

CONTACT
INFORMATION

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EDUCATION

University of California, Los Angeles, USA

Ph.D. in Progress, Physics (2004-present)
• Expected completion **June 2010**
M.S., Physics, 2005

University of Rochester, Rochester, New York USA

B.S., *magna cum laude* Physics, 2004

HONORS AND
AWARDS

U.S. DOE/ORISE Fusion Energy Sciences Fellowship, 2005-2008
Phi Beta Kappa, 2004
Rush Rhees Merit Scholarship, Univ. Rochester, 2000-2004

RESEARCH

University of California, Los Angeles

Advisor: Walter Gekelman

*Graduate Student Researcher***July 2004 - Present**

Ph.D research on the dynamics of expanding laser-produced plasmas, emphasizing turbulence, wave activity at the plasma boundary and interaction with a background magnetized plasma. Extensive practical experience in plasma-physics oriented laboratory research, including lasers, vacuum technology and diagnostic techniques.

Lawrence Livermore National Laboratory, Livermore, CA

Sponsors: Dustin Froula, Siegfried Glenzer

*FES Fellowship Practicum***March-June, 2007**

Performed characterization on a new gas-jet design for laser-wakefield acceleration, at the LLNL Jupiter laser facility. Designed an optical interferometer to measure neutral gas density versus time, as a function of axial location in a gas-filled tube. Experiments based on this design are ongoing.

University of California, Los Angeles

Sponsor: Professor Walter Gekelman

*Research Experience for Undergraduates***June-August, 2003**

Developed and constructed an optical probe to perform correlation measurements in the Large Plasma Device at UCLA, over the 10 week REU period. Designed probe hardware and a sixteen-port vacuum feedthrough for optical fibers, along with a photodiode array to read out signals.

PUBLICATIONS

A. Collette and W. Gekelman *Two-dimensional micron-step probe drive for laboratory plasma measurement*. Review of Scientific Instruments 79, 083505, 2008

S. Vincena, W. Gekelman, M.A. Van Zeeland, J. Maggs, A. Collette *Quasielectrostatic whistler wave radiation from the hot electron emission of a laser-produced plasma*. Phys. Plasmas 15 072114, 2008

W. Gekelman, S. Vincena, and A. Collette *Visualizing three-dimensional reconnection in a colliding laser plasma experiment*. IEEE Trans. Plasma Sci. 36 (4) 2008

N. L. Kugland et al. *High $K\text{-}\alpha$ x-ray conversion efficiency from extended source gas jet targets irradiated by ultra short laser pulses* Appl. Phys. Lett. 92, 241504 (2008)

W. Gekelman, A. Collette, S. Vincena. *Three Dimensional Current Systems Generated by Plasmas Colliding in a Background Magnetoplasma*. Physics of Plasmas 14, 062109, 2007

CONFERENCES

A. Collette and W. Gekelman *Waves and Fine Structure in Expanding Laser-Produced Plasmas. Turbulent Mixing and Beyond: Second International Conference and Advanced School*. July 27, 2009

A. Collette et al. *Colliding Laser-Produced Plasmas on LAPD*. APS Division of Plasma Physics Conference, Dallas, Texas, USA. November 17 - November 21, 2008

A. Collette et al. *Colliding Laser-Produced Plasmas on LAPD*. APS Division of Plasma Physics Conference, Orlando, Florida, USA. November 12 - November 16, 2007

A. Collette et al. *Colliding Laser-Produced Plasmas on LAPD*. 9th International Workshop on the Interrelationship between Plasma Experiments in Laboratory and Space. Cairns, Australia. August 5 - August 10, 2007

A. Collette et al. *Current Systems Generated by Colliding Laser-Produced Plasmas*. APS Division of Plasma Physics Conference, Philadelphia, Pennsylvania, USA. October 30 - November 3, 2006.

W. Gekelman and A. Collette *Magnetic Turbulence in Colliding Laser-Produced Plasmas*. APS Division of Plasma Physics Conference, Philadelphia, Pennsylvania, USA. October 30 - November 3, 2006.

A. Collette et al. *Laser-Produced Colliding Plasmas on LAPD*. APS Division of Plasma Physics Conference, Denver, Colorado, USA. October 24 - October 28, 2005

LAB EXPERIENCE

Laboratory & Experiment Skills

- Operated and maintained laboratory high-vacuum systems, including practical experience designing vacuum control and interlock systems
- Constructed vacuum-compatible diagnostic probes to measure magnetic field fluctuations
- Designed from scratch a micro-probe-drive system using vacuum-compatible ceramic motors, capable of accurately positioning a magnetic field probe down to 100 microns.
- Operated and repaired commercial Nd:YAG (2J, 8ns) laser systems, including rod replacement and realignment
- Designed a laser timing system, essential to my thesis, whereby two separate laser systems are synchronized to each other and to external data acquisition systems to within 2ns.
- Designed and constructed an optical system to deliver laser light to a target inside a vacuum system
- Operated a fast (3ns) intensified CCD imager, including writing LabView code to automatically acquire and process images at 1Hz over tens of hours

Software & Data Analysis

- Extensive experience with IDL, Python, C and LabView for data analysis and experiment control
- Author of a Python data-storage interface now used at multiple scientific institutions (<http://h5py.alfven.org>)
- Familiarity with the OpenDX 3D visualization environment
- Use of the Linux operating system