

Leslie Welser

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EDUCATION

- University of Nevada, Reno
 - Ph.D. Physics, 5/2006, GPA 3.51.
 - M.S. Physics, 5/2003, GPA 3.46.
 - B.S. Physics, Expanded Field of Concentration, 5/2000, GPA 3.36.
- Feather River Community College, Quincy, CA
 - A.S. Physical Science, A.A. Liberal Studies, Highest Honors, 5/1997, GPA 3.90.

EXPERIENCE

- Postdoctoral researcher, Los Alamos National Laboratory, 8/2006-present.
- Graduate research assistant, University of Nevada, Reno Physics Department, 6/2000-8/2006.
 - Dissertation topic: *Spectroscopic determination of temperature and density spatial profiles and mix in inertial confinement fusion implosion cores.*
 - Professor Roberto Mancini, dissertation advisor.
- Graduate research assistant, Los Alamos National Lab, 2/2005-5/2005.
 - Implemented a passive mix model to post-process hydrodynamic simulations in order to estimate the level of mixing in a set of ICF experiments.
 - Dr. Don Haynes, LANL X-2, lab mentor.
- Graduate research assistant, Los Alamos National Lab, 2/2005-5/2005.
 - Built OVID, a graphical user interface program designed to interactively visualize the data output from opacity codes.
 - Dr. Dave Kilcrease, LANL T-4, lab mentor.
- Adjunct faculty instructor, Lake Tahoe Community College, 9/2004-12/2004.
 - Instructed the Introduction to Astronomy class.
- Inertial Confinement Fusion Internship, Lawrence Livermore National Laboratory, 5/2004–7/2004.
 - Modeled a set of ICF experiments in 1-D and 2-D with a hydrodynamics code.
 - Dr. Jeff Koch and Dr. Steve Haan, lab mentors.
- Teaching assistant, University of Nevada, Reno Physics Department, 8/1999-12/2000.
 - Taught undergraduate physics labs.

PROFESSIONAL SCHOOLS

- First International Conference on Advanced Computing and Simulation: The Physics and Computation of Rayleigh-Taylor and Richtmyer-Meshkov Instabilities, University of Cambridge, 7/2005.
- Lake Tahoe School of Plasma Physics, University of Nevada, Reno, 3/2004.
- High Energy Density Physics Summer School, University of California, Santa Cruz, 8/2002.
- Intermediate and Advanced IDL Training Courses, Research Systems IDL Headquarters, Boulder, CO, 7/2003 and 12/2004.

COMPUTER SKILLS

- Advanced graphical user interface programming in IDL
- Familiarity with radiation hydrodynamics codes HELIOS and HYDRA
- Fortran 90/77
- LaTeX
- Windows, UNIX operating systems

PROFESSIONAL MEMBERSHIPS

- Member, American Physical Society
- Member, Sigma Pi Sigma Physics Honor Society
- Member, Society of Physics Students

SCIENTIFIC PRESENTATIONS

- *Inference of Mix from Experimental Data and Theoretical Mix Models*
 - Invited talk, Atomic Processes in Plasmas Conference (APiP), 3/2006.
- *Spectroscopic Determination of Temperature and Density Spatial Profiles and Mix in ICF Implosion Cores*
 - Invited talk, Radiative Properties of Hot Dense Matter (RPHDM), 9/2006.
- *Spectroscopic Analysis of Temperature and Density Spatial Profiles and the Effect of Mix in OMEGA Implosion Cores*
 - Contributed talk, Division of Plasma Physics Conference (DPP), 10/2005.
- *Application of a Passive Mix Model to ICF Implosion Cores*
 - Poster presentation, International Conference on Plasma Science (ICOPS), 6/2005.
- *Quantitative Inference of Temperature and Density Gradients and Mix in ICF-relevant Implosions*
 - Oral presentation, Los Alamos X-Division New Hire Introduction Series, 5/2005.
- *Visualization Tools for Opacity Analysis*
 - Invited talk, Los Alamos Opacity Verification and Validation Workshop, 5/2005.
- *Multi-Objective Spectroscopic Analysis of Gradient Conditions in ICF Implosion Cores*
 - Contributed talk, Radiative Properties of Hot Dense Matter (RPHDM), 11/2004.
- *Three-objective spectroscopic analysis of the spatial structure of ICF implosion cores at OMEGA*
 - Poster presentation, Atomic Processes in Plasmas Conference (APiP), 4/2004.
- *Time-resolved multi-monochromatic x-ray images from indirect drive OMEGA implosion cores*
 - Contributed talk, Division of Plasma Physics Conference (DPP), 10/2003.
- *Spectroscopic determination of plasma core gradients in indirect-drive ICF implosion experiments*
 - Poster presentation, Inertial Fusion Sciences and Applications Conference (IFSA), 9/2003.
- *Spectroscopic determination of gradients in indirect-drive OMEGA implosion cores*
 - Poster presentation, International Conference on Spectral Line Shapes (ICSLS), 7/2002.
- *Spectroscopic determination of core gradients in indirect drive implosions at OMEGA*
 - Poster presentation, Atomic Processes in Plasmas Conference (APiP), 4/2002.
- *Self-consistent analysis of X-ray spectra and monochromatic images in imploded cores at OMEGA*
 - Poster presentation, Division of Plasma Physics Conference (DPP), 10/2001.

AWARDS AND SCHOLARSHIPS

- University and Community College System of Nevada Board of Regents Scholar, 3/2006.
- University of Nevada, Reno College of Science Poster Contest, 2nd place, 5/2004.
- Atomic Processes in Plasmas Poster Contest, 2nd place, 4/2004.
- Atomic Processes in Plasmas Poster Contest, 2nd place, 4/2002.
- University of Nevada, Reno Senior of the Year Award, 5/2000.
- University of Nevada, Reno Undergraduate Research Grant for Astronomy Education, 10/1999.
- Leifson Physics Scholarship, University of Nevada, Reno, 8/1999.
- Vernon Frazier Physics Scholarship, University of Nevada, Reno, 8/1997.
- 1997 All-USA Academic First Team Scholarship from USA Today, 4/1997.
- 1997 All-California Academic First Team Scholarship from USA Today, 4/1997.
- 1997 Guistwhite Finalist Scholarship from Phi Theta Kappa Honor Society, 4/1997.

COMMUNITY SERVICE ACTIVITIES AND ORGANIZATIONS

- Creator and director of the *StarTeach Astronomy Education Program*, an internet-based astronomy education site for K-12 students, *www.starteachastronomy.com*, 8/1999-present.
- Group leader for local physics and astronomy outreach projects to K-12 schools (Science and Technology Day, Engineer Day, Science Olympiad, local and regional science fair judging), 7/1998-present.
- Society of Physics Students officer, treasurer (3 years), vice-president (3 years), 8/1998-12/2004.

REFERENCES

- Dr. Roberto Mancini, Professor of Physics, University of Nevada, Reno, 775-784-6595.
- Dr. Dave Bennum, Professor of Physics, University of Nevada, Reno, 775-784-6128.
- Dr. Ron Phaneuf, Professor of Physics, University of Nevada, Reno, 775-784-6818.
- Dr. Katherine McCall, Physics Department Chair, University of Nevada, Reno, 775-784-6792.

PEER-REVIEWED PUBLICATIONS

- L.A. Welser, R.C. Mancini, J.A. Koch, N. Izumi, S.J. Louis, I.E. Golovkin, T.W. Barbee Jr., S.W. Haan, J.A. Delettrez, F.J. Marshall, S.P. Regan, V.A. Smalyuk, D.A. Haynes Jr., R.W. Lee. *Multi-objective spectroscopic analysis of core gradients: Extension from two to three objectives*. *Journal of Quantitative Spectroscopy and Radiative Transfer* 99, p. 649-657, 2006.
- J.J. MacFarlane, I.E. Golovkin, R.C. Mancini, L.A. Welser, J.E. Bailey, J.A. Koch, T.A. Mehlhorn, G.A. Rochau, P. Wang, P. Woodruff. *Dopant radiative cooling effects in indirect-drive Ar-doped capsule implosion experiments*. *Physical Review E* 72, 066403, 2005.
- J.A. Koch, T.W. Barbee, Jr., N. Izumi, R. Tommasini, R.C. Mancini, L.A. Welser, F.J. Marshall. *Multispectral x-ray imaging with a pinhole array and a flat Bragg mirror*. *Review of Scientific Instruments* 76, 073708, 2005.
- L.A. Welser, R.C. Mancini, J.A. Koch, N. Izumi, S. Dalhed, H. Scott, T.W. Barbee Jr., R.W. Lee, I.E. Golovkin, F.J. Marshall, J.A. Delettrez, L. Klein. *Analysis of the spatial structure of inertial confinement fusion implosion cores at OMEGA*. *Journal of Quantitative Spectroscopy and Radiative Transfer* 81, p. 487-497, 2003.
- L.A. Welser, R.C. Mancini, J.A. Koch, S. Dalhed, R.W. Lee, I.E. Golovkin, F.J. Marshall, J.A. Delettrez, L. Klein. *Processing of multi-monochromatic x-ray images from indirect drive implosions at OMEGA*. *Review of Scientific Instruments* 74, 1951, 2003.