# Samuel Hinton

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## Education

**2016–2020**    **Doctor of Philosophy**      University of Queensland
Analysing supernovae in the Dark Energy Survey using Hierarchical Bayesian models to help constrain the nature of dark energy.

**2010–2015**    **Bachelor of Science** (Physics)(Hons, 1st)      University of Queensland
Thesis: Analysed the Baryon Acoustic Oscillation signal imprinted in the large scale structure of the universe using the WiggleZ survey. Won the Astronomical Society of Australia's award for best Australian Astrophysics honours thesis of the year.

**2010–2014**    **Bachelor of Engineering** (Software)(Hons, 1st)      University of Queensland
Thesis: Created the first online client-only web-application to compute redshifts from telescope spectra. Won the GroudProbe prize, IEEE student thesis prize and IET student prize.

## Experience

**2020-Now**    **Arenko Group**      London, UK
*Senior Data Scientist*
Implemented MLOps pipelines for data engineering, model versioning and productionising code. Implemented ML models to predict energy markets, and created algorithms to utilise market predictions to produce optimal profit.

**2020**    **COVID-19 Critical Care Consortium**      Brisbane, Queensland, Australia
*Lead Data Analyst*
Technical lead for the COVID-19 Critical Care Consortium. Created the data pipeline to automatically produce machine-learning-ready data products for use in the study. Created reports for clinical staff and hosted a dashboard for use in hospital sites to provide insights from the data products.

**2020**    **University of Queensland**      Brisbane, Queensland, Australia
*Postdoctoral Researcher*
Continued research in the areas of supernova cosmology and large scale structure, focusing heavily upon analysis pipelines and systematics control through efficient use of simulations and mocks.

**2019**    **SuperDataScience**      Sunshine Coast, Queensland, Australia
*Course Instructor*
Created a course on statistical analysis in Python for students. Focused on applied statistics and utilisation of modern code packages, with attention given to visual output and workflows for continuous validation of methodology.

**2017, 2016**    **Lawrence Berkeley National Laboratory**      Berkeley, California
*Research Fellowship*
Research fellowship to work on Bayesian Hierarchical Modelling and its applications to Supernova Cosmology. Specifically, investigating how to use high dimensional hierarchical models to model individual supernova instead of populations to provide better constraints on cosmology using supernova discovered by the Dark Energy Survey.

| 2015–2016 | **Gemini & Australian Astronomical Observatory** | La Serena, Chile |
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*Research Intern*

Utilised photometric data of Maffei 1 to determine globular cluster candidates and their properties for spectroscopic follow-up. Utilised data reduction pipelines, automated analysis methods in Python, and applied machine learning techniques to perform object classification.

| 2010–2014 | **GBST** | Brisbane, Queensland, Australia |
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*Software Developer*

Developed business intelligence reporting solutions, designing and developing server and client based web application code, creation of large scale SQL queries, optimising queries, databases and applications for network, processing and memory constraints, developed back-end server code and front-end web applications.

# Noteable Awards

| 2019 | **Lindau Nobel Laureate Delegate** Representing Australia at LINO19. | Australian Academy of Science |
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| 2019 | **Future Superstar Award** Science's highest performing PhD student. | University of Queensland |
| 2016 | **Bok Prize** Best astrophysics honours thesis in Australia. | Astronomical Society of Australia |
| 2016 | **Australian Postgraduate Award** | Australian Government |
| 2016 | **Science Faculty Graduate of the Year** | University of Queensland |
| 2016 | **Australian Institute of Physics Prize** Top physics graduate. | University of Queensland |
| 2016 | **University Medal (Science)** | University of Queensland |
| 2015 | **Australian Gemini Undergraduate Summer Studentships** | AAO |
| 2015 | **AAO Honours Scholarship** | Australian Astronomical Observatory |
| 2015 | **University Medal (Engineering)** | University of Queensland |

# Other Awards

| 2015 | **Rhodes Scholarship Finalist** | Oxford University |
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| 2015 | **A.W. Oakes Scholarship** | St John's College |
| 2015 | **Harriet Marks Bursary** Academic merit in science honours. | University of Queensland |
| 2015 | **10x Deans Commendation** | University of Queensland |
| 2015 | **Helen Thompson Prize for All Round Excellence** | St John's College |
| 2015 | **IET Student Prize** Outstanding academic success. | The Institution of Engineering and Technology |
| 2015 | **David Andrew Krnak Memorial Prize** Top engineering graduate. | University of Queensland |
| 2014 | **UQ Future Leader** | University of Queensland |
| 2014 | **IEEE Student Thesis Prize** Best final year thesis. | IEEE |
| 2014 | **GroundProbe Prize** Best final year thesis. | University of Queensland |
| 2014 | **RWH Hawken Scholar** | University of Queensland |
| 2014 | **UQ Summer Research Scholarship** | University of Queensland |
| 2012 | **Walter Bruce Darker Scholarship** | University of Queensland |
| 2012 | **Exxon Mobil Achievement Award** Top mechanical engineering student. | University of Queensland |
| 2011 | **Alstom Prize** Top electrical engineering student. | University of Queensland |
| 2010 | **UQ Academic Excellence Scholarship** | University of Queensland |
| 2010 | **ICT Enabling Scholarship** | University of Queensland |
| 2010 | **John Black Prize** | University of Queensland |

# Communication

2021      **Industry Guest**      CodeHers
Gave workshops and presentations to highschool students on coding, machine learning, and careers in STEM.

2021      **Interviewed Data Scientist**      SuperDataScience Podcast
Participated in multiple SDS podcast episodes about topics in data science, from hypothesis testing to MLOps.

2020      **Scientific Correspondent**      CNET, CBS
Acted as a scientific correspondent for multiple organisations to break down complicated scientific research into everyday terms.

2020      **Coding@Home Industry Partner**      Queensland Education, Coding@Home
Shared the modern and future role of coding and machine learning from the perspective of an astronomer and scientist.

2020      **FameLab National Finalist**      British Council
National finalist in the FameLab program, with topic "Can you hear the Big bang?"

2020      ***Science Friction* Guest**      ABC Radio National
Discussed the huge transition from astrophysics to data analytics due to the COVID-19 pandemic, and the transferable skillset that science gives you.

2020      **NYSF Guest Panelist**      National Youth Science Forum
Shared my personal journey in science outreach, and presented on how to give effective presentations.

2019-2017      ***ScopeTV* Guest Scientist**      ScopeTV, Channel 10
Helped script, narrate and appear in ScopeTV educational astronomy episodes.

2019      ***Science Says!* Scientific Panelist**      World Science Festival
Panel scientist for Science Says, a comedy science show for Brisbane's World Science Festival.

2019      ***Probably Science Podcast* Guest Scientist**      Probably Science Live Podcast and Comedy Show
Guest scientist for Probably Science, joining the previous guests of Neil deGrasse Tyson, Sean Carroll and more.

2019      ***2SER Radio* Scientific Correspondent**      Radio, 2SER
Monthly scientific and astronomy updates.

2019-2018      **Podcast Host**      Commuting the Cosmos
Hosted and presented on a podcast about various space related concepts.

2018      **Curious Kids Writer**      The Conversation
Consulted and authored articles for The Conversation's Curious Kids program.

2018      **BrisScience Presenter**      BrisScience & UQ
Invited to talk at the monthly BrisScience event on the dark side of the universe.

2018      **Australian Survivor Invited Contestant, Academic Champion**      Endemol Shine
Cast as the academic champion for the 'Champions v. Contendors' season of Australian Survivor.

2018-2017      **School Guest Presenter**      Clayfield College, Gumdale State School
Talks to primary and secondary students on astronomy, science, STEM and career pathways.

2019-2017      **Science Communicator**      Pint of Science, Physics in the Pub
Gave public talks to a general audience about various topics in astronomy.

2017      **Invited Presenter**      Research Education and Development Retreat
Invited presenter at a progressional development program for physics PhD, honours and undergraduate students.

| 2017 | **Workshop Organiser, Host and Presenter** | CAASTRO Code Workshop |
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Created and presented a code workshop focusing on open-source science run across Australia.

| 2017 | **Battle of the Brains Panel Scientist** | National Science Week |
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Invited participant in a games panel discussion for physicists during National Science Week.

| 2017 | **World Science Festival Tour Guide** | Queensland Museum & UQ |
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Scientific tour guide for the Large Hadron Collider exhibit during the World Science Festival.

| 2017 | **FameLab Australia Scientist** | British Council |
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State finalist FameLab scientist. Public communication through radio interview and stage presentation.

| 2016 | **Guest Scientist, An Evening with Dr Lisa Randall** | ThinkInc |
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Gave the opening speech for the Brisbane event, talking about the exciting future of astronomy.

| 2016 | **UQ Science Demo Troupe Member** | University of Queensland |
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Joined the UQ Science Demo troupe to create resources for the group and participate in UQ demonstrations.

| 2016 | **Uluru Astronomer in Residence** | CAASTRO |
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Accompanied Sky Tours to answer scientific questions from the public and gave public lectures on popular astronomy topics.

# Teaching

| 2020 | **Data Manipulation in Python** | SuperDataScience |
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| 2019 | **Python for Statistical Analysis** | SuperDataScience |
| 2019 | **Frontiers of Astrophysics Guest Lecturer** | University of Queensland |
| 2018 | **Introduction to Astrophysics Guest Lecturer** | University of Queensland |
| 2018 | **Cosmology Tutor and Guest Lecturer** | University of Queensland |
| 2018 | **Supervisor - Capstone Project** | University of Queensland |
| 2017 | **Computational Physics Tutor** | University of Queensland |
| 2017 | **Computational Physics Content Creator** | University of Queensland |
| 2017 | **Supervisor - Summer Project** | University of Queensland |
| 2015 | **5-Minute Physics Content Creator** | University of Queensland |

# Presentations

| June 2020 | **Data Science Pipelines** | DataScienceGo Virtual Conference |
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| May 2020 | **Getting Started with Pippin** | Duke University |
| Jan 2020 | **Supernova Cosmology updates from the Dark Energy Survey** | AAS |
| Oct 2019 | **Pippin: A pipeline for SN Ia cosmology** | SCAM |
| Jul 2019 | **Barry - A BAO model fitting framework** | Python in Astronomy |
| Mar 2019 | **The path towards Photometric Supernova Cosmology with DES** | Cosmology on Safari |
| Feb 2019 | **Hitting the Limits of Supernova cosmology** | ANITA |
| Nov 2017 | **Coding Practises for the Busy Astronomer** | CAASTRO |
| Jun 2017 | **Hierachical Bayesian Models for Supernova Cosmology** | Lawrence Berkeley National Lab |
| Dec 2016 | **Introduction to git and code management** | University of Cambridge |
| Dec 2016 | **Hierachical Bayesian Models for Supernova Cosmology** | University of Southampton |
| Dec 2016 | **Hierachical Bayesian Models for Supernova Cosmology** | University of Portsmouth |
| Nov 2016 | **Sound waves in Space: Wigglez and the BAO** | Swinburne University of Technology |
| Aug 2016 | **Publishing Packages in Python** | University of Queensland |
| Aug 2016 | **ChainConsumer: Plots and LaTeX from MCMC chains** | CAASTRO |
| May 2016 | **Hieracrhical Bayesian Models for Supernova Cosmology** | Standford University |
| Feb 2016 | **Detecting Globular Clusters in Maffei 1** | Gemini Institute |
| Nov 2015 | **Marz - Redshifting software inside your browser** | OzDES Workshop |