Jonathan R. Pritchard **Reader in Astrostatistics**

CONTACT INFORMATION

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BIOGRAPHICAL INFORMATION

Date of Birth: 26 January 1980 *Citizenship:* British

RESEARCH INTERESTS

Theoretical cosmology, reionization, cosmological 21 cm line, large scale structure, cosmic microwave background, inflation, dark energy, neutrino mass

RESEARCH EXPERIENCE

Imperial College, London, UK

Reader in Astrostatistics **September, 2018 - present**
Senior Lecturer in Astrostatistics **September, 2015 - August 2018**
Lecturer in Astrostatistics **October, 2011 - August, 2015**
Research in cosmology, the epoch of reionization, and astrostatistics. Teaching of undergraduate physics. Supervision of MSc and PhD projects. Mentoring of postdoctoral researchers.

Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts, USA

ITC Fellow **September, 2010 - August, 2011**
Hubble Fellow **September, 2007 - August, 2010**
Post-doctoral research in cosmology, the epoch of reionization, and the theory of the 21 cm line.

California Institute of Technology, Pasadena, California, USA

Graduate Student **September, 2002 - June, 2007**
Ph.D. research in cosmology, CMB B-modes, and the early Universe.

Cambridge University, Cambridge, UK

Part III Research project **December, 2001 - August, 2002**
Master's level research into bound fermionic states around black holes, using a gauge theory of gravity. Advisor: Anthony Lasenby.

California Institute of Technology, Pasadena, California, USA

Summer Undergraduate Research Fellowship **July, 2001 - September, 2001**
Undergraduate level research into quintessence models for dark energy. Advisor: Marc Kamionkowski.

EDUCATION

Imperial College, London, UK

Postgraduate Diploma in University Learning & Teaching, Sept, 2014.
Postgraduate Certificate in University Learning & Teaching, Sept, 2013.

California Institute of Technology, Pasadena, California, USA

Ph.D., Physics, June 2007.

- Advisor: Marc Kamionkowski
- Thesis: Extract ing the cosmic history from diffuse backgrounds

Cambridge University, Pembroke College, Cambridge, Cambridgeshire, UK

M.A. (Cantab), Natural Sciences, March, 2004.
M.Sci., Natural Sciences, June, 2002.
B.A., Natural Sciences, June, 2002.

Honors and Awards

FDM Everywoman in Technology Awards - Male Agent of Change - Finalist, 2019.

Fowler Award for early career achievement, Royal Astronomical Society, 2017.

Faculty of Natural Sciences Prize for Excellence in Teaching, 2019 - Imperial College London.
President's Award for Excellence in Teaching 2016 - Imperial College London.
Faculty of Natural Sciences Prize for Excellence in Teaching, 2015 - Imperial College London.
Rees Rawlings Prize for best PGCert portfolio, 2013 - Imperial College London.
Nominated for Student Academic Choice Award. 2016, 2018, 2019. Imperial College London.

Hubble Fellowship, 2007 - NASA/Harvard College Observatory.

Cambridge University, graduated with double First in Natural Sciences, 2002.
Foundress Prize, Pembroke College, Cambridge University, 2001.
Foundation scholar, Pembroke College, Cambridge University, 2000.
College scholar, Pembroke College, Cambridge University, 1999.

Postdoc Mentoring

Catherine Watkinson, ERC postdoc, Imperial, 2017-present.
Suman Majumdar, ERC postdoc, Imperial, 2015-18 (→ A.Prof IIT Indore).
Emma Chapman, RAS fellow, Imperial, 2015-18 (→ RS DHF Imperial).

PhD Supervision

Ian Hothi, Imperial, 2018 - present.
Adelie Gorce, Imperial/Paris, 2017 - present.
Tom Binnie, Imperial, 2016-present.
Claude Schmit, Imperial, 2014-2018 (→ Head of Technology, Biosensors Beyond Borders).
Catherine Watkinson, Imperial, 2011-2015 (→ PDRA UCL).
• Winner of Winton Capital Prize for best PhD thesis.

Undergraduate supervision

Madalina Tudorache, MSci Imperial, 2019-20
Matthew Thomas, MSci Imperial, 2019-20
Hirokazu Katori, MSci Imperial, 2018-19
Joschka Ziesche, MSci Imperial, 2018-19
Sina Varaei, MSc self-study project, Imperial, 2018-19
Marcus Halson, MSc self-study project, Imperial, 2018-19
Lawnish Rampat, MSc self-study project, Imperial, 2018-19
Jeremy Lo, MSci project, Imperial, 2017-18
Federico de Vito, MSci project, Imperial, 2017-18
Solene Chabanier, MSc project, Imperial, Summer 2017
Elisabeth Niels, Erasmas project, Imperial 2016-17
Tristan Lauens, MSci project, Imperial, 2016-17
Ronadir Dutta, MSci project, Imperial, 2016-17
Saad Ahmed, MSc self-study project, Imperial, 2016-17
Sophie Koudmani, UROP, Oxford, Summer 2016
Martin Pernot-Borras, Erasmas project, Imperial 2016
Martin Rey, MSc project, Imperial, Summer 2015
Luke Walley, MSci project, Imperial, 2014-15
Fred Piech, MSci project, Imperial, 2014-15
Hannah Collingwood, MSc self-study project, Imperial, 2014-15
Martin Rey, MSc self-study project, Imperial, 2014-15

Elizabeth Campbell, UROP, Imperial, Summer 2014
Michelle Whitehead, MSc project, Imperial, Summer 2013
Claude Schmit, MSc project co-supervisor, Edinburgh, Summer 2013
Jasmina Music, MSc self-study project, Imperial, 2011-12
Jared Phau, MSc self-study project, Imperial, 2011-12

Teaching Experience

Imperial College London, UK.

Lecturer: Quantum Mechanics	2017-present
Head of experiment: Interferometry and holography	2016-17
Lecturer: Cosmology MSci course	Spring term 2013-16
Academic tutor: Second year quantum mechanics.	2014-15
Academic tutor: First year undergraduate physics.	2011-12, 2013-14, 2015-16
Demonstrator: Second year Python programming	2013-15

Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts, USA

Guest lecturer
Ay 202a. Galaxies and dynamics. "Gravitational lensing" Fall term 2009

California Institute of Technology, Pasadena, California, USA

Teaching Assistant **October, 2002 - March, 2005**
Duties included small group teaching, leading problem sessions, office hours, and grading.

Ph 125. Quantum Mechanics.	Fall and Spring term 2005
Ph 236. General Relativity.	Winter term 2004
Ph 125. Quantum Mechanics.	Fall term 2004
Ph 5, 6, and 7. Sophmore Physics Lab.	Fall, Winter and Spring terms 2003-4
Ph 6, and 7. Sophmore Physics Lab.	Winter and Spring terms 2002-3
Ph 3. Freshman Physics Lab.	Fall term 2002

Observing Experience

Submillimetre Array (SMA) - five nights. Oct 2010.

Research Grants

"Inference of star formation maps from 21cm maps of the epoch of reionization", RAS bursary for Miss Sophie Koudmani. (PI/GBP 1200, 1-Co-I, 2016)

"FirstDawn", ERC-Starting Grant (PI/EUR 1,495,000,0-Co-Is, 2015-2020)

Imperial College Space Physics and Astrophysics STFC Consolidated grant (Co-I/GBP ∼4M,16 Co-Is, 2013-2016)

"Detecting patchy reionization and the first galaxies using the 21 cm and Lyman alpha lines (21Alpha)", FP7 Marie Curie Career Integration Grant (PI/EUR 100k, 0 Co-Is, 2012-2016)

"Optimal Statistics for Redshifted 21 cm Observations of the Reionization Epoch ", NSF-AST (collaborator / US$ 341,224, 2 PIs, 2011-2014)

"Probing the end of the dark ages and the epoch of reionization with the 21 cm line", Hubble Fellowship. HST-HF-01211.01-A, NASA/STScI (PI / US$ 320,487, 0 Co-Is, 2007-2010)

Committee work

STFC UK Radio Astronomy Review Panel. Member (Jun 2017-Dec 2017).

STFC UK-SKA science committee. Chair. (Jan 2017 - Dec 2019)
Member (Aug 2014-Dec 2016). Pro tem (May 2014-Aug 2014).

Imperial Physics UG admissions committee. Member, Sept 2019 - present.

Imperial Physics JUNO committee. Member, Aug 2018 - present.

Imperial Physics Graduate Studies Committee. Member, Oct 2016 - present.

Participation in projects

Square Kilometer Array (SKA) - Chair of SKA-EoR Science Working Group (2015-2017).
Vice-Chair of SKA-EoR Science Team (2012-2015);
Member Cosmology SWG; Member Science Working Group (2011-present)

Hydrogen Epoch of Reionization Array (HERA) - PI: A. Parsons - Collaborator (2014-present)

Euclid - Primeval Universe Science Working Group (PU-SWG) (2013-present)

Dark Ages Radio Explorer (DARE) PI: J. Burns - Co-I and Science Working Group (2010-present)

Lunar University Network for Astrophysics Research (LUNAR) - Collaborator (2009-present)

Cosmic Inflation Probe (CIP) PI: G. Melnick - Science Working Group (2008-2010)

Student examination

PhD external - Sarah Shon (Advisor: Katie Mack), Melbourne. Jun 2017.
PhD external - Raghunath Ghara (Advisor: Tirthankar Roy Choudhury), NCRA-TIFR. Oct 2016.
MSc external - Mikael Toresen (Advisor: Mark Dijkstra), Oslo. Nov 2015.
PhD external - Marta Silva (Advisor: Mario Santos), Lisbon. Oct 2014.
PhD external - Emma Chapman (Advisor: Fillipe Abdalla), UCL. Dec 2013.
PhD opponent - Martina Friedrich (Advisor: G. Mellema), Stockholm. March 2012.

Professional Activities

Organiser "SKA-EoR Science Team meeting" RAS, London. Sep 2018.

Organiser "UK SKA Community meeting" RAS, London. Jul 2018.

SOC "Rise and Shine" Strasbourg. Jun 2018.

SOC "UK SKA Community meeting" Edinburgh. Sep 2017.

SOC "SKA 2016: The SKA generation". Goa. Nov 2016.

SOC "UK Dark Energy Strategy 2020 Meeting". RAS. Jan 2016.

SOC "Building an open UK SKA Science community" RAS specialist meeting. Nov 2015. Manchester, UK.

Co-organiser "Building an open UK SKA Science community" RAS specialist meeting. Mar 2015. London, UK.

Co-organiser "Observation and Theory of the first galaxies" NAM2014 parallel session. July 2014. Portsmouth, UK.

Organiser "Reionization and galaxy formation in the first billion years" NAM2013 parallel session. July 2013. St Andrews, Scotland.

SOC "The Epoch of Reionization" Apr 2012. Strasbourg, France.

SOC "LUNAR Workshop: Robotic science from the Moon" Oct 2010, Boulder, CO.

CfA-ITC postdoctoral fellowship selection committee 2009

Co-organiser of CfA-ITC seminar series 2008-9

Member: RAS (2012-present), AAS (2006-present), IOP (2012-present), APS (2010-2011)

Referee: Physics Review D, Physics Review Letters, Astrophysics Journal, Monthly Notices of the Royal Astronomical Society, Physics Letters B, Astronomy and Astrophysics, Journal of Cosmology and Astroparticle Physics, The Harvard Undergraduate Research Journal, Classical and Quantum Gravity.

Reviewer: France-ANR, Canada-NSERC, SA-NRF, NSF-AAG, GMRT-TAC, RAS Penston prize, Royal Society URF, STFC-Rutherford, RAS fellowship, STFC-Consolidated grants.

Public Engagement

"The Cosmic Dawn and the First Galaxies". Imperial Astronomical Society. Feb 2019.

"Cosmic Dawn and the SKA @ Imperial". Imperial Festival stand. April 2018.

"The Cosmic Dawn and the First Galaxies". Beckington Astronomical Society. Apr 2018.

Speech to "March for Science London". Apr 2018.

Square Kilometre Array stand. New Scientist Live. Sep 2017.

"FIRSTDAWN: Imaging the epoch of reionization in the 21cm line" stand. Imperial ERC 10th anniversary festival. Jun 2017.

"The Cosmic Dawn and the First Galaxies". Society for Popular Astronomy, London. Jan 2017.

"Looking back into the first billion years". Panel discussion. ESOF 2016.

"Cosmic Dawn and the SKA". Peek into research for Imperial Physics A-level Open Day. Jun 2015

"The Cosmic Dawn Initiative". Talk for Secret Cantina. Jun 2015.

"Stellar Graffiti" painting stand. Imperial Festival. May 2015.

Short interview segment on Hubble Telescope at 25. ITV News. Apr 2015.

"Twitter and researchers: Friend or foe?" #solo14ECR panel discussion. Science Online London. Nov 2014.

"Cosmic swiss cheese and FM radios". Science Showoff. London. Nov 2014.

"Don't feed the scientists!" Live science installation. Loncon3. Aug 2014.

"Cosmic Dawn". Research Frontiers talk for 1st year ICL physics students. Feb 2014.

Interviewed for Jodcast. Manchester. Nov 2013.

Talk for Big Ideas discussion series. "What are the limits to our knowledge of the Cosmos". London. 29 Oct 2013.

Interviewed for Dara O Briain's Science Club. "Adventures in Time". BBC Two. Air date: 1 August 2013.

Talk to Imperial College Astronomical Society. "Illuminating the cosmic dark ages with the Square Kilometer Array". Jun, 2013.

Big Bang Fair - Career Networker, 2013.

Science week: Cambridge Explore's the Universe: Ask an Astronomer 2009, 2010.

Science consultant: "Instant Egghead Guide: the Universe" (2009) by JR Minkel.

Summer/Winter school teaching

"ICIC data analysis school". Imperial College London. Sep 2016.

"ICIC data analysis school". Imperial College London. Sep 2014.

"The Universe through the 21 cm line". 5 lecture series for the 6th TRR33 Winter school on Cosmology. Passo del Tonale, Italy. Dec 2012.

Invited Conference Presentations

"21cm Cosmology from the Cosmic Dawn". VI Fundamental Cosmology Meeting. Granada. May 2018.

"Mapping the epoch of reionization with the 21cm line". RAS Ordinary meeting. London. Jan 2018.

"Reionization and Cosmology from 21cm observations". Broad Impact of Low Frequency Observations. Bologna. Jun 2017.

"Fundamental physics from the EoR with SKA". Fundamental Physics with SKA. Mauritius. May 2017.

"Reionization with CMB, 21cm and galaxies". 21cm/CMB/LSS workshop. Madrid. Jun 2016.

"Reionization with SKA". MIAPP workshop. April 2016.

"Linking 21cm statistics and astrophysics". IAP 2015 meeting. Paris. Dec 2015.

"Update on Stockholm SKA Key Science Project meeting". UK-SKA meeting. Manchester. Oct 2015.

"Introduction to the Epoch of Reionization/Cosmic Dawn". SKA KSP Workshop. Stockholm. Aug 2015.

"Olympian Symposium summary". Olympian Symposium 2015. Greece. May 2015.

"21cm mapping of the EoR in theory, simulation, and practice". Wetton Workshop on Simulating the Universe. Oxford. Apr 2015.

"Early-universe physics from 21cm surveys". The Primordial Universe After Planck. IAP, Paris, France. Dec 2014.

"Epoch of reionization/cosmic dawn science with SKA" UK-SKA Science meeting. Birmingham. Jul 2014.

"Seeking $z > 7$ galaxies with 21cm observations". Galaxy Evolution over Five Decades. Cambridge, UK. Sept 2013.

"New science from the high-z 21cm signal". Cosmological signals and foregrounds in the radio domain. PCCP, Paris. May 2013.

SKA-EoR Science Team Workshop. SKA Project office, Jodrell Bank, UK. Mar 2013.

"Mapping the Epoch of Reionization". Oxford Intensity Mapping Workshop. Oxford, Nov 2012.

"21 cm Cosmology". AIU2010 - Axion Cosmophysics. KEK, Japan, Nov 2012.

"Recent developments in EoR science and the DRM". PrepSKA WP2. Manchester, Oct 2011.

"Prospects for future 21 cm arrays". PPC2011. CERN, Geneva, Jun 2011.

"Constraining the epoch of reionization and the dawn of structure with atomic and molecular lines". Hydrogen Cosmology. ITAMP, Cambridge, MA, May 2011.

"Constraining the dawn of structure with the 21 cm line. AAS 217 HERA special session. Seattle, Jan 2011.

"HI Science through cosmic time". AAVP2010: Realising the Aperture Array Programme for SKA. Cavendish, Cambridge, UK, Dec 2010.

"Lessons from constraining the global 21 cm spectrum in the presence of foregrounds". The First Billion Years. Keck Institute of Space Studies, Pasadena CA, Aug 2010.

"Pre-reionization 21 cm signatures". Astrophysics and Cosmology with the 21 cm background, Aspen, June 2010.

"Atomic physics and the 21 cm line". DAMOP2010, Houston TX, May 2010.

"Paths to astrophysics with SKA". SKA2010, Manchester, UK, March 2010. Invited plenary talk.

"21 cm signal throughout cosmic history". Sackler conference on 21 cm cosmology, Cambridge MA, May 2008.

"Atomic physics and the cosmological 21 cm signal". Atomic and Molecular Physics of the Early Universe, ITAMP, Cambridge MA, March 2008.

Contributed Conference Presentations

"Reionization and Cosmic Dawn as a percolation process". RAS specialist meeting. London. Feb 2018.

"Epoch of reionization science with SKA and synergies with Euclid". Euclid Consortium meeting. London. Jun 2017.

"Epoch of Reionization/Cosmic Dawn with the SKA". EWASS2016. Athens. Jul 2016.

"Parameter estimation for 21cm global experiments". HI 21cm Cosmology Meeting. Cambridge. Jun 2016.

"Galaxy formation, Cosmology, and the epoch of reionization with the SKA". UK-SKA Science meeting. RAS, London. Nov 2014.

"Statistics of Reionization and Cosmic Dawn" Unsolved Problems in Astrophysics and Cosmology. Budapest. Jul 2014.

"Cosmology from the EoR/CD". Advancing Astrophysics with the SKA. Giardini Naxos, Sicily. Jun 2014.

"Cosmology from the EoR". SKA Cosmology Science Assessment meeting. SKA-HQ, Jodrell Bank. Jan 2014.

"CMB physics". London Cosmology Meeting. RAS, London. Apr 2013.

"Reionization physics". London Cosmology Meeting. RAS, London. Jan 2013.

"CO intensity mapping of the epoch of reionization. EAWSS 2012, Rome. Jul 2012.

"Observational and theoretical constraints on reionization". Reionization and Dark Ages with SKA workshop, Stockholm. Jan 2012.

"Extracting the astrophysics of the first sources from the 21 cm global signal". New Horizons for High Redshifts, Cambridge, UK. Jul 2011.

"The global 21 cm signal". Robotic science from the moon, Boulder, CO. Oct 2010.

"Extracting science from the global 21 cm signal". Astrophysics and Cosmology with the 21 cm background, Aspen. June 2010.

"Constraining reionization using 21 cm experiments in combination with CMB and Lyman alpha forest data". The High Redshift Universe. Aspen. Jan 2010.

"Constraining reionization using 21 cm experiments in combination with CMB and Lyman alpha forest data". Reionization with Multi-frequency datasets. Stockholm, Sweden. August 2009.

"21 cm cosmology". Fingerprints of Inflation. Aspen. June, 2009.

"Lyman series photons and the 21 cm signal". Reionization@Ringberg. Ringberg Castle, Germany. March 2009.

"Cosmology from high redshift 21 cm observations". Foundations of modern cosmology. GGI, Florence Italy. January, 2009.

"Neutrino mass from cosmological 21 cm observations". Neutrino Oscillation Workshop 2008, Otranto Italy, September 2008.

"Probing the First Sources with the Redshifted 21 cm Line". 209th Meeting of the American Astronomical Society. Seattle, January, 2007.

"Radiation fields from the first stars and the redshifted 21 cm line". Radiation Backgrounds from the First Stars, Galaxies and Black Holes. Maryland, October, 2006.

"Radiation fields from the first stars and the redshifted 21 cm line". The first stars and evolution of the early Universe. INT Seattle, August, 2006.

"Descending from on high: Lyman series cascades and spin-kinetic temperature coupling in the 21 cm line". Reionizing the Universe 2005. Groningen, Netherlands, July 2005.

"Tensor modes and the cosmic microwave background" (poster). 2nd Advanced Chilean Winter School. Santiago, Chile, November 2004.

Seminar Presentations

2016: Zurich.

2015: Glasgow, MSSL, Warwick.

2013: Birmingham, Cavendish, Oxford, Manchester.

2012: Aachen, APC-Paris, Copenhagen-NBI, Durham, Edinburgh, Portsmouth, Sussex, UCL.

2011: Brown, Cambridge - IoA, CCAPP-OSU, Imperial, ITAMP-CfA, Leiden, Perimeter, Princeton, Waterloo.

2010: Berkeley, Cambridge - Kavli, Carnegie Mellon, CITA, Chicago, Oxford, Yale.

2009: CfA. *2008:* UT Austin. *2006:* KIPAC, Berkeley, Columbia ISCAP, Harvard ITC.

Computer Skills

- Languages: C, C++, Fortran 77 & 90, HTML, IDL, Perl, Python.
- Cosmology: CMBFAST, CAMB, COSMOMC, HEALPIX.

Academic references

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Professor of Physics and Astronomy
Johns Hopkins University,
Bloomberg 439,
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Baltimore, MD 21218
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Abraham Loeb,
Professor of Astronomy
Harvard-Smithsonian Center for Astrophysics,
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Cambridge,
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Steven Furlanetto,
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University of California - Los Angeles,
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Richard Easther,
Associate Professor of Physics and Astronomy
Yale University,
Department of Physics,

P.O. Box 208120,
New Haven,
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Tel: (203) 432-6959
email: richard.easther@yale.edu

Refereed Publications

[45] Adelie Gorce, **Jonathan R. Pritchard**. "Studying the morphology of reionisation with the triangle correlation function of phases". MNRAS 489, 1321 (2019) [arXiv:1903.11402]

[44] T. Binnie and **J. R. Pritchard**, "Bayesian Model Selection with Future 21cm Observations of The Epoch of Reionisation". MNRAS, 487, 1160 (2019) [arXiv:1903.09064]

[43] SKA Cosmology Science Working Group. "Cosmology with Phase 1 of the Square Kilometre Array; Red Book 2018: Technical specifications and performance forecasts". PASA in press (2019) [arXiv:1811.02743]

[42] P. Bull, S. Camera, K. Kelley, H. Padmanabhan, **J. Pritchard**, A. Racanelli, S. Riemer-Srensen, L. Shao, et al. "Fundamental Physics with the Square Kilometre Array". PASA in press (2019) [arXiv:1810.02680]

[41] Claude J. Schmit, Alan F. Heavens, **Jonathan R. Pritchard**. "The Gravitational and Lensing-ISW Bispectrum of 21cm Radiation". MNRAS, 483, 4259 (2018) [arXiv:1810.00973]

[40] Catherine A. Watkinson, Sambit K. Giri, Hannah E. Ross, Keri L. Dixon, Ilian T. Iliev, Garrelt Mellama, **Jonathan R. Pritchard**. "The 21cm bispectrum as a probe of non-Gaussianities due to X-ray heating". MNRAS, 482, 2653 (2019) [arXiv:1808.02372]

[39] Suman Majumdar, **Jonathan R. Pritchard**, Rajesh Mondal, Catherine A. Watkinson, Somnath Bharadwaj, Garrelt Mellema. "Quantifying the non-Gaussianity in the EoR 21-cm signal through bispectrum". MNRAS, 476, 4007 (2018) [arXiv:1708.08458]

[38] Claude J Schmit, **Jonathan R Pritchard**. "Emulation of reionization simulations for Bayesian inference of astrophysics parameters using neural networks". MNRAS, 475, 1213 (2018) [arXiv:1708.00011]

[37] Catherine A Watkinson, Suman Majumdar, **Jonathan R Pritchard**. "A fast estimator for the bispectrum and beyond - A practical method for measuring non-Gaussianity in 21-cm maps". MNRAS, 472, 2436 (2017) [arXiv:1705.06284]

[36] Jack O. Burns et al., "A Space-Based Observational Strategy for Characterizing the First Stars and Galaxies Using the Redshifted 21-cm Global Spectrum". ApJ, 844, 33 (2017) [arXiv:1704.02651]

[35] Geraint J.A. Harker, Jordan Mirocha, Jack O. Burns, **Jonathan R. Pritchard**, "Parametrizations of the 21-cm global signal and parameter estimation from single-dipole experiments". MNRAS, 455, 3829 (2016) [arXiv:1510.00271]

[34] Adrian Liu, **Jonathan R. Pritchard**, Rupert Allison, Aaron R. Parsons, Uros Seljak, Blake D. Sherwin, "Eliminating the optical depth nuisance from the CMB with 21 cm cosmology". PRD 93, 043013 (2016) [arXiv:1509.08463]

[33] C. A. Watkinson and **J. R. Pritchard**, "The impact of spin temperature fluctuations on the 21-cm moments". MNRAS, 454, 1416 (2015) [arXiv:1505.07108]

[32] L.V.E Koopmans, **J. Pritchard**, G. Mellema et al., "The Cosmic Dawn and Epoch of Reionization with the Square Kilometre Array". PoS (AASKA14) 001 (2015) [arXiv:1505.07568].

[31] C. A. Watkinson, A. Mesinger, **J. R. Pritchard**, E. Sobacchi, "21-cm signatures of residual HI inside cosmic HII regions during reionization". MNRAS, 449, 3202 (2015) [arXiv:1501.01970]

[30] T.-C. Chang et al. "Synergy with CO/[CII]/Lyα Line Intensity Mapping with the SKA". PoS, (AASKA14) 004 (2015) [arXiv:1501.04654].

[29] A. Mesinger et al. "Constraining the Astrophysics of the Cosmic Dawn and the Epoch of Reionization with HI Data with the SKA". PoS, (AASKA14) 011 (2015) [arXiv:1501.04106].

[28] **J.R. Pritchard** et al. "Cosmology from EoR/Cosmic Dawn with the SKA". PoS, (AASKA14) 012 (2015) [arXiv:1501.04291].

[27] Ravi Subrahmanyan et al. "All-sky signals from recombination to reionization with the SKA". PoS, (AASKA14) 014 (2015) [arXiv:1501.04340].

[26] S. C. O. Glover, J. Chluba, S. R. Furlanetto, **J. R. Pritchard**, D. W. Savin, "Atomic, Molecular, and Optical Physics in the Early Universe: From Recombination to Reionization". Advances in Atomic, Molecular, and Optical Physics, 63, 135 (2014).

[25] Catherine Watkinson and **Jonathan R. Pritchard**, "Distinguishing models of reionization using future radio observations of 21-cm 1-point statistics". MNRAS, 443, 3090 (2014) [arXiv:1312.1342].

[24] Adrian Liu, **Jonathan R. Pritchard**, Max Tegmark, and Abraham Loeb. "Global 21 cm signal experiments: a designer's guide" PRD, 87, 043002 (2013) [arXiv:1211.3743].

[23] Mellema, G. *et al.*, "Reionization and the Cosmic Dawn with the Square Kilometre Array". Experimental Astronomy, 36, 235 (2013) [arXiv:1210.0197].

[22] **Jonathan R. Pritchard** and Abraham Loeb. "21 cm cosmology". Reports on Progress in Physics, 75, 086901 (2012). [arXiv:1109.6012].

[21] Geraint J. A. Harker, **Jonathan R. Pritchard**, Jack O. Burns, Judd D. Bowman. "An MCMC approach to extracting the global 21-cm signal during the cosmic dawn from sky-averaged radio observations". MNRAS, 419, 1070 (2011) [arXiv:1107.3154].

[20] Jack O. Burns, T. J. W. Lazio, S. D. Bale, J. D. Bowman, R. F. Bradley, C. L. Carilli, S. R. Furlanetto, G. J. A. Harker, A. Loeb, **J. R. Pritchard**. "Probing the First Stars and Black Holes in the Early Universe with the Dark Ages Radio Explorer (DARE)". Advances in Space Research, 49, 433 (2011) [arXiv:1106.5194].

[19] Adam Lidz, Steven R. Furlanetto, S. Peng Oh, James Aguirre, Tzu-Ching Chang, Olivier Dore, **Jonathan R. Pritchard**. "Intensity Mapping with Carbon Monoxide Emission Lines and the Redshifted 21 cm Line" ApJ, 741, 70 (2011) [arXiv:1104.4800].

[18] K. N. Abazajian, E. Calabrese, A. Cooray, F. De Bernardis, S. Dodelson, A. Friedland, G. M. Fuller, S. Hannestad, B. G. Keating, E. V. Linder, C. Lunardini, A. Melchiorri, R. Miquel, E.Pierpaoli, **J. Pritchard**, P. Serra, M. Takada, Y. Y. Y. Wong. "Cosmological and Astrophysical Neutrino Mass Measurements". Astroparticle Physics, 35, 177 (2011) [arXiv:1103.5083].

[17] Mirabel, I.F., Dijkstra, M., Laurent, P., Loeb, A. and **Pritchard, J.R.** "Stellar black holes at the dawn of the universe". A&A, **528**, 149 (2011) [arXiv:1102.1891].

[16] Santos, M.G., Silva, M.B., **Pritchard, J.R.**, Cen, R. and Cooray, A. "Probing the first galaxies with SKA" A&A, **527**, 93 (2011) [arXiv:1009.0950]

[15] Adshead, A., Easther, R., **Pritchard, J.**, and Loeb, A., "Inflation and the Scale Dependent Spectral Index: Prospects and Strategies". JCAP, **2**, 21 (2011)[arXiv:1007.3748]

[14] **Pritchard, J.R.** and Loeb, A., "Constraining the unexplored period between reionization and the dark ages with observations of the global 21 cm signal", PRD, **82**, 023006 (2010) [arXiv:1005.4057]

[13] **Pritchard, J.R.**, Loeb, A., and Wyithe, J.S.B., "Constraining reionization using 21 cm observations with CMB and Lyman-alpha forest data", MNRAS, **408**, 57 (2010) [arXiv:0908.3891]

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