

Harry Van Der Ark

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EDUCATION

Columbia University, Columbia College Class of 2026
Bachelor of Physics. GPA 3.59 junior & sophomore year
Relevant Coursework: Physics Major with a minor in Mathematics

New York, USA

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