Dylan Cromer

Resume

Key Skills

- Self-directed learning
- Theoretical mathematics
- Physics
- Python

- Distilling complex ideas
- Statistics and probability
- Unix environments and tools
- LaTeX

Education

2017–2020 **Master of Science**, *Cornell University*, Astrophysics.

2013–2017 **Bachelor of Science**, *University of North Carolina Asheville*, Physics and Mathematics, Honors: *Manly Wright Valedictory Scholar, summa cum laude, distinction as research scholar*.

Prior Work Experience

May 2021 – Present **Writer and Researcher**, *Self-Employed*, Pittsboro, NC.
After graduate school, I was fortunate to be able to spend a year focusing on researching a book I am writing about academia and my experiences.

May 2020 – May 2021 **Graduate Research Assistant**, Cornell University, Ithaca, NY.
Research on creating highly accurate estimates of galaxy cluster masses from weak-lensing data.
Detailed achievements:
- Developed open-source Python library for conducting mass estimation
- Created novel mathematical formula to aide in computational speed
- Created a flexible surrogate model library using Gaussian process interpolation to aide in computational speed
- Used simulated data to validate the model reduces biases present in older methods

August 2019 – May 2020 **Teaching Assistant**, Cornell University, Ithaca, NY.
Assisted with two undergraduate astronomy classes simultaneous with graduate research. In one course, assisted students with the university telescope. In another, taught supplementary workshop-style lectures. Assisted with grading and administrative tasks in both.

August 2018 – August 2019 **University Fellowship**, Cornell University, Ithaca, NY.
Fellowship-supported research on forecasting the prospects of using future measurements of galaxy cluster clustering to probe dark energy and neutrino masses. Helped develop Python library to conduct Fisher matrix forecasts using simulated data.

August 2017 – August 2018 **Research Assistant**, Cornell University, Ithaca, NY.
Research on creating new statistical techniques for extracting galaxy clustering signals from simulated data. Created Python tools for processing simulations and calculating several metrics of clustering.

August 2016 – May 2017	**STEM Outreach Intern**, UNC-ASHEVILLE DEPARTMENT OF PHYSICS, Asheville, NC. Helped lead outreach programs and provided administrative assistance. Assisted with outreach events in coordinate with the Asheville City Schools Foundation IRL Program. Assisted with NC Section American Association of Physics Teachers Fall 2016 meeting.
August 2014 – May 2017	**Docent**, *Lookout Observatory at UNC-Asheville*, Asheville, NC. Provided guidance to public attending monthly stargazes, gave contextual information about the objects being viewed. Controlled telescope operation. Assisted with public parking and other logistics.
August 2014 – May 2017	**Peer Tutor**, *UNC-Asheville*, Asheville, NC. Tutor for introductory mechanics and electromagnetism courses, occasionally tutored students on upper-level physics courses.
September 2016 – May 2017	**Math Tutor**, *UNC-Asheville Math Assistance Center*, Asheville, NC. Tutor for math courses taught at UNC-Asheville. Assisted with calculus, statistics and probability, applied math problems, real analysis, abstract algebra, and other topics.

Awards

2017	Cornell Graduate Fellowship	2017	UNC-Asheville Manly E. Wright Valedictorian Scholarship Award
2014–2017	UNC-Asheville Chancellor's List	2016	UNC-Asheville Mathematics Department Parsons Scholarship
2015	North Carolina Space Grant Research Scholarship	2014	UNC-Asheville Physics Department research stipend
2014	North Carolina Space Grant Student Scholarship	2013	UNC-Asheville Dean's List

Volunteer Experience

April 2019	**Volunteer**, *Alien Worlds workshop*, Cornell University Expanding Your Horizons program.
October 2019	**Volunteer**, *"Museum In the Dark"*, Museum of the Earth, Ithaca NY.
April 2018	**Volunteer**, *Alien Worlds workshop*, Cornell University Expanding Your Horizons program.
October 2017	**Volunteer**, *"Museum In the Dark"*, Museum of the Earth, Ithaca NY.
February 2017	**Leader**, *UNC-Asheville Society of Physics Students scientific outreach workshop*.
Fall 2016	**Event Leader**, *Junior Bulldog Program*, UNC-Asheville.
February 2016	**Event Leader**, *North Carolina Science Olympiad*, Asheville, NC.
February 2015	**Event Leader**, *North Carolina Science Olympiad*, Asheville, NC.
February 2014	**Volunteer**, *North Carolina Science Olympiad*, Asheville, NC.
2013–2014	**Volunteer**, *Super Saturday program*, UNC-Asheville.

Additional Experience and Interests

These represent topics I have some experience with that I have garnered in my own time, but have not used professionally.

- Computer and Information Security
- Open Source Intelligence (OSINT)
- Open Source Journalism
- Cryptography
- Test-Driven Development
- Political Essay Writing