

## Jason D. McEwen

### Curriculum Vitae

Postal Address: Mullard Space Science Laboratory (MSSL), University College London (UCL),  
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#### Education

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2007 Doctor of Philosophy (**PhD**), *Astrophysics*, **University of Cambridge**  
Title: Analysis of cosmological observations on the celestial sphere  
Advisor: Prof. Michael P. Hobson; Awarded: 21 July 2007

2002 Bachelor of Engineering (**BE**) with Honours, *Information Engineering*, 1st Class Honours, **University of Canterbury**, New Zealand (NZ)  
Specialising in Information Engineering with additional Mathematics (GPA 8.9/9.0)  
Final year courses: Signal Processing (A+), Communications (A+), Software Engineering (A+), Hardware Engineering (A+), Approximation Theory (A+), Fourier Transform and Distribution Theory (A+)

#### Professional History

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Oct 2017 – present **University Reader** (Associate Professor), Mullard Space Science Laboratory (MSSL), Department of Space and Climate Physics, **University College London (UCL)**

Sep 2016 – present **Director of Research**, Center for Doctoral Training (CDT) in Data Intensive Science (DIS), **UCL**

Jul 2013 – Sep 2017 **University Lecturer** (Assistant Professor), Mullard Space Science Laboratory (MSSL), Department of Space and Climate Physics, **UCL**

Jan 2012 – Jun 2013 **Royal Society Newton International Fellowship**, held at **UCL**

Sep 2011 – Jan 2012 **Leverhulme Early Career Fellowship**, held at **UCL**

Jul 2011 – Aug 2011 Visiting Researcher, Victoria University, New Zealand (awaiting UK visa)

Oct 2010 – Apr 2015 Consultant, Saxon Cambridge Algorithm Research, Cambridge

Jun 2010 – May 2011 Scientist, Ecole Polytechnique Fédérale de Lausanne (**EPFL**)

Oct 2008 – May 2010 Quantitative Analyst, Credit Suisse, London

Oct 2007 – Sep 2008 **Junior Research Fellowship**, Clare College, **University of Cambridge**

Oct 2006 – Sep 2007 Postdoctoral Research Associate, Cavendish Laboratory, **University of Cambridge**

Oct 2006 – Sep 2007 Postdoctoral Teaching Associate, King's College, **University of Cambridge**

Feb 2006 – Mar 2006 Consultant, Geomerics, Cambridge

Dec 2001 – Jul 2002 Industry Fellow, Applied Research Associates NZ

#### Other Appointments, Affiliations & Service

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##### Science Collaborations

Jan 2012 – present Planck Satellite Mission Core Team Member, European Space Agency (ESA)

Sep 2013 – present LSST Informatics and Statistics Science Collaboration (ISSC) UK point of contact

Nov 2013 – present SKA Science Data Processor (SDP) working group

Mar 2014 – present Euclid satellite Science Consortium, European Space Agency (ESA)

Jun 2014 – present LSST:UK Board Member

Oct 2014 – present LSST Dark Energy Science Collaboration (DESC)

##### Professional Societies

Jun 2011 – present Fellow of the Royal Astronomical Society (RAS)

May 2012 – present Member of the Institute of Electrical and Electronic Engineers (IEEE)

Jan 2013 – present Member of the International Astrostatistics Association (IAA)

Nov 2015 – present Fellow of the Higher Education Academy (HEA)

##### Departmental Administration

Sep 2015 – present Chair of Extenuating Circumstances Committee

## Peer Reviewing

- Referee for journal and conference articles:
  - Monthly Notices of the Royal Astronomical Society
  - Astronomy & Astrophysics
  - Astrophysical Journal
  - Physical Review D
  - Physical Review E
  - Proceedings of the Royal Society A
  - Publications of the Astronomical Society of Japan
  - European Journal of Physics
  - IEEE Transactions on Signal Processing
  - IEEE Transactions on Image Processing
  - IEEE Signal Processing Letters
  - IEEE Journal of Selected Topics in Signal Processing
  - IEEE Transactions on Aerospace and Electronic Systems
  - Applied and Computational Harmonic Analysis
  - Annals of Statistics
  - Journal of Applied and Computational Mathematics
  - Journal of Mathematical Analysis and Applications
  - Signal Image and Video Processing
  - Mathematics and Computers in Simulation
  - International Conference on Sampling Theory and Applications
  - European Signal Processing Conference
  - Measurement Science and Technology
  - IEEE International Conference on Data Mining
- Referee for grant proposals:
  - Referee for Science and Technology Facilities Council (STFC) consolidated grant (declined)
  - Referee for South African National Research Foundation (NRF)
  - Referee for Netherlands eScience Center (NLLeSC)
- Referee for book submissions:
  - Referee for Birkhäuser Springer-Verlag on *Applied and Numerical Harmonic Analysis*

## External Funding Awarded

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Total grant funding awarded for last three years: **4,558k GBP fEC**.

Broken down as **1,443k GBP fEC on grants as PI** and **3,115k GBP fEC on grants as Co-I**.

All costings are quoted as full Economic Costing (fEC).

Feb 2017 – present    *Illuminating the dark Universe with novel 3D spherical informatics methods*,  
**PI, 323k GBP**        Leverhulme Trust (PI: **McEwen**; Co-I: Kitching)

Apr 2016 – present    *UCL-MSSL Astrophysics Consolidated Grant*, Science and Technology Facilities  
**Co-I, 1,423k GBP**    Council (PI: Cropper; Co-I: Hepburn, Kawata, Kitching, **McEwen**, Page)

Jan 2016 – present    *DiRAC Resource Allocation*, Science and Technology Facilities Council (PI: Kawata;  
**Co-I, 1.47M hours**    Co-I: Branduardi-Raymont, Cropper, Ferreras, Kitching, **McEwen**, Wu, Zane)

Sep 2015 – Sep 2016 *Signal Analysis on the Sphere*, Engineering and Physical Sciences Research Council  
**PI, 120k GBP**        (PI: **McEwen**; Co-I: None)

- Jun 2015 – present *Big-Data Compressive Sensing: Fast, Parallelised and Distributed Algorithms*, Engineering and Physical Sciences Research Council (PI: **McEwen**; Co-I: Hetherington, Jackson, Wiaux)
- Jun 2015 – present *UK Involvement in LSST: Phase A*, Science and Technology Facilities Council (PI: Peiris; Co-I: Kitching, **McEwen**)
- Apr 2015 – present *Compressive Imaging for Radio Interferometry*, Engineering and Physical Sciences Research Council (PI: Wiaux; Co-I: Davies, **McEwen**)
- Apr 2015 – present *Next-Generation Radio Interferometric Imaging*, Science and Technology Facilities Council (PI: **McEwen**; Co-I: None)
- Mar 2015 – present *Harnessing Spherical Geometry in Scientific and Engineering Data Processing*, Australian Research Council (PI: Kennedy; Co-I: Durrani, **McEwen**)
- Dec 2013 – present *Square Kilometre Array (SKA) Science Data Processor (SDP)*, Science and Technology Facilities Council (PI: Abdalla; Co-I: **McEwen**, Yates)
- Sep 2013 – Mar 2015 Research Software Development Grant, UCL Research IT Service (PI: McEwen; Co-I: None)
- Sep 2011 – present Various travel grants and conference support from the Royal Astronomical Society (RAS) and Winton Capital (PI: **McEwen**; Co-I: None, 5 grants)

### Prizes & Awards

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- 2011 URSI General Assembly and Scientific Symposium **Young Researcher Award**
- 2006 Lundgren Research Award, University of Cambridge
- 2005 Cambridge Philosophical Society Research Studentship
- 2005 Cambridge Philosophical Society Travel Award
- 2002 – 2006 **Commonwealth Scholarship** to support PhD at University of Cambridge
- 2002 FRST Technology in Industry Fellowship
- 2002 Canterbury Doctoral Scholarship (declined)
- 2001 **Canterbury University Prize**
- 2000 Ian McMillan Prize for Engineering
- 1999 Bishop Julius Scholarship
- 1998 John P Good Memorial University Prize for Mathematics
- 1998 Bruce Dall University Prize for Physics
- 1998 Makower McBeath University Prize for Microeconomics
- 1998 School of Economics and Finance University Prize
- 1998 – 2001 Tower Scholarship to support undergraduate degree
- 1997 National Bank Scholarship for **highest grade in NZ** for final-year high school Economics

### Academic Supervision

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#### PhD Student Supervision

- Patrick Roddy, *Primary PhD student supervisor* (2017 – present), Funded by STFC-funded UCL Centre for Doctoral Training (CDT)
- Tarek Allam, *Primary PhD student supervisor* (2017 – present), Funded by STFC-funded UCL Centre for Doctoral Training (CDT)
- Matthew Price, *Primary PhD student supervisor* (2017 – present), Funded by STFC Studentship
- Peter Taylor, *Secondary PhD student supervisor* (2016 – present), Funded by STFC Studentship
- Luke Pratley, *Primary PhD student supervisor* (2015 – present), Funded by Graduate Research Scholarship (GRS) and William Georgetti Scholarship
- Zoe Vallis, *Secondary PhD student supervisor* (2015 – present), Funded by STFC Studentship
- Yu Tao, *Secondary PhD student supervisor* (2014 – present)
- Jennifer Chan, *Primary PhD student supervisor* (2014 – present), Funded by GRS
- Ellis Owen, *Secondary PhD student supervisor* (2014 – present), Funded by STFC Studentship

- William Jennings, *Secondary PhD student supervisor* (2014 – present), Funded by STFC Studentship
- Laura Wolz, *Secondary PhD student supervisor* (2011 – 2014), Funded by STFC Studentship, Now postdoctoral researcher at University of Melbourne

### Masters & Internship Student Supervision

- Tarek Allam, *Primary masters student supervisor* (2016)
- Antoine Plouviez, *Primary internship student supervisor* (2016)
- Nathan Zerbib, *Primary masters student supervisor* (2015 – 2016)
- Mathieu Issartel, *Secondary masters student supervisor* (2014 – 2015)
- Remy Joseph, *Secondary masters student supervisor* (2013 – 2014), Now PhD student at Ecole Polytechnique Fédérale de Lausanne (EPFL)
- Isabella Soldner-Rembold, *Primary masters student supervisor* (2012 – 2013), Now PhD student at Max Planck Institute for Extraterrestrial Physics
- Vlad Margarint, *Primary internship student supervisor* (2012)
- Thibaut Josset, *Primary internship student supervisor* (2012), Now PhD student at Aix-Marseille University
- Athamos Stradis, *Primary masters student supervisor* (2011 – 2012)
- Tom Heritage, *Primary masters student supervisor* (2007 – 2008)

### Teaching & Admissions Activities

2014 – 2017	Lecturer and Course Organiser for <i>SPCEG007: Space-Based Communication Systems</i> of MSc in Space Science & Engineering
2014 – 2017	Lecturer for <i>SPCEGC03: Space Data Systems and Processing</i> of MSc in Space Science & Engineering
2013 – present	Interviewer for PhD and postdoctoral positions (UCL)
2011	Guest lecturer for Masters in Information Engineering (EPFL)
2008	Admissions interviewer in Physics (Clare College, University of Cambridge)
2007 – 2008	Covering supervisor for Part IA Physics (University of Cambridge)
2005 – 2007	Supervisor for Part IA Engineering Mathematics (University of Cambridge)
2004 – 2007	Supervisor for Part IB Engineering Mathematics (University of Cambridge)
2003 – 2004	Demonstrator for Part IA and IB Engineering Computer Programming (University of Cambridge)
2002	Primary School Student Mentor (Golden Key mentoring program)
2002	Supervisor for Circuits and Systems (University of Canterbury, NZ)
1999 - 2000	Supervisor for first year Mathematics (University of Canterbury, NZ)

### Organisation of Scientific Meetings & Discussion Forums

#### Conference & Workshop Organisation

- UCL Centre for Doctoral Training (CDT) in Data Intensive Science (DIS) Research Festival, 2017, London, *Co-Chair*. Multi-disciplinary conference highlighting research projects of the CDT.
- Biomedical and Astrophysical Signal Processing (BASP) Frontiers 2017, Switzerland, *Co-Chair* (<http://www.basppfrontiers.org>). Multi-disciplinary conference bringing together the biomedical, astrophysics and signal processing/applied mathematics communities.
- Big Data in the Physical Sciences, Alan Turing Institute (ATI) Summit, 2016, Royal Society, UK, *Scientific Organising Committee* (<https://indico.cern.ch/event/449964/overview>). Scoping meeting to address the role of physical sciences in the ATI.
- Cosmostatistics Initiative (COIN) Residence Programme, 2015, UK, *Scientific Organising Committee* (<http://iaacoin.wix.com/crp2015>). Inter-disciplinary unconference focusing on statistics and cosmology.
- Next-Generation Radio Interferometric Imaging for the SKA, Royal Society South Africa-UK Scientific Seminar, 2015, South Africa, *Chair* (<https://sites.google.com/site/royalsocradioimg2015>). Multi-disciplinary unconference focusing on radio interferometry and advanced imaging techniques (*e.g.* compressed sensing, Bayesian inference).
- Biomedical and Astrophysical Signal Processing (BASP) Frontiers 2015, Switzerland, *Co-Chair* (<http://www.basppfrontiers.org>). Multi-disciplinary conference bringing together the biomedical, astrophysics and signal processing/applied mathematics communities.

- Science on the Sphere, Royal Society International Scientific Seminar, 2014, UK, *Co-Chair* (<http://lateuniverse.wordpress.com/2014/05/13/science-on-the-sphere>). Multi-disciplinary conference bringing together the physical sciences and signal processing/applied mathematics communities.
- Biomedical Imaging and Astronomy: Shared Algorithms and Analyses, UCL, 2014, UK, *Co-Organiser*. Multi-disciplinary conference bringing together the biomedical imaging and astronomy communities.
- IEEE International Conference on Data Mining (ICDM) Astroinformatics Workshop 2013, USA, *Scientific Organising Committee* (<http://www2.cs.uh.edu/vilalta/workshops/astro-icdm2013/index.html>). Multi-disciplinary conference bringing together the statistics, machine learning and astrophysics communities.
- Biomedical and Astrophysical Signal Processing (BASP) Frontiers 2013, Switzerland, *Co-Chair* (<http://www.basppfrontiers.org>). Multi-disciplinary conference bringing together the biomedical, astrophysics and signal processing/applied mathematics communities.
- Biomedical and Astrophysical Signal Processing (BASP) Frontiers 2011, Switzerland, *Scientific Organising Committee* (<http://www.basppfrontiers.org>). Multi-disciplinary conference bringing together the biomedical, astrophysics and signal processing/applied mathematics communities.

### Discussion Forums

- Led discussion forum at Big Data in the Physical Sciences, Alan Turing Institute Summit on *Extracting meaning from big-data*.
- Led discussion forum at UK Dark Energy Strategy 2020 meeting on *Methodological and algorithmic synergies in astronomy and multi-disciplinary connections*.
- Led discussion forum at Crick Institute Biomedical Imaging and Astronomy: Shared Algorithms and Analyses meeting on *Methodologies for analysing big-data*.

### Scientific Talks

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#### Invited Talks

- High-dimensional uncertainty estimation with sparse priors for radio interferometric imaging  
Jun 2017, Statistical Foundations of Uncertainty Quantification for Inverse Problems, University of Cambridge, UK
- LSST Informatics and Statistics Science Collaboration (ISSC)  
May 2017, Specialist Discussion Session on LSST, Royal Astronomical Society (RAS), UK
- Next-generation radio interferometric imaging for the SKA era  
Mar 2017, School of Physics and Astronomy, University of Manchester, UK
- Sampling and geometry  
Jul 2017, 12th International Conference on Sampling Theory and Applications (SampTA), Tallinn, Estonia
- Topic: Computational harmonic analysis on manifolds and graphs with application to astrophysics and machine learning (declined)  
Dec 2016, Neural Information Processing Systems (NIPS), Barcelona, Spain
- Statistical approaches for sparse radio interferometric imaging  
Oct 2016, 3GC4 Workshop, Port Alfred, South Africa
- Statistical approaches for sparse radio interferometric imaging  
Oct 2016, CALIM 2016, Socorro, USA
- LSST Informatics and Statistics Science Collaboration (ISSC)  
June 2016, National Astronomy Meeting (NAM), University of Nottingham, Nottingham, UK
- Wavelet reconstruction of E- and B-modes for weak lensing mass mapping and CMB polarisation  
June 2016, Mapping the Cosmic Web, Royal Astronomical Society (RAS), London, UK
- Radio interferometry in the big-data era of the Square Kilometre Array (SKA)  
Apr 2016, Mathematical & Physical Sciences (MAPS) Faculty Research Festival, University College London, London, UK
- Big-data in astronomy and astrophysics: extracting meaning from big-data  
Feb 2016, Connecting the Dots, Institute of High Energy Physics, Vienna, Austria
- Astrostatistics and astroinformatics: big-data in astronomy and astrophysics  
Jan 2016, UK Dark Energy Strategy 2020, Royal Astronomical Society, London, UK
- Sparsity in astrophysics: astrostatistics meets astroinformatics

- Dec 2015, ERCIM International Conference on Computational and Methodological Statistics, London, UK
- Imaging data from next-generation radio interferometric telescopes with compressive sensing  
Oct 2015, Department of Applied Mathematics & Theoretical Physics (DAMTP), University of Cambridge, UK
  - Radio interferometric imaging with compressive sensing  
Aug 2015, School of Information Science and Engineering, Australian National University (ANU), Australia
  - Optimising radio interferometric imaging with compressive sensing  
May 2015, Experimental Design and Big Data, Warwick Data Science Institute, University of Warwick, UK
  - Sparsity in astrophysics: astrostatistics meets astroinformatics  
Dec 2014, SuSTaIn EdgeCutter Workshop on Astrostatistics, Royal Statistical Society, London, UK
  - Spin scale-discretised wavelets on the sphere for the analysis of CMB polarisation  
Dec 2014, ERCIM International Conference on Computational and Methodological Statistics, Pisa, Italy
  - Spin scale-discretised wavelets on the sphere for the analysis of CMB polarisation  
Sep 2014, Sparsity and Cosmology, Nice, France
  - Sparsity in astrophysics: astrostatistics meets astroinformatics  
Sep 2014, Royal Statistical Society International Conference, Sheffield, UK
  - Radio interferometric imaging with compressive sensing  
Aug 2014, Inverse Problems - from Theory to Application (IPTA), Bristol, UK
  - Spherical signal analysis  
Jul 2014, Science on the Sphere, Royal Society International Scientific Seminar, Kavli Royal Society International Centre, Buckinghamshire, UK
  - Imaging observations from next-generation radio interferometric telescopes  
Jun 2014, Research IT Services Annual Forum, University College London (UCL), UK
  - Astronomical imaging initiatives  
Jun 2014, Biolmaging UK, London, UK
  - Cosmolnformatics  
Mar 2014, Mullard Space Science Laboratory (MSSL), University College London (UCL), UK
  - Primordial gravitational waves detected by BICEP2?  
Mar 2014, School of Chemical & Physical Sciences, Victoria University, NZ
  - Cosmological signal and image processing  
Mar 2014, School of Information Science and Engineering, Australian National University (ANU), Australia
  - Revisiting the spread spectrum effect in radio interferometric imaging  
Mar 2014, CALIM 2014, Kiama, Australia
  - Cosmological image processing  
Dec 2013, Auckland University of Technology (AUT) Seminar, Auckland, NZ
  - Next-generation radio interferometric imaging with compressive sensing  
Dec 2013, Auckland University of Technology (AUT) Seminar, Auckland, NZ
  - Cosmological image processing  
Nov 2013, Image and Vision Computing New Zealand 2013, Wellington, NZ
  - Next-generation radio interferometric imaging with compressive sensing  
Nov 2013, IEEE NZ Central Section AGM, Wellington, NZ
  - Scale-discretised wavelets on the sphere  
Aug 2013, Wavelets XV, SPIE Optics and Photoics, San Diego, USA
  - Fourier-Laguerre transform, convolution and wavelets on the ball  
Jul 2013, 10th International Conference on Sampling Theory and Applications (SampTA), Bremen, Germany
  - Signal processing on spherical manifolds  
Jun 2013, Probabilistic And Statistical techniques for Cosmological AnaLysis (PASCAL) workshop,



Rome, Italy

- Exploiting sparsity for CMB data analysis  
Apr 2013, London Cosmology Discussion Meeting, Royal Astronomical Society, London, UK
- Sparsity: CosmoStats meets CosmolInformatics  
Mar 2013, CosmoStats 2013, Banff, Canada
- Signal processing on spherical manifolds  
Mar 2013, School of Information Science and Engineering, Australian National University (ANU), Australia
- Towards realistic radio interferometric imaging with compressive sensing  
Mar 2013, Astronomy and Astrophysics, Victoria University, NZ
- Radio interferometric imaging with compressive sensing  
Jan 2013, London Cosmology Discussion Meeting, Royal Astronomical Society, London, UK
- Towards compressive sensing imaging of real radio interferometric observations  
Dec 2012, CALIM 2012, Cape Town, South Africa
- Cosmological signal processing  
Oct 2012, Institute of Cosmology and Gravitation, University of Portsmouth, UK
- Cosmological signal processing  
Oct 2012, Department of Physics and Astronomy, University of Southampton, UK
- Implications of a new sampling theorem for sparse signal reconstruction on the sphere  
May 2012, Astronomical Data Analysis (ADA), Cargese, Corsica
- Spherical signal processing for cosmology  
Mar 2012, Signal Processing for the Physical Sciences, Kavli Royal Society International Centre, Buckinghamshire, UK
- Spherical signal processing and the Multiverse  
Jan 2012, IFCA Seminar, University of Cantabria, Santander, Spain
- Sampling theorems and compressed sensing on the sphere  
Jan 2012, BASP Seminar, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland
- Spherical signal processing for cosmology  
Oct 2011, Astrophysics Seminar, University College London (UCL), London, UK
- Compressed sensing for radio interferometric imaging: review and future direction  
Sep 2011, IEEE International Conference on Image Processing (ICIP), Brussels, Belgium
- A novel sampling theorem on the sphere with implications for compressive sensing  
Sep 2011, Biomedical and Astrophysical Signal Processing (BASP) Frontiers, Villars, Switzerland
- Radio interferometric imaging with compressed sensing  
Sep 2011, Biomedical and Astrophysical Signal Processing (BASP) Frontiers, Villars, Switzerland
- Signal processing on the sphere and applications  
Aug 2011, CaSP Seminar, Victoria University, Wellington, New Zealand
- Wavelets on the sphere and cosmological applications  
Nov 2010, Guest Lecture for Advanced Signal Processing, Master in Information Technology, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland
- Simulating full-sky interferometric observations with wavelets  
Sep 2010, Astrophysics Seminar, Cavendish Laboratory, University of Cambridge, UK
- Compressed sensing for radio interferometric imaging on wide fields of view  
Aug 2010, CALIM 2010, ASTRON, Dwingeloo, Netherlands
- Simulating full-sky interferometric observations  
Apr 2008, CALIM 2008, Deep Surveys of the Radio Universe with SKA Pathfinders, Perth, Australia
- Detecting dark energy with wavelets on the sphere  
Aug 2007, Wavelets XII, SPIE Optics and Photoics, San Diego, USA
- Wavelets on the sphere: new methodologies and cosmological applications  
Jun 2007, Cosmology lunch talk, Department of Applied Mathematics & Theoretical Physics (DAMTP), University of Cambridge, UK
- Bianchi VII<sub>h</sub> signatures and WMAP  
Nov 2006, School of Physics and Astronomy, University of Nottingham, UK

- Large-scale anomalies in WMAP data: Deviations from isotropy  
Oct 2006, CMB workshop, Institute of Astronomy, University of Cambridge, UK
- Detection of the ISW effect and corresponding dark energy constraints  
Jun 2006, Institute of Astronomy, University of Cambridge, UK
- Detection of the ISW effect and corresponding dark energy constraints  
Dec 2005, Astrophysics Seminar, Cavendish Laboratory, University of Cambridge, UK
- Planck workshop on non-Gaussianity: Fast directional spherical wavelets  
Sep 2005, Planck workshop on non-Gaussianity, Instituto de Fisica de Cantabria, Santander, Spain
- Fast directional spherical wavelets for cosmology (Abstract)  
Feb 2005, Cosmology lunch talk, Department of Applied Mathematics & Theoretical Physics (DAMTP), University of Cambridge, UK

### Contributed Talks

- LSST 3D Data Compression (3DDC) Taskforce  
July 2016, LSST DESC collaboration meeting, University of Oxford, Oxford, UK
- Wavelet reconstruction of E- and B-modes for CMB polarisation and cosmic shear  
May 2016, Statistical Challenges in 21st Century Cosmology, Chania, Crete
- Spin scale-discretised wavelets on the sphere for the analysis of CMB polarisation  
May 2014, IAU Symposium on Statistical Challenges in 21st Century Cosmology, Lisbon, Portugal
- Sparsity, Euclid and the SKA  
Sep 2013, Synergistic Science with Euclid and the Square Kilometre Array, Oxford, UK
- Background geometry and topology of the Universe: Bianchi VII<sub>h</sub> cosmologies and Planck  
Apr 2013, The Universe as seen by Planck, ESLAB Symposium, ESA/ESTEC, The Netherlands
- Spherical wavelet-Bayesian cosmic string tension estimation  
Sep 2012, Big 3 (Big Bang, Big Data, Big Computing), Paris, France
- Detecting cosmic bubble collisions with optimal filters  
Mar 2012, Recontres de Moriond, La Thuile, Italy
- Intrinsic advantages of the w component and spherical imaging for wide-field radio interferometry  
Aug 2011, XXXth General Assembly and Scientific Symposium of the International Union of Radio Science, Istanbul, Turkey
- Wavelet-based data compression on the sphere  
May 2008, ADA 5, Heraklion, Crete
- Detection of the ISW effect and corresponding dark energy constraints  
Mar 2006, Recontres de Moriond, La Thuile, Italy
- Fast directional spherical wavelets for CMB analysis  
Apr 2005, National Astronomy Meeting, University of Birmingham, UK
- A high sigma detection of non-Gaussianity in the WMAP 1-year data  
Jul 2004, 20th IAP Colloquium – CMB Physics and Observations, Paris, France
- A fast directional continuous spherical wavelet transform for the analysis of cosmological data  
Mar 2004, Recontres de Moriond, La Thuile, Italy

### Publications

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72 Journal Articles + 26 Conference Proceedings = 98 Articles

H-index: 27; Citations: 4044 (Google Citations)

Google Citations profile (<http://scholar.google.co.uk/citations?user=V19kdRg7j1Y>)

arXiv profile ([http://arxiv.org/a/mcewen\\_j\\_1](http://arxiv.org/a/mcewen_j_1))

### Journal Articles

1. C. G. R. Wallis, **J. D. McEwen**, T. D. Kitching, B. Leistedt, and A. Plouviez, 2017, *Mapping dark matter on the celestial sphere with weak gravitational lensing*, Mon. Not. Roy. Astron. Soc., submitted ([arXiv:1703.09233](https://arxiv.org/abs/1703.09233))
2. J.-F. Robitaille, A. M. M. Scaife, E. Carretti, B. M. Gaensler, **J. D. McEwen**, B. Leistedt, M. Haverkorn, G. Bernardi, M. J. Kesteven, S. Poppi, and L. Staveley-Smith, 2017, *A new perspective on turbulent Galactic magnetic fields through comparison of linear polarisation decomposition techniques*, Mon. Not. Roy. Astron. Soc., in press ([arXiv:1703.04469](https://arxiv.org/abs/1703.04469))



3. A. Dabbech, L. Wolz, L. Pratley, **J. D. McEwen**, and Y. Wiaux, 2017, *The w-effect in interferometric imaging: from a fast sparse measurement operator to super-resolution*, Mon. Not. Roy. Astron. Soc., submitted  
([arXiv:1702.05009](https://arxiv.org/abs/1702.05009))
4. Planck Collaboration LII., 2016 *Planck intermediate results. LII. Planet flux densities*, Astron. & Astrophys., submitted  
([arXiv:1612.07151](https://arxiv.org/abs/1612.07151))
5. **J. D. McEwen**, S. M. Feeney, H. V. Peiris, Y. Wiaux, C. Ringeval, and F. R. Bouchet, 2016, *Wavelet-Bayesian inference of cosmic strings embedded in the cosmic microwave background*, Mon. Not. Roy. Astron. Soc., submitted  
([arXiv:1611.10347](https://arxiv.org/abs/1611.10347))
6. T. D. Kitching, J. Alsing, A. F. Heavens, R. Jimenez, **J. D. McEwen**, L. Verde, 2016, *The limits of cosmic shear*, Mon. Not. Roy. Astron. Soc., submitted  
([arXiv:1611.04954](https://arxiv.org/abs/1611.04954))
7. L. Pratley, **J. D. McEwen**, M. d'Avezac, R. E. Carrillo, A. Onose, and Y. Wiaux, 2016, *Robust sparse image reconstruction of radio interferometric observations with PURIFY*, Mon. Not. Roy. Astron. Soc., submitted  
([arXiv:1610.02400](https://arxiv.org/abs/1610.02400))
8. X. Cai, C. G. R. Wallis, J. Y. H. Chan, and **J. D. McEwen**, 2016, *Wavelet-based segmentation on the sphere*, SIAM Journal on Imaging Sciences, submitted  
([arXiv:1609.06500](https://arxiv.org/abs/1609.06500))
9. C. G. R. Wallis, Y. Wiaux, and **J. D. McEwen**, 2016, *Sparse image reconstruction on the sphere: analysis vs synthesis*, IEEE Trans. Image Proc., submitted  
([arXiv:1608.00553](https://arxiv.org/abs/1608.00553))
10. Planck Collaboration LI., 2016 *Planck intermediate results. LI. Features in the cosmic microwave background temperature power spectrum and shifts in cosmological parameters*, Astron. & Astrophys., submitted  
([arXiv:1608.02487](https://arxiv.org/abs/1608.02487))
11. Planck Collaboration L., 2016, *Planck intermediate results. L. Evidence for spatial variation of the polarized thermal dust spectral energy distribution and implications for CMB B-mode analysis*, Astron. & Astrophys., submitted  
([arXiv:1606.07335](https://arxiv.org/abs/1606.07335))
12. Planck Collaboration XLVIII., 2016, *Planck intermediate results. XLVIII. Disentangling Galactic dust emission and cosmic infrared background anisotropies*, Astron. & Astrophys., 596(A109)  
([arXiv:1605.09387](https://arxiv.org/abs/1605.09387), [DOI:10.1051/0004-6361/201629022](https://doi.org/10.1051/0004-6361/201629022))
13. Planck Collaboration XLIX., 2016, *Planck intermediate results. XLIX. Parity-violation constraints from polarization data*, Astron. & Astrophys., 596(A110)  
([arXiv:1605.08633](https://arxiv.org/abs/1605.08633), [DOI:10.1051/0004-6361/201629018](https://doi.org/10.1051/0004-6361/201629018))
14. D. Saadeh, S. M. Feeney, A. Pontzen, H. V. Peiris, and **J. D. McEwen**, 2016, *How isotropic is the universe?*, Phys. Rev. Lett., 117(13):131302  
([arXiv:1605.07178](https://arxiv.org/abs/1605.07178), [DOI:10.1103/PhysRevLett.117.131302](https://doi.org/10.1103/PhysRevLett.117.131302))
15. B. Leistedt, **J. D. McEwen**, M. Büttner, and H. V. Peiris, 2016, *Wavelet reconstruction of E and B modes for CMB polarisation and cosmic shear analyses*, Mon. Not. Roy. Astron. Soc., 466(3):3728-3740  
([arXiv:1605.01414](https://arxiv.org/abs/1605.01414), [DOI:10.1093/mnras/stw3176](https://doi.org/10.1093/mnras/stw3176))
16. K. K. Rogers, H. V. Peiris, B. Leistedt, **J. D. McEwen**, and A. Pontzen, 2016, *Spin-SILC: CMB polarisation component separation with spin wavelets*, Mon. Not. Roy. Astron. Soc., 462(3):2310-2322  
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