Joseph Hollowed
University of Michigan
Department of Climate and Space Sciences and Engineering (CLASP)
2455 Hayward St
Ann Arbor, MI 48109-2143

Phone: (708) 606 4992
Email: hollowed@umich.edu

CV of Joseph Hollowed

ORCID: 0000-0002-8658-1672
Webpage: https://jhollowed.github.io/pages/

EDUCATION

University of Michigan: Ann Arbor MI
Attended September 2019 – Present
PhD in Physics and Scientific Computing anticipated 2024

DePaul University: Chicago IL
Attended September 2013 – August 2017
B.S. in Physics; ***Minor in Computer Science*** awarded August 2017
Cumulative GPA: 3.75 / 4.00
Major Course GPA: 3.87 / 4.00

RESEARCH EXPERIENCE

University of Michigan Physics & Climate and Space Sciences Departments
Graduate Student, January 2021–present
University of Michigan

- Work on modeling subgrid physics related to volcanic aerosol injections of the stratosphere in the DOE E3SM coupled climate model, in support of the DOE CLDERA project
- Work on implementation of passive tracers species in the DOE E3SM coupled climate model, designed for assessment of the general circulation of the atmosphere

University of Michigan Physics Department
Graduate Student, September 2019–January 2021
University of Michigan

- Worked on weak-lensing simulation support for galaxy-cluster cosmology, developing a software package for the generation of synthetic weak-lensing signals from sets of simulated galaxy cluster observations

Cosmological Physics and Advanced Computing Group
Argonne Associate, September 2017–July 2019
Argonne National Laboratory

- Contributed to development of cosmological simulation components and processing tools
- Contributed to generation and validation of synthetic galaxy catalogs
- Worked on weak-lensing simulation support for galaxy-cluster cosmology

Cosmological Physics and Advanced Computing Group
Research Aide, June 2016–September 2016; December 2016–September 2017
Argonne National Laboratory

- Performed analysis of South Pole Telescope data against simulated analogues, working toward probes of cosmology using galaxy cluster velocity-dispersion observables

X-Ray Science Microscopy Group
Research Aide, June 2015–September 2015; December 2015
Argonne National Laboratory

- Developed image segmentation software for use with X-Ray fluorescence microscopy data

DePaul AstroPhysics Working Group
Research Member, March 2015 – June 2015
DePaul University Physics Department

- Founded the Working Group with a small team of students and faculty
- Worked on exoplanet detection/confirmation via Kepler Space Telescope data

PUBLICATIONS

Refereed Journal Papers

LSST Dark Energy Science Collaboration. (2021). **The LSST DESC DC2 Simulated Sky Survey**. *The Astrophysical Journal Supplement Series*. 253. 31. 10.3847/1538-4365/abd62c.

Korytov, D., Hearin, A., Kovacs, E., Larsen, P., Rangel, E., Hollowed, J., ... & Chang, C. (2019). **CosmoDC2: A Synthetic Sky Catalog for Dark Energy Science with LSST**. *The Astrophysical Journal Supplement Series.* 245. 26. 10.3847/1538-4365/ab510c.

Heitmann, K., Uram, T., Finkel, H., Frontiere, N. Habib, S., Pope, A., Rangel, E., Hollowed, J., Korytov, D., Larsen, P., ... & Foster, I. (2019). **HACC Cosmological Simulations: First Data Release.** *The Astrophysical Journal Supplement Series.* 244. 17. 10.3847/1538-4365/ab3724.

Technical Reports

LSST Dark Energy Science Collaboration. (2021). **DESC DC2 Data Release Note**. *arXiv preprint. arXiv:2101.04855.*

Hollowed, J. (2019). **Lightcone Construction for HACC Cosmological Simulations with LANTERN**. *arXiv e-prints*. arXiv:1906.08355

Candidacy Prospectus

Hollowed, J. (2022). **A Simplified Sub-grid Parameterization for Volcanic Aerosol Injections of the Stratosphere in E3SMv2 in Support of the DOE CLDERA Project**, Candidacy Prospectus, University of Michigan, Ann Arbor, July 2022

PRESENTATIONS

CLDERA Tiered Verification: HSW++ Idealized Volcanic Aerosol Forcing (7/7/22 and 7/27/22)
Preliminary Exam**,** *University of Michigan, Ann Arbor MI*
DOE CLDERA All-Hands Meeting**,** *Sandia National Laboratories, Albuquerque NM*

Mt. Pinatubo-Inspired Idealized Climate Data Sets with Embedded Pathways (5/16/22)
DOE CLDERA All-Hands Meeting, *Virtual*

Modeling Systematics in Galaxy Cluster Mass Estimation (5/21/19)
Young Scientist Symposium Series, *Argonne National Laboratory, Lemont IL*

Cluster Weak Lensing Simulations (2/26/19)
LSST Dark Energy Science Collaboration Meeting, *University of California, Berkeley, Berkeley CA*

Simulation Calibration of Cluster WL Mass Measurements (6/25/18 and 7/26/18)
South Pole Telescope Cluster Face to Face**,** *University of Chicago, Chicago, IL and*
LSST Dark Energy Science Collaboration Meeting, *Carnegie Mellon University, Pittsburgh, PA*

Validation of Synthetic Sky Catalogs (11/7/2017 and 11/14/2017)
American Physical Society Prairie Session Fall Meeting*, University of Illinois at Chicago, Chicago IL*
Young Scientist Symposium Series, *Argonne National Laboratory, Lemont IL*

Cluster Cosmology from Velocity Dispersions (8/31/2016 and 11/4/2016)
Internal Group Presentation, *Argonne National Laboratory, Lemont IL*
DePaul Undergraduate Science Showcase, *DePaul University, Chicago IL*

Image Segmentation of X-Ray Fluorescence Data (9/4/2015 and 11/6/2015)
Internal Group Presentation, *Argonne National Laboratory, Lemont IL*
DePaul Undergraduate Science Showcase (poster), *DePaul University, Chicago IL*

FELLOWSHIPS

Michigan Institute for Computational Discovery and Engineering Fellowship: Awarded Spring 2018
DePaul Dean's Undergraduate Fellowship: Summer 2015

AWARDS AND HONORS

National Science Foundation Graduate Research Fellowship Program Honorable Mention: Fall 2019
Argonne High Energy Physics Pacesetters Award: Summer 2018
Physics Student of the Year/Most Outstanding Graduating Senior in Physics Award: Spring 2017
DePaul University graduating honors: *magna cum laude:* Spring 2017
DePaul College of Science and Health Dean's List: All quarters of attendance
DePaul College of Computing and Digital Media Dean's List: All quarters of attendance
Dean's Scholarship of $11,000 per year at DePaul University: 2013-2017

PROFESSIONAL MEMBERSHIP

American Geophysical Union (AGU)
American Physical Society (APS)

TEACHING

Physics & Astronomy:
Electromagnetism, Optics, and Radiation (Laboratory); Fall 2019, Winter 2020 (UM), undergraduate course
Introduction to Astrobiology; Fall 2020 (UM), undergraduate course
Alien Skies: A Tour Through the Universe; Fall 2020 (UM), undergraduate course

Climate & Earth Science:
Climate & Climate Change; Winter 2021 (UM), undergraduate course