

## **PUBLICATIONS (FY0910):**

T.J. Awe, B.S. Bauer, S. Fuelling, and R.E. Siemon, "Threshold for thermal ionization of an aluminum surface by pulsed megagauss magnetic field", *Phys. Rev. Lett.*, **Vol. 104**, 035001 (2010)

S.D. Baton, M. Koenig, J. Fuchs, L. Gremillet, C. Rousseaux, D. Batani, A. Morace, M. Nakatsutsumi, R. Kodama, T. Norimatsu, "Recent results at LULI on fast electron transport with and without guiding cone in the context of fast ignitor", *The European Physical Journal - Special Topics*, **Vol. 175**, No 1, 77-82 (2009)

R.K. Bista, R.F. Bruch and A.M. Covington, "Vibrational Spectroscopic Studies of Newly Developed Synthetic Biopolymers", *Review for Biopolymers*, **Vol. 93**, No. 5 pp. 403-417 (May 2010)

R.K. Bista, R.F. Bruch and A.M. Covington, "Spectroscopic Characterization of Bionanoparticles Originating from Self-forming Synthetic PEGylated Lipids (QuSomes)", Invited paper for the *Journal of Analytical and Bioanalytical Chemistry*, **Vol. 396**, No 3, pp. 1045-1055 (Feb. 2010)

R.K. Bista, R.F. Bruch and A.M. Covington, "Spectroscopic characterization of nanovesicles originating from self-forming synthetic PEGylated lipids", *ICAVS-5 Special Edition of Vibrational Spectroscopy*, (Dec 2009)

M. Borghesi, T. Toncian, J. Fuchs, C.A. Cecchetti, L. Romagnani, S. Kar, K. Quinn, B. Ramakrishna, P.A. Wilson, P. Antici, "Laser-driven proton acceleration and applications: Recent results", *The European Physical Journal - Special Topics*, **Vol. 175**, No. 1, 105-110 (2009)

A.S. Chuvatin, V.L. Kantsyrev, L.I. Rudakov, M.E. Cuneo, A.L. Astanovitskiy, R. Presura, A.S. Safronova, W. Cline, K.M. Williamson, I. Shrestha, G.C. Osborne, B. LeGalloudec, V. Nalajala, T.D. Pointon, K.A. Mikkelson, "Operation of a load current multiplier on a nanosecond mega-ampere pulse forming line generator", *Phys. Rev., S.T.: Accelerators and Beams*, **Vol. 13**, 010401, (2010)

E. d'Humieres, J. Rassuchine, S. Baton, J. Fuchs, P. Guillou, M. Koenig, L. Gremillet, C. Rousseaux, R. Kodama, M. Nakatsutsumi, "Importance of magnetic resistive fields in the heating of a micro-cone target irradiated by a high intensity laser", *The European Physical Journal - Special Topics*, **Vol. 175**, No. 1, 89-95 (2009)

E.D. Emmons, J.C. Fallas, V.K. Kamisetty, W.M. Chien, A.M. Covington, R.S. Chellappa, S.A. Gramsch, R.J. Hemley and D. Chandra, "High-Pressure Raman

Publications – Nevada Terawatt Facility, DOE Review 10-26-2010

Spectroscopy of Tris(hydroxymethyl)aminomethane", *Journal of Physical Chemistry B*, **Vol. 114**, 17 pp. 5649-5656 (May 2010)

A.A. Esaulov, V.L. Kantsyrev, A.S. Safronova, K.M. Williamson, I. Shrestha, G.C. Osborne, M.F. Yilmaz, N.D. Ouart, M.E. Weller, "WADM and radiation MHD simulations of compact multi-planar and cylindrical wire arrays at 1 MA currents", *High Ener. Dens. Phys.*, **Vol. 5**, 166-172 (2009)

J.C. Fallas, V.K. Kamisetty, W.M. Chien, D. Chandra, E.D. Emmons, A.M. Covington, R. Chellappa, S.A. Gramsch, R.J. Hemley, H. Hagemmann, "Raman Spectroscopy Measurements of the Pressure-Temperature Behavior of  $\text{LiAlH}_4$ ", *Journal of Physical Chemistry B*, **Vol. 114**, 11991-11997 (June 2010)

J.C. Fallas, D.Chandra, A.M. Covington, E. Emmons and J. Vega-Baudrit, "Investigaciones en Materiales Sometidos a Altas Presiones", *Boletin de Ciencia y Tecnologia*, N., **Vol. 78**, (Enero 2009)

S.F. Garanin, S.D. Kuznetsov, W.L. Atchison, R.E. Reinovsky, T.J. Awe, B.S. Bauer, S. Fuelling, I.R. Lindemuth, R.E. Siemon, "Numerical simulations of thick aluminum wire behavior under megaampere current drive", for publication by *IEEE Trans. Plasma Sci.*, **Vol. 99**, (2010)

V.V. Ivanov, S. D. Altemara, A. L. Astanovitskiy, G. S. Sarkisov, A. Haboub, D. Papp, J. M. Kindel, "Development of UV Laser Probing Diagnostics for 1-MA Z-pinches", *IEEE Trans. Plasma Sci.*, **Vol. 38**, No.4, 574, April (2010)

V. V. Ivanov, A. L. Astanovitskiy, D. Papp, J. P. Chittenden, S. N. Bland, B. Jones, S.D. Altemara, "Study of transparent and non-transparent regimes of implosion in star wire arrays", *Phys. Plasmas*, **Vol. 17**, 102702, (2010)

B. Jones, D.J. Ampleford, R.A. Vesey, M.E. Cuneo, C.A. Coverdale, E.M. Waisman, M.C. Jones, W.E. Fowler, W.A. Stygar, J.D. Serrano, M.P. Vigil, A.A. Esaulov, V.L. Kantsyrev, A.S. Safronova, K.M. Williamson, A.S. Chuvatin, L.I. Rudakov, "Planar wire-array Z-pinch implosion dynamics and x-ray scaling at multiple-MA drive currents for a compact multisource hohlraum configuration", *Phys. Rev. Lett.*, **Vol. 104**, 125001-1-4, (2010)

V.L. Kantsyrev, "Pinch plasma sources", *Handbook of Optics, Third Edition*, **Vol. 5**, Chapter 57. Optics in the Atmosphere, Modulators, Fiber optics, X-ray and Neutron Optics", pp. 57.1-57.5 (McGraw-Hill, 2009)

V.L. Kantsyrev, A.S. Safronova, A.A. Esaulov, K.M. Williamson, I. Shrestha, F. Yilmaz, G.C. Osborne, M.E. Weller, M.F. Yilmaz, N.D. Ouart, V.V. Shlyaptseva, A.L.

Velikovich, L.I. Rudakov, "X-ray pulse shaping in experiments with planar wire arrays at the 1.6 MA Zebra generator", J. Phys.: Conf. Series, **244**, 032030 (2010)

D. Kiefer, A Henig, D. Jung, D.C. Gautier, K.A. Flippo, S.A. Gaillard, S. Letzring, R.P. Johnson, R.C. Shah, T. Shimada, "First observation of quasi-monoenergetic electron bunches driven out of ultra-thin diamond-like carbon (DLC) foils", The European Physical Journal D - Atomic, Molecular, Optical and Plasma Physics, **Vol. 55**, No. 2, 427-43 (2009)

T. Kluge, W. Enghardt, S. D. Kraft, U. Schramm, Y. Sentoku, K. Zeil, T. E. Cowan, R. Sauerbrey, and M. Bussmann, "Efficient laser-ion acceleration from closely stacked ultrathin foils", Phys. Rev., **Vol. 82**, 016405 (2010)

D. Martinez, R. Presura, S. Stein, C. Plechaty, S. Neff, "Reduction of Instabilities in Wire Array Z-pinches", High Energy Density Physics, **Vol. 6**, 237-241 (2010)

R. Mishra, Y. Sentoku, and A.J. Kemp, "Hot electron generation forming a steep interface in super intense laser-matter interaction", Phys. Plasmas, **Vol. 16**, 1 (2009)

A. Müller, S. Schippers, R. A. Phaneuf, S. W. J Scully, A. Aguilar, A. M. Covington, I. Álvarez, C. Cisneros, E. D. Emmons, M. F. Gharaibeh, G. Hinojosa, A. S. Schlachter and B. M. McLaughlin, "K-shell photoionization of ground-state Li-like carbon ions [C<sup>3+</sup>]: experiment, theory and comparison with time-reversed photorecombination", J. Phys. B. (Nov. 2009) online

S. Neff, D. Martinez, C. Plechaty, S. Stein, R. Presura, "Magnetic acceleration of aluminum foils for shock wave experiments", High Energy Density Physics, **Vol. 6**, No.2, 242 (June 2010)

N.D. Quart, A.S. Safronova, V.L. Kantsyrev, A.A. Esaulov, K.M. Williamson, I. Shrestha, G.C. Osborne, M.E. Weller, "Studies of radiative and implosion characteristics from brass planar wire arrays", IEEE Trans. Plasma Sci., **Vol. 34**, No. 4, 631-638 (2010)

I. Paraschiv, B.S. Bauer, I.R. Lindemuth, and V. Makhin, "Linear and nonlinear development of the  $m = 0$  instability in a diffuse Bennett z-pinch equilibrium with sheared axial flow", Phys. Plasmas, **Vol. 17**, 072107-1-10 (2010)

F. Perez, L. Gremille, M.Koenig, S.D. Baton, P. Audebert, M. Chahid, C. Rousseaux, M. Drouin, E. Lefebvre, T. Vinci, J. Rassuchine, S.A. Gaillard, K.A. Flippo, R. Shepherd, "Enhanced isochoric heating from fast electrons produced by high-contrast, relativistic-intensity laser pulses", Phys Rev. Lett., **104(8)**, 085001, February 26, 2010

C. Plechaty, R. Presura, S. Stein, D. Martinez, S. Neff, V. V. Ivanov, Y. Stepanenko, "Penetration of a Laser-Produced Plasma Across an Applied Magnetic Field", High Energy Density Physics, **Vol. 6**, No.2, 258 (June 2010)

Publications – Nevada Terawatt Facility, DOE Review 10-26-2010

- R. Presura, D. Martinez, S. Wright, C. Plechaty, S. Neff, "Radiation from wire arrays imploding on an axial target", High Energy Density Physics **Vol. 6**, No.2, 262 (June 2010)
- A.S. Safronova, V.L. Kantsyrev, A.A. Esaulov, N.D. Ouart, V.V. Shlyaptseva, K.M. Williamson, I. Shrestha, G.C. Osborne, M.E. Weller, "Analysis of X-ray iron and nickel radiation and jets from planar wire arrays and X-pinchs", J. Phys.: Conf. Series, **244**, 032030 (2010)
- A.S. Safronova, N.D. Ouart, J.K. Lepson, P. Beiersdorfer, B. Stratton, M. Bitter, V. L. Kantsyrev, V. Shlyaptseva, P.G. Cox, K.M. Williamson, "X-ray spectroscopy of Cu impurities on NSTX and comparison with Z-pinch plasmas", Rev. Sci. Instr., **81** (2010)
- Y. Sentoku and M. Downer, "Heat transport in solid target following relativistic laser-matter interaction", High Energy Density Physics, **Vol. 6**, 268 (2010)
- I. Shrestha, V.L. Kantsyrev, A.S. Safronova, A.A. Esaulov, K.M. Williamson, N.D. Ouart, G.C. Osborne, M.E. Weller, M.F. Yilmaz, "Investigation of characteristics of hard x-rays produced during implosions of wire array loads on 1.6 MA Zebra generator", High Ener. Dens. Phys., **Vol. 6**, 113-120 (2010)
- I. Shrestha, V.L. Kantsyrev, A.S. Safronova, A.A. Esaulov, K.M. Williamson, N.D. Ouart, G.C. Osborne, M.E. Weller, M.F. Yilmaz, "Study of electrons beams in wire arrays at 1 MA Z-pinch generator", IEEE Trans. Plasma Sci., **Vol. 34**, No. 4, 658-666 (2010)
- R. B. Stephens, K.U. Akli, T. Bartal, F.N. Beg, S. Chawla, C.D. Chen, H. Chen, S. Chen, B. Chrisman, R.R. Freeman, D. Hey, M. Key, A. Kemp, J. King, K. Lancaster, S. Lepape, A. Link, T. Ma, A. MacKinnon, A. Macphee, P. Norreys, D. Offerman, V. Ovchinnikov, J. Pasley, P. Patel, D. Schumacher, Y. Sentoku, Y. Tsui, S. Wilks, L.V. Woerkom, M. Wei, T. Yabuuchi, "Energy Injections for Fast Ignition", Plasma and Fusion Research, **Vol. 4**, issue 0, pp. 016 (2009)
- P.P. Wiewior, V.V. Ivanov, A. Chalyy, "Development of the 50 TW laser for join experiments with 1 MA z-pinchs", J.Phys.: Conf. Series, **Vol. 244**, P. 032013 (2010)
- K. M. Williamson, V. L. Kantsyrev, A.A. Esaulov, A. S. Safronova, P. Cox, W. Cline, I. Shrestha, G.C. Osborne, M.E. Weller, N.D. Ouart, V.V. Shlyaptseva, "Implosion dynamics in double planar wire array Z pinchs", Phys. Plasmas, **Vol. 17**, (2010)