

## Curriculum vitae of Hiranya Vajramani Peiris

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**URL for web site (includes link to full CV):** <https://www.ucl.ac.uk/cosmoparticle/hiranya-peiris>

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### Research Interests:

Theoretical and observational cosmology; cosmic microwave background; large scale structure; early universe physics; galaxy evolution; stellar dynamics; Bayesian statistics; machine learning; computational methods.

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### Education:

Nov 2003: Doctor of Philosophy: Astrophysics, **Princeton University** (Advisor: Prof. David Spergel)  
Title: “*WMAP First Year Results: Cosmological Parameters and Implications for Inflation*”

Jun 2001: Master of Arts in Physics, **Princeton University**

Jun 2000: Master of Arts in Astrophysics, **Princeton University**

1994–1998: Bachelor of Arts & Master of Science in Natural Sciences (Physics, 1<sup>st</sup> Class Honours)  
**University of Cambridge**

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### Current Positions:

Oct 15 – present: Professor of Astrophysics, Dept. of Physics and Astronomy, **University College London**

Sep 16 – present: Director, UCL Cosmoparticle Initiative, **University College London**

Sep 16 – present: Professor in Cosmoparticle Physics, Department of Physics, **Stockholm University**

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### Previous Positions:

Sep 16 – Jan 22: Director, **Oskar Klein Centre for Cosmoparticle Physics**, Stockholm

Oct 12 – Sep 15: Reader, Dept. of Physics and Astronomy, **University College London**

Oct 09 – Sep 12: University Lecturer, Dept. of Physics and Astronomy, **University College London**

Oct 07 – Sep 12: STFC Advanced Fellowship, held at **Cambridge University, University College London**

Oct 04 – Sep 07: Hubble Postdoctoral Fellowship (NASA/STSci), held at the **University of Chicago**

Nov 03 – Sep 04: Research Associate, Dept. of Astrophysical Sciences, **Princeton University**

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### Fellowships and Awards (since PhD):

2022: Elected Foreign Member, Royal Swedish Academy of Sciences

2021: Eddington Medal, Royal Astronomical Society, U.K.

2021: Max Born Medal and Prize, German Physical Society and Institute of Physics, U.K.

2020: Göran Gustafsson Prize in Physics, Gustafsson Foundation / Royal Swedish Academy of Sciences

2018: Fred Hoyle Medal and Prize, Institute of Physics, U.K.

2018: Gruber Cosmology Prize (awarded to Planck Collaboration), Gruber Foundation, U.S.A.

2018: Breakthrough Prize in Fundamental Physics (awarded to the WMAP Science Team), U.S.A.

2018: Buchalter Cosmology Prize, co-recipient

2017: Svein Rosseland Lecture, University of Oslo, Norway

2016: Elected Fellow of the American Physical Society

2014: Buchalter Cosmology Prize, co-recipient

2012: Gruber Cosmology Prize (awarded to the WMAP Science Team), Gruber Foundation, U.S.A.

2012: Fowler Prize, Royal Astronomical Society, U.K.

2009: Philip Leverhulme Prize, The Leverhulme Trust, U.K.

2008: Junior Research Fellowship, King’s College, Cambridge

2007: STFC Advanced Fellowship, UK Science and Technology Facilities Council

2007: Halliday Prize, given to the top scientist selected for STFC Advanced Fellowship

2007: Kavli Frontiers Fellow, US National Academy of Science (of 76 named in all fields in 2007)

2004 & 2007: 2 Group Achievement Awards to WMAP Science Team awarded by NASA

2004: Hubble Postdoctoral Fellowship (NASA/STSci), held at University of Chicago

2004: Enrico Fermi Fellowship, Enrico Fermi Institute, University of Chicago, U.S.A.

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**Professional Esteem Indicators:**

- Publications since 2000 (iNSPIRE-HEP): Citation count: **63,429**; **157** journal publications; h-index: **69**; **20** “Renowned” (500+), **7** “Famous” (250-499); Citations per paper (avg): **360**
- **170+** invited talks incl. plenary talks at all recurring international symposia in my broad research area
- Vice-President (Astronomy), **Royal Astronomical Society** (2016–2018)
- Council Member, **STFC Council**, U.K. (2020–) [*Governing body of UK National Research Council*]
- Distinguished Visiting Research Chair, **Perimeter Institute**, Canada (2022–)
- Organizer/session convenor at **23** international symposia
- **European Research Council** Starting Grant PI (2013–2018), Advanced Grant PI (2021–)
- **€12.22M** in grant funding awarded as PI, **€9.19M** as Co-I in the last 10 years.

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**Membership of Scientific Societies:**

Foreign Member, Royal Swedish Academy of Sciences (elected 2022);  
Fellow, Royal Astronomical Society (2008–); Member, American Astronomical Society (2004–);  
Fellow, American Physical Society (elected 2016); Fellow, Institute of Physics (elected 2018).

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**Major collaborations (selected):**

Wilkinson Microwave Anisotropy Probe Science Team (2002–2006); Planck High Frequency Instrument Core Team (2009–2019); Dark Energy Survey (DES) Collaboration (2013–); Legacy Survey of Space and Time (LSST) Dark Energy Science Collaboration (2013–, elected *Builder* 2020); Dark Energy Spectroscopic Instrument (DESI) Collaboration (2015–)

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**International committees, advisory boards, and reviewing activities:**

- DiRAC (UK National HPC facility) Resource Allocation Committee (2013–2015)
- Computing Advisory Panel to Science & Technology Facilities Council, U.K. (2013–2016)
- External Advisory Committee, Simons Observatory (2017–)
- Science Advisory Board, Flatiron Institute New York (2017–)
- European Research Council Consolidator Grants PE9 Panel (2017, deputy chair in 2019 and 2021)
- Legacy Survey of Space and Time (LSST) Dark Energy Science Collaboration (DESC):  
Collaboration Council (2015–2019); Publication Board (2016–2020); Advisory Board (2019–2021)
- LSST Corporate Operations Committee (2017–)
- LSST Survey Cadence Optimisation Committee (2020–)
- General Member, Aspen Center for Physics (2017–)
- STFC Council, U.K. (2020–) [*Governing body of UK National Research Council*]
- Editor, Physics Letters B (2015–2021)

**Reviewer** for the Canadian Space Agency, the UK Science and Technology Facilities Council, L'Agence Nationale de la Recherche France, and the European Research Council. **Referee** for Monthly Notices of the Royal Astronomical Society, Physical Review Letters, Physical Review D, Journal of Cosmology and Astroparticle Physics, Science, General Relativity and Gravitation, Classical and Quantum Gravity.

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**Current grants:**

- Jan 2022: “Fundamental physics from populations of compact object mergers”, Reg. No. 202-04195, Swedish Research Council, Sweden (PI/ 4,000,000 SEK (€390k); 3 Co-Is)
- Oct 2021: “CosmicExplorer: Exploring the Cosmos with the Vera Rubin Observatory” **ERC Advanced Grant** 101018897, European Research Council (PI/ €2.5M, 0 Co-Is)
- Nov 2020: “Quantum Simulators of Fundamental Physics (UCL)”, ST/T005904/1, Science and Technology Facilities Council, U.K. (PI/ £602,976; 1 Co-I; UCL component of QTFP consortium grant)
- Mar 2020: Research prize associated with the Göran Gustafsson Prize in Physics, Göran Gustafsson Foundation, Sweden (5,100,000 SEK (€460k))
- Jan 2020: “Detecting Axion Dark Matter In The Sky And In The Lab”, Reg. No. 2019-02337, Swedish Research Council, Sweden (PI/ 17,890,577 SEK (€1.7M); 5 Co-Is)
- July 2020: “Gravity Meets Light”, Dnr KAW 2019.0112, Knut and Alice Wallenberg Foundation (Co-I / 33,500,000 SEK (€3.2M); PI: Rosswog, 3 other Co-Is)
- July 2019: “Understanding the Dynamic Universe”, Dnr KAW 2018.0067, Knut and Alice Wallenberg Foundation (PI / 37,800,000 SEK (€3.7M); 4 Co-Is)
- Dec 2017: “Fundamental Physics from Cosmological Surveys”, Dnr. 2017-04212, Swedish Research Council, Sweden (PI/ 4,110,000 SEK (€404k); 2 Co-Is)
- Jan 2017: “GREAT: Gravitational Radiation and Electromagnetic Astrophysical Transients”, Dnr. 2016-06012, Swedish Research Council, Sweden (Co-I/ 21,492,000 SEK (€2.2M); PI: Goobar, 2 other Co-Is)

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**Supervision of graduate students and postdoctoral fellows:**

I have mentored **nine** PhD students as primary supervisor, and **five** students as second supervisor (all completed except for 3 in progress) as well as **22** postdocs as line manager, at the Universities of Cambridge, UCL and Stockholm. Successful outcomes include Cora Dvorkin (associate professor, Harvard), Simeon Bird (assistant professor, UC Irvine), Stephen Feeney (assistant professor at UCL), 2 NASA Einstein Fellows, 3 Royal Society University Research Fellows and numerous prestigious institutional fellowships. In recognition of my mentoring, I was invited to write a chapter for “How to Get Your PhD: a handbook for the journey”, ed. Gavin Brown (University of Manchester), published by Oxford University Press in March 2021.

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**Teaching and public outreach:**

I have taught the following courses: Physical Cosmology (UCL, 3<sup>rd</sup> year course 2021-); Advanced Physical Cosmology (UCL, 4<sup>th</sup> year course 2010-2015); Cosmology & Extragalactic Astronomy (UCL, 3<sup>rd</sup> year course 2009-2010); Part III Mathematics Cosmology (DAMTP, Cambridge, 2008-2009). I supervised 11 undergraduate project students in the last decade and was an invited lecturer at international summer schools at Oxford; ICTS-IUCAA, Pune, India; and UCT, South Africa. I engage with a variety of media including TV, radio, print, and regular appearances to live audiences, to promote the public understanding of science. Appearances include TEDxCERN, BBC *Newsnight*, ITV News, Channel 4 News, BBC Radio 4, BBC World Service, BBC science programmes such as *Human Universe*, *Magic Numbers: Hannah Fry’s Mysterious World of Maths*, *The Sky at Night*, *Science’s Greatest Mysteries*, *Nova’s Universe*, *New Scientist Live*, and the *Guardian Science Weekly* podcast. These efforts have reached an audience of several million.

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**Organisation of scientific meetings (selection from last 10 years):**

- Co-organizer, *Large-scale structure beyond 2-point statistics*, Aspen Center for Physics, Jun 2022
- SOC, 21<sup>st</sup> IAP Colloquium, *Potential of machine learning for astronomical surveys*, Oct 2021
- Organiser, *Understanding Cosmological Observations* workshop, Benasque, July-Aug 2019
- Session Convenor, *GR22 Conference on General Relativity and Gravitation*, Valencia, July 2019
- Organiser and SOC, Kavli workshop on *Consistency of Cosmological Datasets*, Cambridge, May 2018
- Co-organizer, *Accurate Astrophysics Correct Cosmology*. Aspen Center for Physics, Jun-Jul 2018
- Session Convenor, 42nd COSPAR Scientific Assembly, Pasadena, CA, U.S.A., July 2018
- SOC, *COSMO21: Statistical Challenges in 21<sup>st</sup> Century Cosmology*, Valencia, Spain, May 2018
- SOC, EWASS2018, *European Week of Astronomy and Space Science*, Liverpool, U.K., April 2018
- SOC, Alan Turing Institute Summit: *Big Data in the Physical Sciences*, Royal Society, Jan 2016
- Co-organizer, *Accurate Astrophysics – Correct Cosmology*, RAS London, Jul 2015
- Session Convenor, Biomedical and Astronomical Signal Processing Frontiers (BASP15), Jan 2015
- Co-organizer, *Unsolved Problems in Astrophysics & Cosmology*, Benasque Center for Physics, Feb 2011
- Session Convenor, International Conference for High Energy Physics (ICHEP2010), Paris, Jul 2010

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**Selected scientific presentations:** over 170 invited talks (including all major annual international symposia relevant to my expertise). Multidisciplinary international meetings are indicated by (\*).

\*July 2021: Plenary; 14th Edoardo Amaldi Conference on Gravitational Waves (virtual)

Sept 2018: Plenary; COSMO-18 International Symposium, Daejeon, South Korea

May 2017: Svein Rosseland Lecture 2017, Oslo, Norway

\*Jul 2016: Plenary; 21st International Conference on General Relativity and Gravitation, New York, U.S.A.

\*Dec 2015: Plenary; XXVIII Texas Symposium on Relativistic Astrophysics, Geneva, Switzerland

June 2015: Plenary; Rencontres de Blois 2015 International Symposium, Blois, France

Aug 2014: Plenary; COSMO-14 International Symposium, Chicago, U.S.A.

\*May 2014: Invited; International Astronomical Union symposium Statistical Challenges in 21st Century Cosmology (IAU306), Lisbon, Portugal

Jun 2013: Plenary; National Astronomy Meeting (NAM2013), University of St. Andrews, U.K

\*Oct 2009: Plenary; “Statistical Frontier of Astrophysics”, IPMU Tokyo, Japan

Sep 2009: Plenary; COSMO-09 International Symposium, CERN, Switzerland

\*Dec 2008: Invited; XXIV Texas Symposium on Relativistic Astrophysics, Vancouver, Canada

May 2007: Plenary; Rencontres de Blois 2007 International Symposium, Blois, France

Jun 2006: Plenary; “Inflation+25” International Conference, Paris, France

\*Apr 2005: Invited; 2005 American Physical Society Meeting, Tampa, FL, U.S.A.

\*Jun 2004: Plenary; 10th Annual German-American Frontiers of Science Symposium, Germany

Nov 2003: Keynote; 6th RESCEU International Symposium, Tokyo, Japan

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