. Safronova, U.I. Safronova, V.L. Kantsyrev, A. Y. Faenov, P. Wiewior, M. E. Weller, I. Shrestha, V. V. Shlyaptseva, Y. Paudel, “*Analysis of Mg spectral features produced by irradiations of laser pulses with different contrast and pulse durations*”, J. Phys. B: At. Mol. Opt. Phys. 47, 065001: 1-10 (2014). W. Theobald, A. Solodov, C. Stoeckl, K.S. Anderson, F.N. Beg, R. Epstein, G. Fiksel, E.M. Giraldez, V.Y. Glebov, H. Habara, S. Ivancic, L.C. Jarrott, F.J. Marshall, G. McKiernan, H.S. McLean, C. Mileham, P.M. Nilson, P.K. Patel, F. Pérez, T.C. Sangster, J.J. Santos, H. Sawada, A. Shvydky, R.B. Stephens, and M.S. Wei, “*Time-resolved compression of a capsule with a cone to high density for fast-ignition laser fusion*”, Nat. Commun. 5, 5785 (2014).
18. M.E. Weller, A.S. Safronova, V.L. Kantsyrev, A.A. Esaulov, I. Shrestha, J.P. Apruzese, A.S. Chuvatin, A. Stafford, S.F. Keim, V.V. Shlyaptseva, G.C. Osborne, E.E. Petkov, “*Radiation from Ag High Energy Density Z-pinch Plasmas with Applications to Lasing*”, Physics of Plasmas, 21, 031206:1-9 (2014).

2014 Conference Presentations

Papers

1. T.W. Darling, V. Davis, V. Ivanov, P. Neill, R. Presura, H. Sawada, Y. Sentoku and P. Wiewior, “*An Overview of NTF R&D Activities*”, US DOE NNSA-SSAA Symposium, Washington DC, (Feb 2014). **Contributed paper.**
2. V. L. Kantsyrev, A. S. Chuvatin, L. I. Rudakov, A. L. Velikovich, I. K. Shrestha, A. A. Esaulov, A. S. Safronova, V. V. Shlyaptseva, G. C. Osborne, A. L. Astanovitskiy, M. E. Weller, A. Stafford, K. A. Schultz, M. C. Cooper, M.E. Cuneo, B. Jones, R. A. Vesey, “*New compact hohlraum configuration research at the 1.7 MA Z-pinch generator*”, AIP **Conference Proceedings** 1639, 102-107 (2014).
3. A.S. Safronova, V.L. Kantsyrev, M.E. Weller, V.V. Shlyaptseva, I.K. Shrestha, A.A. Esaulov, A. Stafford, A.S. Chuvatin, C.A. Coverdale, B. Jones, “*Larger sized wire arrays on 1.5 MA Z-pinch generator*”, AIP **Conference Proceedings** 1639, 122-125 (2014).

Oral Presentations

1. A. Anderson, V. V. Ivanov, A. L. Astanovitskiy, P. Wiewior, O. Chalyy, “*Study of the ablation stage structure of 1-Ma wire arrays with x-ray and UV diagnostics*”, Dense Z-pinch Conference, Napa, CA, August 4-7, 2014. **Oral Presentation.**
2. B.S. Bauer, K. C. Yates, S. Fuelling, V.V. Ivanov, I. R. Lindemuth, R. E. Siemon, A.A. Anderson, T. Hutchinson, J. Mei, T. J. Awe, “*Formation of Plasma from Thick Metal Pulsed with Multi-Megagauss Magnetic Field*”, Annual Meeting of the Far West Section of the APS, Reno, Nevada, October 23-25, 2014. **Oral Presentation.**

3. A.Covington, “*A Synopsis of Recent NTF R&D Activities*”, US DOE NNSA-SSAA Symposium, Washington, DC, February 19, 2014. **Oral Presentation.**
4. A.Covington, “*An Overview of Basic and Applied Research at the Nevada Terawatt Facility*”, Nevada Center for Entrepreneurship and Technology (NCET) Tech Wednesday at the NTF, Reno Nevada, April 9, 2014. **Oral Presentation.**
5. V. V. Ivanov, A. V. Maximov, A. A. Anderson, B. S. Bauer, K. Yates ,“Study of of strong magnetic fields using parametric instability in a magnetized plasma”, 56rd Annual Meeting of the APS Division of Plasma Physics, New Orleans, LA, October 27-31, 2014. <http://meetings.aps.org/Meeting/DPP14/Session/BO7.4>. **Oral Presentation.**
6. V. V. Ivanov, A. A. Anderson, B. S. Bauer, K. Yates, J. P. Chittenden, N. Niasse, A. V. Maximov, “Measuring mg magnetic fields in the dense z pinch”, Dense Z-pinches Conference, Napa, CA, August 4-7, 2014. **Oral Presentation.**
7. K. C. Yates, B. S. Bauer, V. V Ivanov, A. A. Anderson, S. Fuelling, J. Mei, R. S. Bauer, “Plasma formation and evolution on the surface of copper, titanium, and nickel surfaces driven by a mega-ampere current”, Dense Z-pinches Conference, Napa, CA, August 4-7, 2014. **Oral Presentation.**
8. K.C. Yates, B.S. Bauer, S. Fuelling, T.J. Awe, V.V. Ivanov, S.D. Altemara, D. Papp, A.A. Anderson, G.A. Wurden, R.E. Seimon, I.R. Lindemuth, and R.S. Bauer, “*Plasma Formation and Evolution on a Copper Surface Driven by a Mega-Ampere Current Pulse*”, presented (poster and talk) at DOE-NNSA Nevada Terawatt Facility Annual Review, Reno, Nevada, January 29, 2014. **Oral Presentation.**
9. K. C. Yates, B. S. Bauer, V. V Ivanov, A. A. Anderson, S. Fuelling, J. Mei, R. S. Bauer, “Plasma formation and evolution on the surface of copper, titanium, and nickel surfaces driven by a mega-ampere current”, Dense Z-pinches Conference, Napa, August 4-7, 2014. **Oral Presentation.**
10. K.C. Yates, B.S. Bauer, S. Fuelling, V.V Ivanov, A.A. Anderson, T.J. Awe, J. Mei, R.S. Bauer, T. Hutchinson, “*Plasma Formation And Evolution On The Surface of Aluminum, Copper, Titanium And Nickel Driven By A Mega-Ampere Current*”, Annual Meeting of the Far West Section of the APS, Reno, Nevada, October 24-25, 2014. **Oral Presentation.**

Poster Presentations

1. A.Anderson, V. V. Ivanov, “Study of 3D structure of the stagnated Z-Pinch”, 56rd Annual Meeting of the APS Division of Plasma Physics, New Orleans, LA, October 27-31, 2014. **Poster.**
2. A. Anderson, V. V. Ivanov, “Investigation of the 3D structure of the Z pinch using UV laser probing”, Annual Meeting of the Far West Section of the APS, October 23-25, 2014, Reno, Nevada. **Poster.**
3. B.D. Hammel, T.W. Darling, “*Investigation of shock damage from x-pinch wire loads*”, Annual Meeting of the Far West Section of the APS, October 23-25, 2014, Reno, NV. **Poster.**

4. S. Haque, M.S. Wallace, A. Arias, R. Presura, T. Morita, C. Plechaty, C. Huntington, D. Martinez, S.J. Ross, H.-S. Park, “*Magnetic Field Measurement in Magnetized laser Plasmas Using Zeeman Broadening Diagnostics*”, NIF/JLF User Group Meeting, Livermore, CA, Feb. 9-12, 2014. **Poster.**
5. S. Haque, A. Arias, M.S. Wallace, E. Wright, R. Presura, “*Magnetic Field Measurement in Magnetized laser Plasmas Using Zeeman Broadening Diagnostics*”, 2014 ICOPS/BEAMS Intl. Conference, Washington, DC, May 25-29, 2014. **Poster.**
6. J.J. Iratcabal, T.W. Darling, P.A. Neill, A.M. Covington, “*Multi-Parameter Characterization of Laser Ablation Plasmas*”, Annual Meeting of the Far West Section of the APS, October 23-25, 2014, Reno, NV. **Poster.**
7. J.J. Iratcabal, T.W. Darling, P.A. Neill and A.M. Covington, “*Multi-Parameter Characterization of Laser Ablation Plasmas*”, APS Far West Section Meeting, Reno, NV Oct 23-25, 2014. **Poster.**
8. Z. McCormick, O. Chalyy, T. Darling, B. Hammel, J. Iratcabal, E. McKee, P. Wiewior and A. M. Covington, “*Laser Produced Neutrons and Isotope Activation at the Nevada Terawatt Facility*”, APS Far West Section Meeting, Reno, NV Oct 23-25, 2014. **Poster.**
9. J. Mei, S. Fuelling, and B.S. Bauer, “*Developing Software Tools to Analyze Plasma Expansion*”, Annual Meeting of the Far West Section of the APS, Reno, Nevada, October 24-25, 2014. **Poster.**
10. J. Mei, S. Fuelling, and B.S. Bauer, “*Developing Software Tools to Analyze Plasma Expansion*”, University of Nevada College of Science Poster Competition, Reno, Nevada, December 1, 2014. **Poster.**
11. M.S. Wallace, N.R. Pereira, A.L. Kastengren, R. Presura, “*Characterization of an X-Ray Polarization Splitting Quartz Crystal*”, ICOPS/BEAMS Intl. Conference, Washington, DC, May 25-29, 2014. **Poster.**
12. M.S. Wallace, N.R. Pereira, A.L. Kastengren, R. Presura, D. Papp, S. Haque, “*Characterizing a Polarization Splitting Quartz Crystal*”, SSAP Symposium, North Bethesda, MD, Feb. 19-20, 2014. **Poster.**
13. K.C. Yates, B.S. Bauer, S. Fuelling, T.J. Awe, and W.G. Yelton, “*Plasma Formation on the Surface of Aluminum, Copper, Titanium and Nickel Driven by a Mega-Ampere Current*”, University of Nevada College of Science Poster Competition, Reno, Nevada, December 1, 2014. **Poster.**
14. K.C. Yates, B.S. Bauer, S. Fuelling, T.J. Awe, V.V. Ivanov, S.D. Altemara, D. Papp, A.A. Anderson, G.A. Wurden, R.E. Seimon, I.R. Lindemuth, and R.S. Bauer, “*Plasma Formation and Evolution on a Copper Surface Driven by a Mega-Ampere Current Pulse*”, DOE-NNSA Nevada Terawatt Facility Annual Review, Reno, Nevada, January 29, 2014. **Poster.**