Experience

2018- Las Cumbres Observatory, Senior Astrodata Scientist.

Present In charge of all pipelines to analyze data taken by the observatory, approximately 3 million images per year and hundreds of spectra per month. Continued my own scientific programs on peculiar supernovae and gravitational wave follow up. Project Manager for the Scalable Cyber Infrastructure for Multi-Messenger Astronomy (SCIMMA) collaboration. We develop collaboration and coordination tools for the astronomical community to ensure that we can rapidly identify and follow gravitational-wave electromagnetic counterparts. I manage the development of the project across multiple institutions. I am principal investigator (PI) for the Treasure Map, a tool designed to also coordinate the astronomical community to search for electromagetic counterparts of gravitational wave events. This grant is specifically to bring the Treasure Map to professional cyber-infrastructure standards so that it can be used for future gravitational wave observing runs.

> >269 referred journal publications: A full publication list is available at https://cmccully. github.io/publications.pdf

2021–2023 Mount Vernon Nazarene University, Adjunct Faculty.

Taught Astronomy 1 and Intro to Data Science

2018–2020 Westmont College, Adjunct Faculty.

Taught Classical Mechanics, Waves and Optics, and Quantum Mechanics I & 2

2015–2018 Las Cumbres Observatory, Network Operations Scientist.

Data reduction and analysis, thousands of images per night across 20 telescopes. Integration of the pipeline with other observatory software systems.

2014–2018 Las Cumbres Observatory/UCSB, Postdoctoral Scholar.

Data reduction and analysis for the Supernova Key Project at LCO. We currently have observations of more than 650 supernovae, with more than 150,000 images. I mentored three graduate students and several undergraduate students. I led studies on supernovae, gravitational lensing, and the first discovered kilonova (see https://www.cnet.com/news/ gravitational-waves-kilonova-explosion-nasa-ligo/).

2008–2014 Graduate Student, Rutgers University, Department of Physics and Astronomy. Studied peculiar supernovae: Spectroscopic and image data reduction in Python and C for a variety of telescopes including the Hubble Space Telescope. I also designed a new efficient computational framework that makes it possible to include hundreds of components in gravitational lens models.

Technical Skills

Open • Image Data Reduction Pipeline for LCO data: github.com/lcogt/banzai

Source • Fast Cosmic Ray Rejection: github.com/astropy/astroscrappy

Projects • Image subtraction pipeline for HST: github.com/cmccully/snhst

• AstroPy Contributor github.com/astropy/astropy

Languages Python, Cython, IDL, Matlab, Mathematica, C, C++, Java, VB.net, VBA, TCL

Technologies AWS, Kubernetes, Django, Celery, MySQL, SQLite, RabbitMQ, ElasticSearch, MS Access, ArcGIS, Docker, Rancher, IRAF/PyRAF

Analysis Image analysis, Monte Carlo Markov Chains, Maximum Likelihood Analysis (Chi-Experience squared minimization), Parallel Computing (OpenMP, Multiprocessing, Beowulf Cluster Computing), Robotic Telescope Operations, Data Visualization, Fourier analysis, Neural Networks, Principle Component Analysis, Gaussian Processes

Awards, Fellowships, and Grants

- 2023 Principal Investigator on NSF AST-2308113 CDS&E: WoU-MMA: The Treasure Map
- 2012 Principal Investigator Cycle 20 HST-GO-12973
- 2011-2012 Excellence in Mentoring Fellow
 - 2011 AAS Chambliss Astronomy Achievement Student Award (Graduate)
- 2009–2010 Richard J. Plano Outstanding Teaching Assistant Award
- 2008-2009 Graduate Assistance in Areas of National Need (GAANN) Fellow
 - 2008 AAS Chambliss Astronomy Achievement Student Award (Undergraduate)

Teaching and Mentoring

2008— Taught Astronomy I and Intro to Data Science at MVNU. Taught Classical Me-Present chanics, Waves and Optics, and Quantum Mechanics I and II at Westmont College. At Rutgers, I was the Teaching Assistant for two introductory physics for underprepared engineering students. Detailed reviews are available upon request. I have mentored two postdocs, seven graduate students from UCSB and more than a dozen undergraduate students from Rutgers, UCSB, and Westmont College.

Service and Outreach

- 2025 Science and Technology Advisory Committee for Gemini Telescopes
- 2023 NASA SOMA Reviewer
- 2016 Astronomy on Tap Coordinator/Presenter
- 2014 Referee for MNRAS and ApJ
- 2016–2019 LCO Seminar Coordinator
- 2015–2016 LCO Journal Club Coordinator
- 09,11,13,14 Rutgers Graduate Student Life Committee Student Representative
 - 2012 Rutgers Telescope Allocation Committee for the Southern African Large Telescope

Education

- **2004–2008** Bachelor of Science, Southern Nazarene University, Bethany, OK. Summa Cum Laude. Major in Physics, Minor in Computer Science
- 2008–2014 Ph.D., Department of Physics and Astronomy, Rutgers University, Piscataway, NJ.

- Dr. D. Andrew Howell Las Cumbres Observatory ahowell@lco.global
- Dr. Mark Bowman Las Cumbres Observatory
- Prof. Charles Keeton Rutgers University

- keeton@physics.rutgers.edu
- Prof. Saurabh Jha Rutgers University saurabh@physics.rutgers.edu
- Prof. Ann Zabludoff University of Arizona aiz@email.arizona.edu