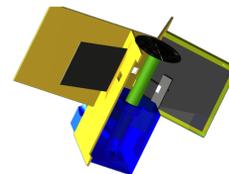


SALLEE R. KLEIN



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INTRODUCTION

I am head of target fabrication at the University of Michigan with the Center for Laser Experimental Astrophysical Research (CLEAR) group. I manage the entire life cycle of all campaigns, working very closely with faculty physicists, graduate students and managing numerous undergrads to achieve the highest level of success in high-energy-density physics (HEDP) campaigns routinely shot on high powered laser facilities around the United States.

EDUCATION

B.S., *Physics*
University of California, San Diego

PROFESSIONAL EXPERIENCE

Center for Laser Experimental Astrophysical Research (CLEAR)

Engineer in Research (November 2010 - Present)

- managing all HEDP target campaigns for CLEAR group
 - interface closely with physicist and graduate students to design repeatable targets, within the time and scope of individual campaigns
 - create 3D CAD models of target design
 - provide drawings to machinist, General Atomics (GA), laser machinist and specialty component vendors
 - material sourcing, including working with other facilities and vendors to obtain rare or custom components
 - primary intermediary with other target fabrication facilities, such as GA, Los Alamos and Livermore National Laboratoris to acquire specialized components per experimental requirements
 - interface closely with machinist to fabricate target components
 - precise assembly of targets by hand and with automation
 - generates detail documentation on build cycle, including components used with specifics on characterization results and timeline of build and subsequent metrology

- Shotday support at laser facility
 - transporting targets to laser facility along with any equipment needed on hand for possible repairs or shot day added components
 - target delivery on shot day
 - gas-fill with our portable fill system, including complying with all facility compressed gas safety regulations
 - any repairs or modifications to targets on demand through shot day under tight time constraints between shots cycles as short as 45 minutes
 - provide proper filtration for diagnostics, Ross Pairs and the stack configuration for the Static Pinhole Camera Array (SPCA)
 - communicate with laser facility personal disseminating pertinent information for modifications of experimental configurations

- on-site support of imaging X-ray Thomson scattering (iXTS) diagnostic at Laboratory for Laser Energetics (LLE), designed jointly by LANL and University of Michigan
 - perform pre-shot procedures on diagnostic
 - stack blast shield configuration
 - shot day modifications to blast shield configuration

- headed iXTS redesign project to allow for an option to use image plates (IP) instead of the current CCD camera configuration
 - all CAD modeling, drawings and coordination with our facility machinist for the redesign of iXTS diagnostic to accommodate IPs
 - worked in conjunction with University of Michigan and LANL machinists to modify existing iXTS hardware and to create additional hardware accommodating IPs
 - iXTS IP modification configuration was successfully fielded on Trident
 - interfacing with LLE mechanical engineers and diagnostic staff to pass facility design reviews, successfully implementing a redesign that will be fielded on a joint shot day with target in Omega and backlighter beams coming from Omega-EP August 2015

- develop techniques to improve target quality, including repeatability
 - design fabrication methods within CLEAR budget constraints
 - upgraded staging equipment for automated target fabrication when needed and metrology
 - design acrylic structures that ensure accurate, repeatable targets
 - design and implementation of simple jigs to ease target builds, saving time during construction

- create presentation quality visual media to showcase our target fabrication abilities
 - compiles high quality photographs used as advertisement of sophistication in target design and build techniques
 - represents our group at conferences and meetings with other labs and groups within the HEDP community
 - manage several supporting laboratory projects carried out by undergraduates
 - 24 undergraduates work in one of two labs on seven projects
 - foam characterization
 - density characterization
 - thin film coater
 - film characterization
 - target fabrication x-ray source
 - target fabrication upgrade
 - crystal calibration
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PUBLICATIONS

First Author

“**Novel Target Fabrication Using 3D Printing Developed at University of Michigan**” *Institute of Physics IOP Conference Series*, *expected publication date*: March/April 2015

“**Construction of a solenoid used on a magnetized plasma experiment**” *Review of Scientific Instruments*, November 1, 2014, (Vol. 85, Issue 11, Pages 11E812)

“**Innovations in Target Fabrication Techniques at the University of Michigan**” *Fusion Science and Technology*, Mar./Apr. 2013, (Vol. 63)

Co-author

“**Measurements of the energy spectrum of electrons emanating from solid materials irradiated by a picosecond laser**” *Physics of Plasmas*, April 1, 2015, (Vol. 22, Issue 4, Pages 043113)

“**Richtmyer-Meshkov evolution under steady shock conditions in the high-energy-density regime**” *Applied Physics Letters*, March 16, 2015, (Vol. 106, Issue 11, Pages 114103)

“**Preliminary characterization of a laser-generated plasma sheet**” *High Energy Density Physics*, December 10, 2014

“**Investigation of the hard x-ray background in backlit pinhole imagers**” *Review of Scientific Instruments*, November 1, 2014, (Vol. 85, Issue 11, Pages 11E610)

“**Demonstration of x-ray fluorescence imaging of a high-energy-density plasma**” *Review of Scientific Instruments*, November 1, 2014, (Vol. 85, Issue 11, Pages 11E602)

“**Experimental results from magnetized-jet experiments executed at the Jupiter Laser Facility**” *High Energy Density Physics*, August 20, 2014

“**Observation and modeling of mixing-layer development in high-energy-density, blast-wave-driven shear flow**” *Physics of Plasmas*, May 1, 2014, (Vol. 21, Issue 5, Pages 056306)

“**An experimental concept to measure opacities under solar-relevant conditions**” *High Energy Density Physics*, June 2013

“**Early-time evolution of a radiative shock**” *High Energy Density Physics*, June 30, 2013, (Vol. 9, Issue 2, Pages 315-318)

“**Radiative reverse shock laser experiments relevant to accretion processes in cataclysmic variables**” *Physics Of Plasmas*, May 2013, (Vol. 20)

“**Reverse Radiative Shock Laser Experiments Relevant To Accreting Stream-Disk Impact In Interacting Binaries**” *The Astrophysical Journal*, January 2013, (Vol. 762, Number 1)

“**Late-time breakup of laser-driven hydrodynamics experiments**” *High Energy Density Physics*, December 31, 2012, (Vol. 8, Issue 4, Pages 360-365)

“**Memristive Adaptive Filters**” *Applied Physics Letters*, September 2010, (Vol. 97, Issue 9)

“**Parameter and State Estimation of Experimental Chaotic Systems Using Synchronization**” *Physical Review E*, July 2009, (Vol. 80, Issue 1)

CONFERENCES

56th Annual Meeting of the APS Division of Plasma Physics - Poster “Integrating 3D Printing into Target Fabrication at the University of Michigan” (November 2014)

5th Annual Target Fabrication Workshop - Poster “Novel Target Fabrication Using 3D Printing Developed at University of Michigan” (July 2014)

20th Topical Conference on High-Temperature Plasma Diagnostics - Poster “Construction of a solenoid used on a magnetized plasma experiment” (June 2014)

55th Annual Meeting of the APS Division of Plasma Physics - Presented Poster “3D Printing Utilized In Target Fabrication” (November 2013)

20th Target Fabrication Conference **Oral Presentation** “Innovations in Target Fabrication Techniques at the University of Michigan” (May 2013)

PROFICIENCIES

- AutoCAD Inventor
 - L^AT_EX documentation creation (including BEAMER)
 - Power Point
 - MATLAB, including read-in of Exel files, compiling to output in a L^AT_EX document complete with calculations
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VOLUNTEER

Young Physicist Program (YPP)

Lab Instructor

January 2010

- setting up and running a teaching lab for young students
- teaching circuit assembly and soldering

Tech Trek

Lab Instructor

Summer 2007, 2008, 2009

- setting up and running a teaching lab for young science minded female students
- teaching circuit assembly and soldering
- projects with liquid nitrogen

Reach For Tomorrow

Lab Instructor

Summer 2007, 2008, 2009

- setting up and running a teaching lab for young, underprivileged students
- teaching circuit assembly and soldering
- projects with liquid nitrogen