ANDREW MCHATY

703-672-1174 ~ www.astrodrews.com ~ andrew.mchaty@berkeley.edu

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EDUCATION

University of California, Berkeley, *Berkeley, CA* ~ Double Major in Astrophysics & Physics (GPA: 3.916)

- Expected Graduation: May 2027

University of Oxford, *Oxford, England* ~ Exeter College Summer Programme (*Summer 2026*)

- **Coursework:**
  - Quantum Computer Science – quantum algorithms, computational theory, and quantum information **[Grade: First Class (A)]**
  - Why Be Good? An Introduction to Ethics – philosophical frameworks for moral reasoning and decision-making **[Grade: First Class (A)]**

Quantico Middle/High School, *Quantico, VA* ~ Graduated Valedictorian in June 2023

Bethel College, *North Newton, KS* ~ Summer Science Institute (*Summer 2022*)

- Conducted statistics research and developed Python programs to facilitate and optimize everyday tasks.

RESEARCH EXPERIENCE

Student Researcher & Observer – Dr. Alex Filippenko's Research Group, University of California, Berkeley *(August 2024 – Present)*

- Serve as the ZTF Checking Head, overseeing transient verification and training undergraduate researchers to identify and vet supernovae and variable-star candidates using Zwicky Transient Facility data.
- Develop a catalog of ultracompact eclipsing white dwarf binaries using ZTF, TESS, and Lick Observatory data to study orbital properties, binary evolution, and potential gravitational-wave sources.

Student Researcher – Dr. James Analytis' Research Group, University of California, Berkeley & Lawrence Berkeley National Laboratory *(February 2026 – Present)*

- Develop an automated robotic storage system for quantum-material specimens using Python, embedded systems, and hardware–software integration.
- Conduct in-situ diffraction experiments to study crystal dissolution and formation during flux growth, developing machine-learning methods to distinguish crystalline peaks from flux and sample-container backgrounds.

Student Researcher – Dr. Takuro Ideguchi's Ultrafast Spectroscopy Group, The University of Tokyo *(June 2025 – August 2025)*

- Developed simulations of Kerr squeezing using stochastic nonlinear Schrödinger equations and Raman response models to analyze quantum-noise evolution in optical fibers.
- Compared simulation results with experimental spectroscopy data to validate ultrafast optical measurement techniques across scientific applications.

Mathematical & Physical Sciences Scholars REU Researcher – Enhancing Astrometric Methods for Exoplanet Discovery, University of California, Berkeley (*May 2024 – August 2024)*

- Developed a machine-learning algorithm using Gaia astrometric data to identify and rank the ten most promising non-transiting exoplanet candidates.
- Analyzed and modeled candidate characteristics to support follow-up observations and improve the reliability of exoplanet detection.

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Undergraduate Lab at Berkeley (ULAB), University of California, Berkeley

Physics Innovation Lab Superuser *(February 2025 – Present)*

- Guide students in using laboratory equipment, developing experimental setups, and following safe operating procedures.
- Troubleshoot equipment and experimental issues while supporting daily operations and maintaining an effective lab environment.

Research Director *(May 2025 – May 2026)*

- Directed ULAB's Physics & Astronomy division, overseeing research logistics and supporting mentors with troubleshooting and project development.
- Improved lab operations and communication while building campus partnerships and representing the division in biweekly Directors' Meetings.

Lab Manager & Research Mentor *(May 2024 – May 2025)*

- Collaborated with the research director to coordinate lab logistics, equipment, staffing, training, and safety protocols.
- Co-mentored a research group using transit photometry and spectroscopy with the Leuschner Telescope to identify an exoplanet candidate.

Research Mentee – Confirming an Exoplanet (*September 2023 – May 2024)*

- Used NASA TESS and Leuschner Telescope observations to identify and validate exoplanet candidates through transit photometry.
- Calibrated data and generated normalized light curves using Python, confirming an exoplanet candidate and presenting the results at the 2024 ULAB Physics & Astronomy Research Symposium.

Astrophotographer, astrodrews.com (Website), @astrodrews (Instagram) *(2022 – Present)*

- Capture and share astronomical images on Instagram and astrodrews.com, generating over 400,000 impressions.
- Explain the science behind photographed objects and share techniques for capturing and processing astronomical images.

LEADERSHIP EXPERIENCE

Undergraduate Astronomy Society, University of California, Berkeley

Sidewalk Astronomer *(September 2023 – Present)*

- Engage in public outreach by setting up telescopes on sidewalks and in plazas, offering passersby opportunities to observe celestial objects.
- Educate and inspire the public about astronomy, encouraging community interest in the night sky and making celestial observation accessible to a broader audience.

Astrophotography Officer *(August 2024 – May 2026)*

- Organized astrophotography events, photography sessions, and print production while managing related inquiries.
- Supported team members in capturing and processing astronomical images, ensuring the smooth execution of the society's astrophotography activities.

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Co-Founder and Head Technical Specialist, "Astrophotography at Berkeley" Club *(January 2024 – August 2025)*

- Founded the club in Spring 2024 and led astrophotography workshops and image-processing tutorials.
- Managed the club's telescopes and cameras, organized trips to dark-sky sites, and assisted members with equipment operation and astronomical data collection.

WORK EXPERIENCE

Physics 7A Course Reader, University of California, Berkeley *(January 2026 – May 2026)*

- Supported instruction in a large-enrollment Classical Mechanics course by grading problem sets, labs, and exams, proctoring assessments, and ensuring consistency in evaluation.
- Collaborated with instructors and Graduate Student Instructors to uphold academic standards, provided detailed feedback, and supported course operations and office hours.

Recreational Assistant, Marine Corps Community Services - Quantico (*August 2021 – August 2023)*

- Scheduled and supervised recreational activities and events at the Quantico Marine Corps Base Recreational Center.

CERTIFICATIONS

Certified Astronomer & Observer, Lick Observatory *(November 2024)*

TESS Data Validation Specialist, NASA *(August 2024)*

Certified Entry-Level Python Programmer (PCEP), Python Institute (*Summer 2022*)

AWARDS

Daniel Edward Wark Award, Department of Astronomy at UC Berkeley *(May 2026)*

- Awarded in recognition of outstanding academic achievement, leadership, and character.

AAS 246 Chambliss Student Poster Award Finalist, American Astronomical Society *(June 2025)*

- Selected as a finalist for research developing machine-learning methods to identify promising exoplanet host star candidates within Gaia DR3.

Valedictorian, Quantico Middle/High School *(June 2023)*

Marine Corps Base Quantico Challenge Coin for Excellence, Marine Corps Installations National Capital Region *(June 2023)*

Finalist with Silver Honor, International Youth Math Competition *(December 2022)*

Performance Year 2021 Award, Marine Corps Community Services - MCCS *(2021)*

President's Award for Educational Excellence, The United States of America *(2020)*