

Harry Van Der Ark

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EDUCATION

Columbia University, Columbia College Class of 2026

New York, USA

Bachelor of Physics. GPA 3.43

Relevant Coursework: Physics Major with a minor in Mathematics

Hillbrook High School

Brisbane, Australia

Higher School Certificate. ATAR 99.5 SAT 1550 GPA 4.0 unweighted.

Relevant Coursework: Physics, Chemistry, Mathematical Methods, Specialist Math, Digital Technologies, English

RESEARCH EXPERIENCE

Undergraduate Research Project

Feb '24 - Present

Columbia Astrophysics Laboratory, Columbia University

New York, NY

Hailey - Mori Research Group, Kaya Mori PhD with contributor Prof. Charles Hailey

- Analyzed and confirmed the first ever observation of Compact Cloud Clumps on the interaction site of a molecular cloud and supernova remnant; this involved developing new Chandra data analysis techniques to differentiate point vs extended sources; this was also the first demonstration of Non-thermal Bremsstrahlung radiation being used to illuminate a Compact Cloud Clump - Publication in progress.
- Worked as a part of an international team conducting an extensive Chandra survey of the galactic center where I developed a non-proprietary tool based on a Maximum Likelihood Estimator that can quantify the likelihood of potential sources in raw Chandra data being true sources versus fluctuations in background noise; this was critical in resolving sources in the low exposure, high background data.

Undergraduate Research Project

May '25 - Present

Center for Astrophysics, Harvard University

Boston, MA

Rafael Martínez-Galarza PhD, Deputy Director of AstroAI

- A project using archival Chandra X-ray data from the Chandra Source Catalogue to build a neural network in python that can produce a background map for an observation when given a raw event file; this is a very useful tool for Chandra analysis.

Research Assistant

Nov '18 – Aug '21

School of Mathematics & Physics, University of Queensland

Brisbane, QLD

Professor Tamara Davis AM FAA

- Utilized MARZ software to redshift FITS files containing approximately 300 spectra per file from 2dF on the Anglo-Australian Telescope. Acknowledgement in the publication below.
- Improving the Determination of Supernova Cosmological Redshifts by Using Galaxy Groups (arXiv:2408.14560v2 [astro-ph.CO] 5 Feb 2025)

PUBLICATIONS

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

Expected Dec '25

Extensive Chandra X-Ray Catalog of Galactic Center

Author List: Van Der Ark, H., Mandel, S., Mori, K., Ponti, G

Expected '26 - tbd

PROFESSIONAL EXPERIENCE

Jan - Aug 2022. Professional Tutor for High School Seniors, teaching Physics, Chemistry, Mathematics and Computing. Working for HighSchoolTutors.com approx. 20 hours per week both online and in person.

OTHER EXPERIENCE

**University of Massachusetts
Chandra/CIAO Workshop**

Lowell, MA
May 2025

**Harvard University, Center for Astrophysics
AstroAI Workshop**

Boston, MA
July 2025

World Science Scholar Graduate 2-year program of study led by **Professor Brian Greene**. A new topic each 8 weeks with live sessions and coursework by leading international research scientists. (2019-2021)

Harvard University Pre-College Summer residential program “**The Fundamentals of Particle Physics**” at Boston, MA. The class of 15 students were taught by Dr. Carissa Cesarotti. (Jun-Jul 2020)

Stanford University Pre-College Summer residential program “**The Frontiers of Physics**” at Stanford CA. The class of 15 students used the Stanford Particle Accelerator. Prof. Paul McCullough (Jun-Jul 2019)

TEDx Hillbrook held 8 May 2021. The event had 9 exceptional speakers sharing 9 Big Ideas, to a full house with over 10,800 YouTube views in the first week. Speakers included surgeons, marketeers & entrepreneurs.

NASA JPL Workshop Prof. David Flannery led students to utilise Physics, Mathematics, Coding and Robotics in a 7-day study of the Mars 2020 Rover Mission at the QLD University of Technology. (Sep 2020)

Trinity College London Grade 8 Communication Skills, Awarded with Merit. (2019)

SKILLS

Computer:

- Proficient Computer Languages: Python, Bash, SQL, HTML, CIAO
- Other proficient software: Excel, Word, PowerPoint, LaTeX

Laboratory:

- Experience with sensitive electronics and equipment e.g. Crystal Scintillators, Photomultiplier tubes, cathode ray tubes, oscilloscopes, high powered vacuum tubes
- Experienced in handling high voltage electronics and radioactive materials

HONORS AND AWARDS

- 2025 Dean's List for academic excellence
- 2024 Dean's List for academic excellence
- 2021 Valedictorian for highest ATAR in the graduating class
- 2021 Chairperson of School Board Award for receiving an A grade each semester for 6 years
- 2021 Australia Day Youth Award - Federal Seat of Dickson
- 2021 Australian Institute of Physics Certificate of Excellence
- 2021 Australian Chemistry Institute Certificate of Excellence
- 2020 Queensland Governors Award for services to the Royal Society of Queensland

MEMBERSHIPS

- The Explorers Club - Founded in New York 1904 - Admitted May '20
- AIP Society of Physics Students – Admitted Jul '21
- Australian Institute of Physics - Member MSE6571
- The Royal Society of Queensland - Admitted Mar '19

WEBSITE

www.harryvanderark.com