Mr. Christian Kirkham, FRAS

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http://astrochristian.github.io/

Employment History

2024 – 2025 **Demonstrator for Part IA Scientific Computing Module** Department of Physics, University of Cambridge

2023 – 2024 **Supervisor for Part II Stellar Dynamics and Structure of Galaxies Module** Institute of Astronomy, University of Cambridge

2022 – 2023 **Demonstrator for Part IA Scientific Computing Module** Department of Physics, University of Cambridge

Sep 2021 **"Developing a Remote Operation Mode for the TARA Radio Telescope"** Centre for Extragalactic Astronomy, Durham University

Education

2022 – Present **Ph.D., University of Cambridge** Physics
Thesis title: *Foreground Modelling using Bayesian Techniques for 21cm Cosmology*.

2018 – 2022 **MPhys., Durham University** Physics with Astronomy.
Thesis title: *The Gaia and HST Cepheid Scales and the Tension in Hubble's Constant*.

Research Publications

1. C. J. Kirkham, W. J. Handley, J. Zhu, *et al.*, *Accounting for Noise and Singularities in Bayesian Calibration Methods for Global 21-cm Cosmology Experiments*, Dec. 2024. DOI: 10.48550/arXiv.2412.14023. arXiv: 2412.14023 [astro-ph]. (visited on 12/19/2024).

2. C. J. Kirkham, D. J. Anstey, and E. d. L. Acedo, *A Bayesian Method to Mitigate the Effects of Unmodelled Time-Varying Systematics for 21-cm Cosmology Experiments*, Oct. 2023. DOI: 10.48550/arXiv.2310.17975. arXiv: 2310.17975 [astro-ph]. (visited on 10/31/2023).

Skills

Languages Strong reading, writing and speaking competencies in English

Coding Python, LaTeX, Git, UNIX.

Databases ADQL.

Web Dev HTML, CSS, JavaScript.

Misc. Academic research, teaching, LaTeX typesetting and publishing.

Talks

Conference and Workshop Talks

Apr 2025 **"Accounting for Noise and Singularities in Bayesian Calibration Methods for Global 21-cm Cosmology Experiments"** Friday Lunchtime Astronomy Talk, Durham, UK

Feb 2025 **"Accounting for Noise and Singularities in Bayesian Calibration Methods for Global 21-cm Cosmology Experiments"** Hills Coffee Talk, Cambridge, UK

Talks (continued)

Sep 2024 — **"An Overview of Bayesian Noise Wave Methods for Calibration of REACH"** REACH Annual Meeting, Mahabaleshwar, India

May 2024 — **"Gaussian Processes for Systematic Mitigation"** URSI AT-RASC, Gran Canaria, Spain

Feb 2024 — **"Gaussian Processes for Mitigating Systematics in Global 21-cm Cosmology Experiments"** Institute of Astronomy Wednesday Seminar, University of Cambridge, Cambridge, UK

— **"Gaussian Processes for Mitigating Systematics"** Science with the 21-cm line, Kavli Science Focus Meeting, University of Cambridge, Cambridge, UK

Sep 2023 — **"A Bayesian Method to Mitigate the Effects of Unmodelled Time-Varying Systematics for 21-cm Cosmology Experiments"** REACH Annual Meeting, University of Malta, Valetta, Malta

Poster Presentations

Oct 2024 — **"A Marginalised Bayesian Noise Wave Calibration Method for Global 21-cm Cosmology Experiments"** Global 21-cm Workshop, Raman Research Institute, Bengaluru, India

Mar 2024 — **"A Bayesian Method to Mitigate the Effects of Unmodelled Time-Varying Systematics for 21-cm Cosmology Experiments"** Cosmology in the Alps, Les Diablerets, Switzerland

Miscellaneous Experience

Awards and Achievements

2024 — **College Senior Scholarship**, Fitzwilliam College, Cambridge

2019 — **Physics Award for Outstanding Achievement**, Durham University

References

Available on Request