





# Patrick Armstrong

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## EDUCATION

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| <b>Doctor of Philosophy (Astronomy &amp; Astrophysics)</b> | Australian National University<br><i>February 2020 – Present</i>      |
| <b>Bachelor of Science (Adv.) (Hon.)</b>                   | Australian National University<br><i>February 2016 – October 2019</i> |

## ACADEMIC EXPERIENCE

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|-----------------------------|--|
| <b>DES Builder</b>          | Dark Energy Survey<br><i>Develop &amp; maintain the <u>Pippin</u> pipeline, Internal review of DES papers, Organise &amp; host meetings. July 2023 – Present</i> |
| <b>MSATT Student Mentor</b> | MSATT<br><i>Provide guidance and mentorship for highschool students completing astronomical projects. February 2020 – Present</i>                                |
| <b>Astronomical Tutor</b>   | Australian National University<br><i>Sole tutor for Galaxies and Cosmology (ASTR3002). July 2019 – October 2022</i>  |

## OTHER EXPERIENCE

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| <b>Student Seminar Planning Committee Member</b> | Australian National University<br><i>[2022]: Senior planning committee member, [2021]: Planning committee member</i><br><i>February 2021 – October 2022</i>  |
| <b>Mt. Stromlo Outreach Officer</b>              | Australian National University<br><i>Deliver high quality outreach experience for school groups and families</i><br><i>January 2018 – December 2022</i>  |
| <b>Astronomical Consultant</b>                   | <i>[2020] Research for Questacon's Australia in Space exhibition</i><br><i>[2019] Research for Penguin Random House's Stargazer publication</i><br><i>[2018] Research and preparation for ABC's Stargazing Live 2018</i><br><i>[2018] Building backend code and moderation for the SkyMapper Citizen Science Project: Supernova Sighting</i> |
| <b>Questacon Staff</b>                           | Questacon<br><i>[2019 – 2020] Learning Programs Presenter (APS 4)</i><br><i>[2016 – 2019] Questacon Assistant (APS 2)</i><br><i>[2015 – 2019] Gallery Assistant (APS 1)</i>  |

## AWARDS & SCHOLARSHIPS

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| <b>Alex Rodgers Travelling Scholarship</b>                           | ANU College of Science<br><i>Travel to DES Collaboration Meeting 2022</i><br><i>2022</i>                                 |
| <b>Commendation for Excellence in Tutoring or Demonstrating</b>      | ANU College of Science<br><i>Tutoring Galaxies and Cosmology (ASTR3002)</i><br><i>2022</i>                               |
| <b>Australian Government Research Training Program</b>               | Australian National University<br><i>PhD Scholarship</i><br><i>2020 – Present</i>  |
| <b>RSAA Supplementary Scholarship</b>                                | Australian National University<br><i>PhD Scholarship</i><br><i>2020 – Present</i>  |
| <b>ANU Science, Health, and Medicine Honours Scholarship</b>         | Australian National University<br><i>Honours Scholarship</i><br><i>2019</i>  |
| <b>ANU Summer Research Scholarship</b>                               | Australian National University<br><i>Develop a TNS Bulk Report API for the SkyMapper Transient Survey</i><br><i>2016</i> |
| <b>Boyapti Computer Science and Mathematics prize for first year</b> | Australian National University<br><i>Top grades in mathematics and computing</i><br><i>2016</i>                          |

## PUBLICATIONS

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### FIRST AUTHOR

**Probing the consistency of cosmological contours for supernova cosmology** (doi: [10.1017/pasa.2023.40](https://doi.org/10.1017/pasa.2023.40))

P. Armstrong, H. Qu, et. al. (2023); Publications of the Astronomical Society of Australia

**SN2017jgh: a high-cadence complete shock cooling light curve of a SN I Ib with the Kepler telescope** (doi: [10.1093/mnras/stab2138](https://doi.org/10.1093/mnras/stab2138))

P. Armstrong, B E. Tucker, et. al. (2022); Monthly Notices of the Royal Astronomical Society

### CO-AUTHOR

**Binning is Sinning: Redemption for Hubble Diagram Using Photometrically Classified Type Ia Supernovae** (doi: [10.3847/2041-8213/ace34d](https://doi.org/10.3847/2041-8213/ace34d))

R. Kessler, M. Vincenzi, ..., P. Armstrong, et. al. (2023); The Astrophysical Journal Letters

**Revealing the Progenitor of SN 2021zby through Analysis of the TESS Shock-cooling Light Curve** (doi: [10.3847/2041-8213/acb0d0](https://doi.org/10.3847/2041-8213/acb0d0))

Q. Wang, P. Armstrong, et. al. (2023); The Astrophysical Journal Letters

**Concerning colour: The effect of environment on type Ia supernova colour in the dark energy survey** (doi: [10.1093/mnras/stac3711](https://doi.org/10.1093/mnras/stac3711))

L. Kelsey, M. Sullivan, ..., P. Armstrong, et. al. (2023); Monthly Notices of the Royal Astronomical Society

**The Dark Energy Survey supernova program: cosmological biases from supernova photometric classification** (doi: [10.1093/mnras/stac1404](https://doi.org/10.1093/mnras/stac1404))

M. Vincenzi, M. Sullivan, ..., P. Armstrong, et. al. (2022); Monthly Notices of the Royal Astronomical Society

**Revealing the progenitor of SN 2021zby through analysis of the *TESS* shock-cooling light curve** (doi: [10.48550/arXiv.2211.03811](https://doi.org/10.48550/arXiv.2211.03811))

Q. Wang, P. Armstrong, et. al. (2023); arXiv e-prints

**Measuring Cosmological Parameters with Type Ia Supernovae in redMaGiC Galaxies** (doi: [10.3847/1538-4357/ac8b82](https://doi.org/10.3847/1538-4357/ac8b82))

R. Chen, D. Scolnic, ..., P. Armstrong, et. al. (2023); The Astrophysical Journal

**The Pantheon+ Analysis: Cosmological Constraints** (doi: [10.3847/1538-4357/ac8e04](https://doi.org/10.3847/1538-4357/ac8e04))

D. Brout, D. Scolnic, ..., P. Armstrong, et. al. (2023); The Astrophysical Journal

**The dark energy survey 5-yr photometrically identified type Ia supernovae** (doi: [10.1093/mnras/stac1691](https://doi.org/10.1093/mnras/stac1691))

A. Möller, M. Smith, ..., P. Armstrong, et. al. (2023); Monthly Notices of the Royal Astronomical Society

**SN 2018agk: A Prototypical Type Ia Supernova with a Smooth Power-law Rise in Kepler (K2)** (doi: [10.3847/1538-4357/ac2c84](https://doi.org/10.3847/1538-4357/ac2c84))

Q. Wang, A. Rest, ..., P. Armstrong, et. al. (2022); The Astrophysical Journal

**Rates and delay times of Type Ia supernovae in the Dark Energy Survey** (doi: [10.1093/mnras/stab1943](https://doi.org/10.1093/mnras/stab1943))

P. Wiseman, M. Sullivan, ..., P. Armstrong, et. al. (2023); Monthly Notices of the Royal Astronomical Society

**First Results of the SkyMapper Transient Survey** (doi: [10.1017/S1743921318002077](https://doi.org/10.1017/S1743921318002077))

A. Möller, B. E. Tucker, ..., P. Armstrong, et. al. (2022); IAU Symposium

**Spectroscopic classification of SN 2018bwp as a type Ia supernova a few weeks after peak brightness** (bibcode: [2018ATel11671....1L](#))

A. Lopez-Sanchez, L. Galbany, ..., P. Armstrong, et. al. (2022); The Astronomer's Telegram

**Spectroscopic classification of SN 2018bwq as a type Ia supernova a few days before maximum light.** (bibcode: [2018ATel11667....1L](#))

A. Lopez-Sanchez, L. Galbany, ..., P. Armstrong, et. al. (2022); The Astronomer's Telegram

**First Confirmed Supernova with the SkyMapper/Zooniverse Supernova Sighting Project** (bibcode: [2017ATel10426....1T](#))

B. E. Tucker, A. Moller, ..., P. Armstrong, et. al. (2022); The Astronomer's Telegram

**WiFeS Classification of SMT17kdl/SN2017edm as a Type Ia Supernova** (bibcode: [2017ATel10444....1T](#))

B. E. Tucker, A. Moller, ..., P. Armstrong, et. al. (2022); The Astronomer's Telegram

**DEbass Transient Classification Report** (16 Reports)

C. Lidman, H. J. Abbot, ..., P. Armstrong, et. al.; Transient Name Server Classification Report

**Transient Classification Report for 2021-10-12** (bibcode: [2017TNSTR.593....1M](#))

C. Lidman, M. Dixon, ..., P. Armstrong, et. al. (2022); Transient Name Server Classification Report

**Classification of 11 supernovae by DEBass** (bibcode: [2017TNSTR.593....1M](#))

C. Lidman, S. Dhaka, ..., P. Armstrong, et. al. (2022); The Astronomer's Telegram

**SkyMapper Transient Discovery Report** (15 Reports)

A. Moller, B. Tucker, ..., P. Armstrong, et. al.; Transient Name Server Discovery Report

CONFERENCE TALKS

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**CosmoPalooza**

*DES SN 5 Year Methodology & Results*

Invited Speaker

2023

**DES Collaboration Meeting**

*DES 5 year supernova analysis*

Invited Speaker

2020, 2021, 2022, 2023

**ASA Annual Science Meeting**

*DES 5 year supernova analysis*

Speaker

2020, 2021, 2022, 2023

**Kepler K2 Extragalactic Data Analysis Meeting**

*Investigating transients in Kepler's K2 survey*

Attendee

2018

COMMUNICATION

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**SN2017jgh: a high-cadence complete shock cooling light curve of a SN I Ib with the Kepler telescope**

**Highlights:**, *Al Jazeera, National Geographic Indonesia, Radio Canada, De Morgen, ABC Science online, The Guardian, Space Australia, Sky News Australia, 2GB and on the AAP wires*

Over 180 items in print, radio, and online, across Australia and internationally

2021