Philip Clarke

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Publications

Dec 2020 **Probing Inflation with Precision Bispectra**, *arXiv/2012.08546, accepted by JCAP*.
New and significantly more efficient methods for the calculation of inflationary three-point correlators in a form tailored for comparison with observation. Methods implemented in software to be released as PRIMODAL.

Education

Oct 2017– **PhD**, *DAMTP, University of Cambridge*.

2016–2017 **Master of Advanced Study (Part III)**, *University of Cambridge*.
Pass with Merit, 74%; rank 101; Cosmology 95%, Advanced Cosmology 87%, Essay 85%.
(Early PhD Offers Examination: received an early PhD offer based on performance in January exam.)

2012–2016 **B.A. Mathematics**, *Trinity College, University of Dublin*.
First class honours, gold medal; top of year in Theoretical Physics scholarship exam.

2007–2012 **Secondary level**, *St. Mary's Diocesan School, Drogheda*.
600 (of 625) points, highest in the school; achieved highest mathematics result in Ireland 2012.

Teaching

2020–2021 **Part III Cosmology Example Classes**.
Lead tutorials over videocall, marked assignments, responded to email queries about course content.

2014–2016 **Undergraduate Classical Mechanics, Teaching Assistant**.
Lead weekly tutorials for class of ~ 40 students, marked assignments, responded to email queries.

2012–2016 **Leaving Cert Maths Tutor**.
Organised one-to-one tutorials with students, and taught small groups at JustMaths school, Dublin.

Awards, Scholarships

2019	Smith-Knight and Rayleigh-Knight Essay Prize	*Awarded Grade 4*
2017	Cambridge European Scholarship	*PhD funding award*
2016	Robert Gardiner Memorial Scholarship	*Masters, PhD funding award*
2014	Trinity College Foundation Scholarship	*Top 12 in university*
2012	Accenture Analytics Mathematical Excellence Award	*Top Maths result in Ireland (joint with two others)*

Presentations

Apr 2021 Research talk at Institute of Astronomy Cambridge, CMB group meeting.
Jun 2020 Research talk at DAMTP Cambridge, Cosmology Group Meeting.
Sep 2019 Flash presentation at Workshop on the Non-Gaussian Universe, Cambridge.
Apr 2019 Flash presentation at CAM/LMU Spring Meeting, Munich.

Workshops

May 2018 Consistency of Cosmological Datasets: Evidence for New Physics?

Projects

2017	Essay on two-field inflation	*Literature review, calculations; 85%*
2016	Final year project on the conformal bootstrap	*Significant report, poster, talk; 81%*
Summer 2015	Exact eigenvalues for the quartic oscillator	*Calculations, talk*
2014	Group poster project on viscosity	*Experiments and poster; prize for best presentation*

Outreach

Oct 2020	**Online Fête de la science, Lyon**. Collaborated to design and create animations for online public outreach at `https://perso.ens-lyon.fr/harriet.walsh/random_physics.html`
Lent 2019	**BlueSci central feature, issue 47, "Our Place in the Universe"**. Initiated and co-wrote a feature-length article summarising cosmological history, placing the 2019 Nobel prizes in context.
Mich 2019	**BlueSci article, issue 46, "An Expanding Mystery"**. An article outlining and explaining recent developments on cosmological discrepancies.
Mar 2019	**Cambridge Maths science festival open day**. Designed and presented to visitors software which demonstrated gravitational lensing by warping feed from laptop webcam.
Mar 2018	**CHaOS – Hands-On Science**. Volunteered at Crash, Bang, Squelch.
Mar 2017	**Cambridge Maths science festival open day**. Presented mathematical games to visitors.
Summer 2014/15/16	**Festival of Curiosity, Dublin**. Presented science demos to visitors, such as a human circuit, and red cabbage juice as a pH indicator.

Cambridge researcher development

Jan 2020	The Engaged Researcher: Working with Museums
Mar 2019	Python3: Advanced Topics
May 2018	Writing your first year report
Oct 2017	Effective undergraduate supervision
Courses	Research programming, Astrostatistics, Machine Learning
Seminars	CDT in Data Intensive Science industry seminar series, Cosmology lunch seminar series
Sep 2020	"Suicide prevention: a conversation that could save a life"
Aug 2020	Race Awareness: School of Physical Sciences

Skills

IT/Coding	I am trained in and regularly use Python3, Cython, Bash, Slurm, SSH, Git.
Organisation	I instigated and organise a regular tea-break with my group, to provide a casual, welcoming environment for our newer PhD students to ask questions and gain knowledge during the lockdown.
Interpersonal	Teaching, outreach and volunteering.
Teamwork	With my collaborators, my outreach side-projects and volunteer committee work.

Other volunteering

2019–	Details available upon request.

Other interests

Sport	Hiking, running, badminton
Software	A goal of mine is to get involved with open source community projects such as Numpy, or Nightscout.