

Alexandra Amon

Kavli Fellow

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Education

- Sep 2014 – Aug 2018 **Ph.D. Physics, University of Edinburgh**
“*Weak lensing with the ESO Kilo-Degree Survey*”
Supervisors: Prof. C. Heymans, Prof. C. Blake
- Sep 2009 – Jun 2014 **Master of Physics, University of Edinburgh - First Class with Honors**
“*Scalar Field Dark Energy*”
Supervisor: Prof. A. Taylor

Research

- Sep 2018 – present **Kavli Fellowship, Stanford University / SLAC**
- Jun 2013 – Aug 2013 **Summer research scholarship, Imperial College London**
Advisor: Prof. A. Heavens
- Jun 2012 – Aug 2012 **Royal Society Summer Fellowship, University of Edinburgh**
Advisors: Dr T. Kitching, Dr M. Viola

Research Achievements

- Played a pivotal role in the Dark Energy Survey Year 3 analysis, leading the cosmic shear results and co-leading three analysis teams
- Developed and applied leading methods for weak lensing shear systematics [Amon+2017; Gatti, Sheldon & Amon+2020; Jarvis, Bernstein & Amon+2020]
- Co-led the processing of deep imaging fields for redshift calibration [Hartley, Choi & Amon+2020]
- Pioneered the Lensing Without Borders cross-survey collaboration to test the consistency of weak lensing results [Amon+2017; Leauthaud & Amon+2020]
- Performed a combined probe test of General Relativity (E_G) with weak-lensing and spectroscopic data [Amon+2017]

Honours and Grants

- 2020 [Rising Stars Workshop Attendee*](#)
- 2019 [Program for Astrophysics Visitors Exchange at Stanford \(PAVES\)](#) *Innovative Proposal : 25,000 USD*
- 2019 [Royal Astronomical Society's Michael Penston Thesis Prize](#)
- 2019 [Institute of Physics Jocelyn Bell Burnell Medal and Prize Runner-up](#)
- 2018 SUPA Short-Term Travel Grant: 5,000 USD
- 2017 [LSST Data Science Fellowship Programme](#): 12,000 USD
- 2017 Best Conference Talk at DEX XIII conference
- 2014 STFC PhD Studentship: $\sim 100,000$ USD
- 2013 Imperial College Summer Scholarship: 2,500 USD
- 2012 Royal Society Summer Research Fellowship, University of Edinburgh: 1,500 USD
- 2019 National Scholarship from Trinidad and Tobago for Undergraduate Degree: $\sim 100,000$ USD
- 2008 Scholar, International Summer School for Young Physicists, Perimeter Institute
- 2007 Euler Award, Trinidad and Tobago Mathematics Olympiad

* postponed due to COVID-19

Publications

Since the start of my PhD in Sept 2014, I have authored a total of **23 papers** (22 accepted, 1 submitted) in international peer-reviewed journals with a **total of 1,319 citations (h-index of 13)**.

Leadership positions

[Analysis Team Coordinator - Dark Energy Survey Cosmic Shear](#): 2020 - present

[Analysis Team Coordinator - Dark Energy Survey Deep Field Photometry](#): 2018 - present

[Analysis Team Coordinator - Dark Energy Survey Shear Testing](#): 2018 - present

Commissioning Liason - between LSST DESC and the Weak Lensing group: 2018 - present

Analysis Team Coordinator - Kilo-Degree Survey bright-time data 2014 - 2016

Teaching and Mentoring

Co-advisor: Jamie McCullough, PhD student at Stanford, “*Redshift estimation with machine learning and image simulations*”, 2020 - ongoing

Advisor: Sana Gabriel, BSc thesis at University of the West Indies, “*Understanding Active Galactic Nuclei (AGN) with weak lensing*”, 2019 - ongoing

Co-advisor: Justin Myles, PhD at Stanford, “*Redshift estimation with machine learning*”, 2018 - ongoing

Co-advisor: Angus Cameron, MSc at Edinburgh University, “*Lensing with troughs*”, 2017

Lecturer: Re-designed and delivered the course lectures for the Office of Life Long Learning’s Course “*The Distant Universe*”, 2015 - 2018

Tutor *Fourier Analysis & Statistics, General Relativity* University of Edinburgh, 2014 – 2017

Professional Service

KIPAC, Stanford Cosmology Seminar co-organiser 2018 - present

Lorentz Centre, Leiden Bridging Gaps Between Dynamical Probes of Galaxies SOC co-chair, 2020

>25 nights of telescope observing at CTIO and AAT

[BCCP Accurate lensing in the era of precision Cosmology](#) SOC co-chair, 2019

KIPAC, Stanford Code of Conduct co-author, 2020

KIPAC, Stanford Graduate Admissions review panel, 2020

Dark Energy Survey cosmic shear workshop oraganiser, SLAC, 2019

[BCCP Accurate lensing in the era of precision Cosmology](#) SOC co-chair, 2019

Science Policy: [Early-career delegate for Astro2020 Decadel Survey](#), 2018

Reviewer for MNRAS; DES and LSST-DESC internal reviewer

Selected Talks

AAS, USA (2021)*

Invited Cosmology seminar, Fermilab (2020)*

Invited Cosmology seminar, JPL (2020)*

Invited Cosmology seminar, UC Irvine (2020)*

Invited Cosmology seminar, UC Berkeley (2020)*

Invited Cosmology talk, ETH Zurich (2020)*

Texas Symposium Conference, Portsmouth (2019)

Ancient Heavens Conference, Royal Society, UK (2019)

BCCP Lensing Conference, Berkeley (2019)

LSST DESC meeting, SLAC (2018)

Dark Universe conference, Munich (2017)

Observations in Cosmology, Benasque (2017)

DEX XIII, Edinburgh (2017)
GravLens: 100 Years of Lensing, Leiden (2016)
KiDS-GAMA-VIKING meeting, Edinburgh (2016)
2dFLenS-OzDES conference, Swinburne (2015)
Invited IAS Cosmology talk, Princeton (2018)

Invited Cosmology seminar, UC Berkeley (2017)
Invited Dark Sector seminar, NASA JPL (2017)
Invited talk, Stanford University (2017)
Invited Cosmology talk, UC Santa Cruz (2017)

Science Communication and Public Engagement

SciComm on Instagram: [@astroalexamon](#) (2018 - present)
Seminar series, University of the West Indies (2020)
Co-founder, [PAVES Program](#) - hosting researchers from under-represented countries at Stanford (2020)
Board of Directors [Brightest Stars Foundation](#) (2019 - present)
'We Code' ambassador - to inspire Caribbean youth to learn coding (2020)
[Caribbean STEM media article](#) (2020)
Career and STEM inspiration discussion - with Plumstead Manor Girls High School, London (2020)
Institute of Physics Jocelyn Bell Burnell Medal and Prize Finalist Lecture (Fall 2019)
'Skype a Scientist' (Summer 2019)
'Ancient Skies' PBS Documentary Series (Airs July 24th, 2019)
Interview on 'The Stream', Al Jazeera, Dark Matter edition (2018)
Fermilab's 'Symmetry' magazine article (2018)
'Space Shed' guest scientist event and podcast (Fall 2018)
'Women Are Boring' magazine article (2018)
'Shining Light on Dark Matter' documentary (2018)
'Astronomy on Tap' speaker, Edinburgh (2018)
Mentor, [Brightest Stars Foundation](#) (2017 - present)
Royal Observatory Edinburgh's Winter Talk (2017)
Scotland Girl Guiding science session (2017)
Organiser for 'Pint of Science', Edinburgh (2017)
Scottish Astronomical Society lecture, Aberdeen (2016)
'What's Up' Lecture, Edinburgh (2016)
MOOC Management of astronomy online discussion forum for 30,000 students (2016)
Royal Observatory Edinburgh's Open Day speaker (2014-2016)
Physics visits- Undergraduate physics students visit local schools (2011-2014)

References

Prof. R. Wechsler, rwechsler@stanford.edu Stanford University

Prof. S. Dodelson, sdodelso@andrew.cmu.edu Carnegie Mellon University

Prof. C. Heymans, cech@roe.ac.uk University of Edinburgh

Prof. M. Troxel, cech@roe.ac.uk Duke University

Publications

- [1] **Amon, A.** et al. (in prep.)
Dark Energy Survey Year 3: Cosmology from cosmic shear and its robustness to redshift calibration and blending
- [2] **Myles, J.**, Alarcon, A. and **Amon, A.** (in prep.)
Dark Energy Survey Year 3: Redshift calibration with self-organising maps
- [3] Hartley, W., Choi, A., and **Amon, A.** et al. (in prep.)
Dark Energy Survey Year 3: Deep field photometry
- [4] Gatti, M., Sheldon, E. and **Amon, A.** et al. (in DES internal review)
Dark Energy Survey Year 3: Weak lensing shear catalogues
- [5] MacCrann, N., Becker, M. and **McCullough, J.** et al. (in prep.)
Dark Energy Survey Year 3: Weak lensing image simulations
- [6] Jarvis, M., Bernstein, G. and **Amon, A.** et al. (in DES internal review)
Dark Energy Survey Year 3: Point-Spread Function Modeling
- [7] Leauthaud, A. and **Amon, A.** et al (in prep.)
Lensing Without Borders I. A Blind Comparison of the Amplitude of $\Delta\Sigma$ Across Lensing Surveys
- [8] **Amon, A.**; Blake, C; Heymans, C; Leonard, D, Asgari, M; Bilicki, M; Choi, A; Erben, T; Glazebrook, K; Harnois-Deraps, J; Hildebrandt, H; Hoekstra, H; Joachimi, B; Joudaki, S; Kuijken, K; Lidman, C; Parkinson, D; Valentijn, E; Wolf, C; MNRAS (2018)
KiDS + 2dFLenS + GAMA: Testing the cosmological model with the E_G statistic
- [9] **Amon, A.**; Heymans, C.; Klaes, D.; Erben, T.; Blake, C.; Hildebrandt, H.; Hoekstra, H.; Kuijken, K.; Miller, L.; Morrison C.; Choi, A.; de Jong, J.T.A.; Glazebrook, K.; Irissari, N.; Joachimi, B.; Joudaki, S.; Kannawadi, A.; Lidman, C.; Napolitano, N.; Parkinson, D.; Schneider, P.; van Uitert, E.; Viola, M.; Wolf, C.; MNRAS (2017)
KiDS-i-800: Comparing weak gravitational lensing measurements in same-sky surveys
- [10] Harnois-De raps J; **Amon, A.**; Choi, A; Demchenko, V; Heymans, C; Kannawadi, A; Nakajima, R; Sirks, E; van Waerbeke, L Cai, Y; Giblin, B; Hildebrandt, H; Hoekstra, H; Miller, L; Troster, T; MNRAS (2018)
Cosmological Simulations for Combined-Probe Analyses: Covariance and Neighbour-Exclusion Bias
- [11] Joudaki, S.; Blake, C.; Johnson, A.; **Amon, A.**; Asgari, M.; Choi, A.; Erben, T.; Glazebrook, K.; Harnois-Deraps, J.; Heymans, C.; Hildebrandt, H.; Hoekstra, H.; Klaes, D.; Kuijken, K.; Lidman, C.; Mead, A.; Miller, L.; Parkinson, D.; Poole, G.; Schneider, P.; Viola, M.; Wolf, C., MNRAS (2017),
KiDS-450 + 2dFLenS: Cosmological parameter constraints from weak gravitational lensing tomography and overlapping redshift-space galaxy clustering
- [12] Hildebrandt, H.; Viola, M.; Heymans, C.; Joudaki, S.; Kuijken, K.; Blake, C.; Erben, T.; Joachimi, B.; Klaes, D.; Miller, L.; Morrison, C. B.; Nakajima, R.; Verdoes Kleijn, G.; **Amon, A.**; Choi, A.; Covone, G.; de Jong, J. T. A.; Dvornik, A.; Fenech Conti, I.; Grado, A.; Harnois-Deraps, J.; Herbonnet, R.; Hoekstra, H.; Köhlinger, F.; McFarland, J.; Mead, A.; Merten, J.; Napolitano, N.; Peacock, J. A.; Radovich, M.; Schneider, P.; Simon, P.; Valentijn, E. A.; van den Busch, J. L.; van Uitert, E.; Van Waerbeke, L., MNRAS (2016),
KiDS-450: cosmological parameter constraints from tomographic weak gravitational lensing
- [13] Blake, C.; **Amon, A.**; Childress, M.; Erben, T.; Glazebrook, K.; Harnois-Deraps, J.; Heymans, C.; Hildebrandt, H.; Hinton, S.; Janssens, S.; Johnson, A.; Joudaki, S.; Klaes, D.; Kuijken, K.; Lidman, C.; Marin, F.; Parkinson, D.; Poole, G.; Wolf, C., MNRAS (2016),
The 2-degree Field Lensing Survey: design and clustering measurements

- [14] Kuijken, K.; Heymans, C.; Hildebrandt, H.; Nakajima, R.; Erben, T.; de Jong, J.; Viola, M.; Choi, A.; Hoekstra, Henk; Miller, L.; van Uitert, E.; **Amon, A.**; Blake, C.; Brouwer, M.; Buddendiek, A.; Fenech-Conti, I.; Eriksen, M.; Grado, A.; Harnois-Déraps, J.; Helmich, E.; Herbonnet, R.; Irisarri, N.; Kitching, T.; Klaes, D.; La Barbera, F.; Napolitano, N.; Radovich, M.; Schneider, P.; Sifón, C.; Sikkema, G.; Simon, P.; Tudorica, A.; Valentijn, E.; Verdoes Kleijn, G.; van Waerbeke, L., MNRAS (2015),

Gravitational lensing analysis of the Kilo-Degree Survey