Harry Van Der Ark

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EDUCATION

Columbia University, School of Professional Studies — Sep ‘26 - current
Visiting post-baccalaureate student
Relevant Coursework: ASTR3986UN – Astrostatistics [Midterm result A+, 1st in class]

Columbia University, Columbia College — Aug ‘22 - May ‘26
Bachelor of Arts. Physics Major, Mathematics Concentration
4-year GPA: 3.5, Junior + Senior GPA: 3.64
Relevant/Additional Coursework: ASTR3273UN - High Energy Astrophysics [Final result A+, 1st in class]

RESEARCH EXPERIENCE

Columbia Astrophysics Laboratory, Columbia University — Feb ‘24 - Current
Advisor: Dr. Kaya Mori, Research Scientist and Principal Investigator

- Led the analysis of an extensive Chandra survey of the Galactic Center, where I developed a Maximum Likelihood Estimation tool that can detect and verify sources in high background, low exposure observations.
- Confirmed the first ever observation of Non-thermal Bremsstrahlung emitting Compact Cloud Clumps on the shock front of a middle-aged supernova remnant. This involved developing new Chandra analysis techniques to differentiate point sources from the smallest scale extended sources.

Center for Astrophysics, Harvard University — May ‘25 - Aug ’25 &
Advisor: Dr. Rafael Martínez-Galarza, Deputy Director of AstroAI — Jul ‘26 - Current

- Visiting summer researcher at the Harvard Center for Astrophysics, learning the methods behind the Chandra Source Catalog processing pipeline from the CSC team.
- An international collaboration developing a neural network to detect patterns in Chandra observation background noise and reduce the S/N threshold needed to identify sources.

PUBLICATIONS

Extensive Chandra X-Ray Catalog of Galactic Center using 1.65 Ms of New Exposure
Author List: **Van Der Ark, H.**, Mandel, S., Mori, K., Ponti, G., Martínez-Galarza, J.R., Evans, I., Hong, J., Zhang, H., Bao, T., Hailey, C. — In-prep Jan ‘26

Fully Automated Source Detection and Validation Pipeline for X-ray Observations
Author List: **Van Der Ark, H.**, Mandel, S., Mori, K., Ponti, G., Martínez-Galarza, J.R., Evans, I., Hong, J., Zhang, H., Bao, T., Hailey, C. — In-prep Dec ‘26

High Resolution Chandra X-Ray Survey of a Middle-Aged Supernova Remnant G22.7-0.2 interacting with Molecular Clouds
Author List: **Van Der Ark, H.**, Mori, K., Hailey, C. — Submitted to ApJ

PROFESSIONAL EXPERIENCE

Columbia Astrophysics Laboratory, Columbia University — Jun ‘26 - Jun ‘27

- Full-time Research Staff Assistant for Mori research group, serving as the group’s Chandra expert.
- Leading several first author papers.

HighSchoolTutors — Jan ‘22 - Aug ‘22

- Professional Tutor for high school seniors, teaching Physics, Chemistry, Mathematics and Computer Science. Working for HighSchoolTutors.com approx. 20 hours per week both online and in person.

CONFERENCES

Harvard-Smithsonian, Center for Astrophysics — Aug ‘26
Chandra Dynamic Universe Conference - Presented Poster and Flash Talk

Harvard-Smithsonian, Center for Astrophysics Jul ‘25
AstroAI Workshop

University of Massachusetts Lowell May ‘25
Chandra/CIAO Workshop

HONORS AND AWARDS

- Dean’s List for academic excellence: Spring 2026, Fall 2025, Spring 2025, Fall 2023
- Valedictorian for highest Australian Tertiary Admission Rank (ATAR) in my graduating class, 2021
- Successfully secured $599,534 funding as Co-PI of NASA ADAP proposal
  “A New Census of X-ray Point Sources in the Galactic Bulge and Inner Disk: Resolving the Origin and Composition of Diffuse X-ray Emission"

SKILLS

Computer:

- Proficient computer languages: Python, Bash, SQL, HTML, CIAO
- Other proficient software: LaTeX, DS9, Microsoft suite

Laboratory:

- Experience with sensitive electronics and equipment e.g. crystal scintillators, photomultiplier tubes, cathode ray tubes, oscilloscopes, high powered vacuum tubes
- Experience handling high voltage electronics and radioactive materials