

Jordan Laune

1365 E. 56th St.
Apt. 3
Chicago, IL 60637
(812) 202-2198

EDUCATION

Bachelor of Arts, Physics,
University of Chicago, Chicago, IL.

Expected March 2019

Bachelor of Science with Honors, Mathematics,
University of Chicago, Chicago, IL.

Expected March 2019

EXPERIENCE

Undergraduate Researcher Jul 2016 – Present
Flash Center for Computational Science,
Department of Astrophysics and Astronomy, University of Chicago, Chicago, IL.

- Designed and executed 2-D FLASH hydrodynamical simulations of the experiments at LULI in Gregori et al. (2012).
- Utilized Argonne National Laboratory's Mira and Cetus high-performance computing platforms to perform 2-D laser plasma simulations.
- Implemented reconstruction algorithm of Bott et al. (2017) into a Python library for experimental and simulated plasma physics diagnostics.
- Collaborated to create Python library which reads in various simulation and experimental proton radiography diagnostic data for use with reconstruction tools.
- Tested diagnostic reconstruction algorithm on the Midway compute cluster at the University of Chicago.
- Refined and developed Python module for conversion and analysis of equation of state tabulated data into FLASH Code.
- Assisted with analysis and visualization of FLASH simulation data with VisIt on Argonne's Mira supercomputer.
- Deployed open source scientific software to the community through GitHub.
- Created comprehensive API documentation for scientific Python software.
- Created user-friendly command line tools for scientific computing.

Science Undergraduate Laboratory Internship Jun – Sep 2018
Nuclear, Particle, Astrophysics and Cosmology, Theoretical Division (T-2),
Los Alamos National Laboratory, Los Alamos, NM.

- Designed and executed two-fluid hydrodynamic simulations of protoplanetary disks of gas and dust with the Los Alamos Computational Astrophysics Simulation Suite (LA-COMPASS).
- Simulated millimeter-scale radio observations of protoplanetary disks using the radiative transfer code RADMC-3D.
- Utilized Los Alamos National Laboratory's high performance compute clusters for simulations and data analysis.
- Created Python analysis library built upon matplotlib and NumPy for use with the Los Alamos Computational Astrophysics Simulation Suite (LA-COMPASS).

University of Chicago Analysis Bootcamp Jul – Aug 2017
Department of Mathematics, University of Chicago, Chicago, IL.

- Participated in four advanced mathematics courses lead by undergraduate teaching assistants on dynamical systems, probability theory, complex analysis, and differential geometry.
- Prepared three lectures to give to peers in the program.

University of Chicago Mathematics REU Jun – Aug 2016

Department of Mathematics, University of Chicago, Chicago, IL.

- Participated in a five week course in graph theory and linear algebra.
- Authored expository paper on the applications of probability theory to large graphs (<https://math.uchicago.edu/may/REU2016/REUPapers/Laune.pdf>).

PUBLICATIONS

JT Laune, P. Tzeferacos, S. Feister, M. Fatenejad, R. Yurchack, N. Flocke, K. Weide, D. Q. Lamb. *Opacplot2: Enabling tabulated EoS and opacity compatibility for HEDLP simulations with the FLASH code* (abstract). 59th Annual Meeting of the APS Division of Plasma Physics (<http://meetings.aps.org/link/BAPS.2017.DPP.JP11.45>).

PRESENTATIONS

FLASH Simulations of Laser Experiments that Study Biermann Battery Generation of Magnetic Fields at LULI (poster). JT Laune, P. Tzeferacos. 2019 NIF & JLF User Group Meeting, Livermore, CA, 3-6 Feb 2019.

PROBLEM Solver: A nonlinear proton radiography reconstruction algorithm implemented in Python (poster). JT Laune, A. F. A. Bott, S. Feister, A. Bogale, N. Flocke, K. Weide, T.G. White, G. Gregori, A. A. Schekochihin, D. Q. Lamb, P. Tzeferacos. 2018 Omega Laser Facility Users Group Workshop, Rochester, NY, 24-27 Apr 2018.

PROBLEM Solver: A nonlinear proton radiography reconstruction algorithm implemented in Python (poster). JT Laune, A. F. A. Bott, S. Feister, A. Bogale, N. Flocke, K. Weide, T.G. White, G. Gregori, A. A. Schekochihin, D. Q. Lamb, P. Tzeferacos. 2018 NIF & JLF User Group Meeting, Livermore, CA, 4-7 Feb 2018.

Opacplot2: Enabling tabulated EoS and opacity compatibility for HEDLP simulations with the FLASH code (poster). JT Laune, P. Tzeferacos, S. Feister, M. Fatenejad, R. Yurchack, N. Flocke, K. Weide, D. Q. Lamb. 59th Annual Meeting of the APS Division of Plasma Physics, Milwaukee, WI, 23-27 Oct 2017.

Opacplot2: Enabling tabulated EoS and opacity compatibility for HEDLP simulations with the FLASH code (poster). JT Laune, P. Tzeferacos, S. Feister, M. Fatenejad, R. Yurchack, N. Flocke, K. Weide, D. Q. Lamb. 2017 Omega Laser Facility Users Group Workshop, Rochester, NY, 26-28 Apr 2017.

Opacplot2: Enabling tabulated EoS and opacity compatibility for HEDLP simulations with the FLASH code (poster). JT Laune, P. Tzeferacos, S. Feister, M. Fatenejad, R. Yurchack, N. Flocke, K. Weide, D. Q. Lamb. 2017 Stewardship Science Academic Programs Annual, Naperville, IL, 12-13 Apr 2017.

AWARDS

Science Undergraduate Laboratory Internship

Feb 2018

United States Department of Energy, Office of Science
\$5000

Second Place Undergraduate Poster Award

Apr 2018

2018 Omega Laser Facility Users Group Workshop
\$150

SKILLS

Computer Languages & Software: Python, Jupyter, NumPy, SciPy, matplotlib, Git, GitHub, VisIt, L^AT_EX, LA-COMPASS, RADMC-3D

Languages: English (native), German (basic reading, writing)

**MEMBERSHIPS
IN SCIENTIFIC
SOCIETIES**

Student Member, High Energy Density Science Association Sep 2017 – Present
Organization of scientists to promote federal funding in high energy density science.

Student Member, American Physical Society Jul 2017 – Jul 2018
Membership organization to promote scientific research through scientific meetings, journals, and education outreach.