

Contact: boris.leistedt@gmail.comHomepage: <http://www.ixkael.com>**RESEARCH INTERESTS**

Data-driven observational cosmology, astrophysics, and fundamental physics.

Analysis of large astronomical data sets (galaxy surveys and CMB, ground- and space-based).

High performance computing, statistical inference, signal & image processing, compressed sensing.

CURRENT AND PAST POSITIONS

NYU – New York University (USA). since 2015

Postdoctoral researcher in the Center for Cosmology & Particle Physics.

Visiting researcher at the New York University Center for Data Science
and at the Simons Foundation Center of Computational Astrophysics.**UCL – University College London (UK).** 2014 – 2015

Postdoctoral researcher in the Department of Physics & Astronomy.

EDUCATION

UCL – University College London (UK) 2011 – 2014

Doctor of Philosophy (PhD) in Physics and Astronomy, awarded 10/2014.

Thesis: *Accurate cosmology with galaxy and quasar surveys*. Advisor: Hiranya Peiris.

UCL Jon Darius Memorial Prize. Runner-up for RAS Michael Penston Prize.

UMons – University of Mons (Belgium) and 2006 – 2011**Supélec – École Supérieure d'Électricité (France)**

Joint Diplôme d'Ingénieur (dual MSc Electrical Engineering / Computer Science).

Thesis: *Selection of optimal learning sets for preference modeling and decision making*.

Advisors: Marc Pirlot (UMons) and Vincent Mousseau (École Centrale Paris).

High Octane award. Finalist for the ORBEL award.

Paris 11 – Orsay Paris-Sud University (France) 2008 – 2011

Master de Physique Fondamentale (MSc Physics, joint with engineering degree)

AWARDS

NASA Einstein Research Fellowship (competitive 3yr fellowship held at NYU) 2016 – 2019

Simons Foundation Research Fellowship (competitive 3yr fellowship held at NYU) 2015 – 2016

UCL Jon Darius Memorial Prize (outstanding PhD research in astrophysics) 2015

RAS Michael Penston Prize (runner-up, best UK PhD thesis in astrophysics) 2014

ORBEL award finalist (best MSc thesis in operational research in Belgium) 2011

High Octane award (top of MSc class), Faculty of Engineering, University of Mons 2011

T.I.M.E. scholarship held at UMons/Supélec/Paris 11 (competitive exchange program
between top European engineering universities leading to a joint masters degree) 2008 – 2011

SELECTED TALKS AND TRAVEL

Meeting names are in *italic*. Inter-disciplinary talks and meetings are highlighted with *.
Talks at bi-annual DES and LSST collaboration meetings are not included.

Dec 2016 * *Conference on Neural Information Processing Systems (NIPS)*, Barcelona (**invited**)
 Oct 2016 Department of Physics, University of Oxford, UK (**invited**)
 May 2016 * *Statistical Challenges in 21st Century Cosmology*, Chania, Greece.
 Apr 2016 * Center for Data Science, New York University, USA (**invited**)
 Apr 2016 American Physical Society (APS), Salt Lake City, USA (**invited**)
 Apr 2016 McWilliams Center for Cosmology, Carnegie Mellon University, USA (**invited**)
 Mar 2016 Kavli Institute for Particle Astrophysics and Cosmology, Stanford University, USA
 Feb 2016 *SphereX Community Workshop*, California Institute of Technology, USA
 Jan 2016 * *Sampling & non-sampling methods in cosmology*, University of California, Berkeley, USA
 Dec 2015 Dept of Physics & Astronomy, Imperial College London, UK (**invited**)
 Mar 2015 Dept of Physics & Astronomy, University College London, UK
 Jan 2015 * *BASP Frontiers Workshop 2015*, Villars, Switzerland (**best presentation prize**)
 Nov 2014 Lawrence Berkeley Laboratory, Berkeley, USA (**invited**)
 Nov 2014 Perimeter Institute, Waterloo, Canada (**invited**)
 Nov 2014 Institute of Astronomy & DAMPT, University of Cambridge, UK (**invited**)
 Sept 2014 Institute for Advanced Study / Princeton University, USA
 Sept 2014 Institute for Strings, Cosmology & Astroparticle Physics, Columbia University, USA
 Sept 2014 Institute for Theory and Computation, Harvard University, USA
 Sept 2014 Center for Cosmology and AstroParticle Physics, Ohio State University, USA
 Aug 2014 COSMO 2014, Kavli Institute for Cosmological Physics, University of Chicago, USA
 July 2014 Laboratório Interinstitucional de e-Astronomia, Rio de J., Brazil (webinar, **invited**)
 July 2014 * *Science on the Sphere, Royal Society Seminar*, Chicheley Hall, UK (**invited**)
 Jun 2014 * *Astronomy and Biomedical Imaging Workshop*, UCL Crick Institute, UK
 Apr 2014 * *Statistical Challenges in 21st Century Cosmology*, Lisbon, Portugal
 Apr 2014 *Progress on Old and New Themes in Cosmology*, Avignon, France
 Mar 2014 *49th Rencontres de Moriond*, La Thuile, Italy
 Dec 2013 London Cosmology Discussion Meeting (LCDM), UK
 Nov 2013 Department of Physics, University of Oxford, UK (**invited**)
 Oct 2013 Institute of Cosmological Sciences, University of Barcelona, Spain
 Aug 2013 * *Wavelet and Sparsity XV, SPIE 2013*, San Diego, USA (**invited**)
 July 2013 *Challenges for Next Gen. LSS Surveys*, Ascona, Switzerland (**best presentation prize**)

ORGANISATION OF WORKSHOPS AND SEMINARS

Since 2013 Co-organiser of the interdisciplinary *BASP Frontiers workshops* (2013, 2015, 2017)
 June 2014 Co-organiser of the *Cross-correlating cosmic probes* conference in UCL

OUTREACH AND PUBLIC ENGAGEMENT

Since 2013 I have been tweeting about astronomy and careers in STEM with the username @ixkael.

Apr 2016 Seminar on galaxy survey data analysis at the NYU Center for Data Science.
2013–2015 Seminar organiser for the UCL *Certificate in Astronomy* course.
May 2014 Talk on cosmological data analysis at the UCL Crick workshop.
Apr 2014 Article on BICEP2 and inflation for the T.I.M.E.A.A. newsletter.
Mar 2014 Animator for the Your Universe outreach festival, UCL (high-school students).
Feb 2014 Seminar on modern cosmology for the UCL Postgraduate Physics Society.
Sep 2013 Animator for the Your Universe outreach festival, UCL (high-school students).
Jun 2013 Seminar on modern cosmology for the Open University Astronomy Club.
Jan 2013 Seminar on modern cosmology for the UCL *Certificate in Astronomy* course.
2012 Consultant for the Dash theatre company ([trailer of the project](#)).

REFERENCES

Prof Hiranya Peiris

Dept of Physics & Astronomy
University College London, UK

h.peiris@ucl.ac.uk

Prof Ofer Lahav

Dept of Physics & Astronomy
University College London, UK

o.lahav@ucl.ac.uk

Dr Jason McEwen

Mullard Space Science Laboratory
University College London, UK

jason.mcewen@ucl.ac.uk

Prof Licia Verde

Institute of Cosmological Sciences
University of Barcelona, Spain

liciaverde@icc.ub.edu

Prof David Hogg

Dept of Physics
New York University, USA

david.hogg@nyu.edu

Prof Joshua Frieman

Dpt of Astronomy & Astrophysics
University of Chicago, USA

frieman@fnal.gov

PUBLICATIONS

Journal names are abbreviated as follows:

MNRAS : Monthly Notices of the Royal Astronomical Society
IEEE TSP : IEEE Transactions on Signal Processing

ApJ: the Astrophysical Journal
A&A : Astronomy & Astrophysics

PRD : Physics Review D
PRL : Physics Review Letters

REFEREED JOURNAL ARTICLES (FIRST AUTHOR ONLY):

1. [*Wavelet reconstruction of pure E and B modes for CMB polarisation and cosmic shear analyses.*](#)
B. Leistedt, J. D. McEwen, M. Büttner, H. V. Peiris, MNRAS, in press, 2016.
2. [*Hierarchical Bayesian inference of galaxy redshift distributions from photometric surveys.*](#)
B. Leistedt, D. J. Mortlock, H. V. Peiris, MNRAS, in press, 2016.
3. [*Mapping and simulating systematics due to spatially-varying observing conditions in DES SV data.*](#)
B. Leistedt, H. V. Peiris, F. Elsner *et al* (DES collaboration), ApJS, in press, 2016.
4. [*3D weak lensing with spin wavelets on the ball.*](#)
B. Leistedt, J. D. McEwen, T. Kitching, H. V. Peiris, PRD, 92, 123010, 2015.
5. [*Constraints on primordial non-Gaussianity from 800,000 photometric quasars.*](#)
B. Leistedt, H. V. Peiris, N. Roth, 2014, PRL, 113, 221301, 2014.
6. [*Exploiting the full potential of photometric quasar surveys: Optimal power spectra through blind mitigation of systematics.*](#)
B. Leistedt, H. V. Peiris, MNRAS, 444(1): 2-14, 2014.
7. [*No new cosmological concordance with massive sterile neutrinos.*](#)
B. Leistedt, H. V. Peiris, L. Verde, PRL, 113, 041301, 2014.
8. [*S2LET: a code to perform fast wavelet analysis on the sphere.*](#)
B. Leistedt, J. D. McEwen, P. Vanderghenst, Y. Wiaux, A&A, 558, A128, 2013.
9. [*Estimating the large-scale angular power spectrum in the presence of systematics: a case study of Sloan Digital Sky Survey quasars.*](#)
B. Leistedt, H. V. Peiris, D. Mortlock, A. Benoit-Lévy, A. Pontzen, MNRAS, 435(3): 1857-73, 2013.
10. [*Exact Wavelets on the Ball.*](#)
B. Leistedt, J. D. McEwen, IEEE TSP, 60, 6257-6269, 2012.
11. [*3DEX: a code for Fast Fourier-Bessel Decomposition of All-Sky 3D Surveys.*](#)
B. Leistedt, A. Rassat, J-L Starck, A. Refregier, A&A, 540, A60, 2011.

PRE-PRINTS (FIRST AUTHOR ONLY)

12. [*Accurate & physical photometric redshifts from heterogeneous, incomplete spectroscopic training.*](#)
B. Leistedt, D. Hogg, in prep.

REFEREED JOURNAL ARTICLES (COLLABORATIONS WITH SIGNIFICANT CONTRIBUTIONS ONLY)

13. [*No galaxy left behind: Accurate clustering for incomplete galaxy samples in the Dark Energy Survey.*](#)
E. Suchyta, E. Huff *et al*. (DES collaboration, including **B. Leistedt**), MNRAS, 457(1): 786-808, 2016.
14. [*Debiasing systematics mitigation methods in galaxy angular clustering estimators.*](#)
F. Elsner, **B. Leistedt**, H. V. Peiris, MNRAS, 456(2): 2095-2104, 2016.
15. [*CMB lensing tomography with the DES Science Verification galaxies.*](#)
T. Giannantonio *et al*. (DES collaboration, including **B. Leistedt**), MNRAS, 456(3), 3213-3244, 2016.

16. [Galaxy clustering, photometric redshifts & diagnosis of systematics in the DES Science Verification data.](#)
M. Crocce *et al.* (DES collaboration, including **B. Leistedt**), MNRAS, 455(4): 4301-4324, 2016.
17. [A novel sampling theorem on the rotation group.](#)
J. D. McEwen, M. Büttner, **B. Leistedt**, H. V. Peiris, Y. Wiaux, IEEE Sig Proc Letters, 22, 12, 2015.
18. [Modelling the Transfer Function for the Dark Energy Survey.](#)
C. Chang *et al.* (DES collaboration, including **B. Leistedt**), ApJ, 801, 73, 2015.

PRE-PRINTS (COLLABORATIONS WITH SIGNIFICANT CONTRIBUTIONS ONLY)

19. [Spin-SILC: CMB polarisation component separation with spin wavelets.](#)
K. Rogers, H. V. Peiris, **B. Leistedt**, J. D. McEwen, A. Pontzen, MNRAS, in press, 2016.
20. [A new Planck Internal Linear Combination CMB temperature map using directional wavelets.](#)
K. Rogers, H. V. Peiris, **B. Leistedt**, J. D. McEwen, A. Pontzen, MNRAS, in press, 2016.
21. [Second-generation curvelets on the sphere.](#)
J. Y. H. Chan, **B. Leistedt**, T. Kitching, J. D. McEwen, submitted to IEEE TSP.
22. [Directional spin wavelets on the sphere.](#)
J. D. McEwen, **B. Leistedt**, M. Büttner, H. V. Peiris, Y. Wiaux, submitted to IEEE TSP.
23. [Cosmology from Cosmic Shear with DES Science Verification Data.](#)
DES collaboration (including **B. Leistedt**), submitted to PRD.
24. [Cosmic Shear Measurements with DES Science Verification Data.](#)
M. Becker *et al.* (DES collaboration, including **B. Leistedt**), submitted to PRD.
25. [Redshift distributions of galaxies in the DES SV shear catalogue and implications for weak lensing.](#)
C. Bonnett *et al.* (DES collaboration, including **B. Leistedt**), submitted to PRD.
26. [redMaGiC: Selecting Luminous Red Galaxies from the DES Science Verification Data.](#)
E. Rozo *et al.* (DES collaboration, including **B. Leistedt**), submitted to MNRAS.

PROCEEDINGS ARTICLES (POSTED ON ARXIV ONLY)

27. [Analysing the polarisation of the CMB with spin scale-discretised wavelets.](#)
B. Leistedt, J. D. McEwen, M. Büttner, H. V. Peiris, Y. Wiaux, P. Vanderghenst, BASP 2015.
28. [On spin scale-discretised wavelets on the sphere for the analysis of CMB polarisation.](#)
J. McEwen, M. Büttner, **B. Leistedt**, H. V. Peiris, Y. Wiaux, P. Vanderghenst, 2014, SCCC21/IAU306.
29. [Flaglets on the ball for studying the large-scale structure of the Universe.](#)
B. Leistedt, H. V. Peiris, J. D. McEwen, 2013, Wavelets & Sparsity XV, SPIE 2013.
30. [Fourier-Laguerre Transform, Convolution and Wavelets on the Ball.](#)
J. D. McEwen, **B. Leistedt**, 2013, International Conference on Sampling Theory and Applications.
31. [Flaglets: Exact Wavelets on the Ball.](#) **B. Leistedt**, J. D. McEwen, 2013, BASP Frontiers 2013.