School of Physics and Astronomy
Cardiff UK, CF24 3AA
+44 7 518 739 477
beringueb@cardiff.ac.uk
beringueb.github.io

Benjamin Beringue

Academic Experience

2021 – present **Cardiff University, School of Physcis and Astronomy**, *Postdoctoral Research Associate*.

Education

2017 – 2021 **University of Cambridge, Centre for Theoretical Cosmology**, *PhD in Cosmology*, Dr D. Meerburg & Dr J. Fergusson.
Funded by the SFTC Centre for Doctoral Training in Data Intensive Science. Member of the Simons Observatory and CCAT-prime collaborations.

2016 – 2017 **University of Cambridge**, *MAST in theoretical physics, Part III of the Mathematical tripo*.
Lectures : (Advanced) Cosmology, (Advanced) QFT, GR, Standard Model. First (Merits, 71%)

2015 – 2016 **Université Paris-Saclay**, *MSc in large scale research instruments*.
Main topics : Particle accelerators, High power lasers, Tokamaks, Project management.

2014 – 2015 **Université Paris Sud (Paris 11)**, *Master (4th year) in Fundamental Physics*.
Lectures : Introduction to QFT, Plasma Physics, Particle Physics

2013 – 2014 **Université Paris Sud (Paris 11)**, *Bachelor (3rd year) in Fundamental Physics*.
Lectures : Quantum Mechanics, Analtytical Mechanics, Statistical Physics

2013 – 2016 **Institut d'optique Graduate School, Palaiseau**, *Engineering Degree*.
French "Grande Ecole" in Engineering and Applied Mathematics. Main topics : Quantum mechanics, Optical design and aberrations, Laser physics, Signal processing, practical work in optics and electronics. (Ranked first with highest honours)

Research Experience

April – September 2020 **Internship at Sano Genetics**, *Cambridge, UK*.
6 months internship, part of the Centre for Doctoral Training in Data Intensive Science. Worked on implementing Polygenic Risk Score evaluation on open source genomic data.

Summer 2017 **Microsoft funded intern**, *University of Cambridge*, Dr J. Fergusson.
Worked on inpainting of CMB maps and its impact on cosmological parameters estimation.

March – August 2016 **MSc internship**, *Paul Scherrer Institute*, Low Enery Muons group.
Developed a modelling framework for the low energy muons beamline.

Teaching & Outreach

February 2023	Postgraduate lecture series	*2 hours of lectures on statistical methods*
2022 – 2023	3rd year student project	*Weekly supervisions of a student through their research project*
October 2022	Festival Sciences Infuses	*Outreach talk:* **La Cosmologie au 21ème siècle**
2019 – 2021	Part III Cosmology	*Example classes supervision, taught by Prof. B. Sherwin*
2013 – 2014	ASTEP program	*Science popularisation for 6-7 years old*

Workshops & Summer Schools

July 2019 **Centre for Doctoral Training in Data Intensive Science Summer School**, *University College London*, UK.
Lectures form industrial partners (Intel, Nvidia, ASI, AWS) covering computer vision, code optimization, deep learning for image recognition.

September 2018 **Trimester on the Mathematics of Cosmology**, *Institut Henri Poincaré*, Paris, France.
1 month visit part of a trimester organised by B. Wandelt, P. Peter and M. Zaldarriaga aimed at highlighting state of the art research in Cosmology and encouraging collaborations.

August 2018 **Analytics, Inference, and Computation in Cosmology**, *Institut d'études scientifiques de Cargèse*, France.
Bayesian inference, probabilistic graphical models, methods for cosmological simulations and deep learning applied to cosmological datasets.

February 2016 **Joint Universities Accelerator School (JUAS)**, *Archamps*, France.
Academically accredited training program in partnership with CERN. Courses and workshops delivered by particle accelerator specialists from LHC, PSI and CEA.

Academic talks

May 2022 **Component separation for the Simons Observatory Large Aperture Telescope**, *From Planck to the future of CMB*, Ferrara, Italy.

November 2021 **Cosmology with Rayleigh Scattering**, *KASI Early Career Researchers Seminar Series*, Held remotely, (Invited).

September 2020 **Cosmology with Rayleigh Scattering**, *Cosmology from Home*, Held remotely.

August 2020 **Looking for Rayleigh Scattering with the next generation of CMB surveys**, *CMB-S4 workshop junior scientists talks*, Held remotely.

June 2020 **Updates on component separation effort for Simons Observatory**, *SO Collaboration Meeting, on behalf of the foregrounds working group*, Held remotely, (Solicited).

April 2020 **Detecting Rayleigh scattering with CCAT-prime telescope**, *CCAT-prime Collaboration Meeting*, Held remotely.

September 2019 **Cosmology with Rayleigh Scattering of the CMB**, *Cosmo19*, Aachen, Germany.

April 2019 **Rayleigh scattering with CCAT-prime**, *CCAT-prime Collaboration Meeting*, Santiago, Chile, (Solicited).

December 2018 **Cosmology with Rayleigh Scattering**, *CITA Journal Club*, Toronto, Canada.

Language & Computer skills

French	Native Speaker
English	Proficient C2 in the European Reference scale. IELTS: 8
German and Spanish	Former working knowledge
Programming	Python (proficient) , C & Fortran (intermediate), MPI parallelisation, Matlab
Computing	git, CI, LaTeX, Office suite
Cosmology	CAMB, CLASS, Cobaya, ...

Academic services

NAM 2023 Local organizing committee for the National Astronomy Meeting held in Cardiff.
In charge of monitoring and minimizing the environmental impact of the conference.

2022 – 2023 Organiser of Astro seminar series at Cardiff University.

2022 – 2023 Postdoctorate representative in the Environment and Sustainability sub-committee. In charge of the quarterly newsletter and promoting a "greener" culture in the School through various actions.

2022 – 2023 Mentoring of PhD students.

Extracurricular activities

2019 – 2020 President of St Edmund's College Boat Club at the University of Cambridge, a student-run rowing club with more than 60 members competing at the College level.

2014 – 2015 Treasurer of the *Bureau Des Sports* at Institut d'Optique, a non-profit student organization with an 8000€ annual budget, aiming at coordinating sport life within the school.

Others Regular practise of orienteering, climbing, hiking, mountain biking

Publications

First authored publications

[1] **Beringue**, Meerburg, Meyers & Battaglia, Cosmolgy with Rayleigh Scattering of the CMB. *JCAP* 01(2021)060

Second authored publications

[1] Coulton,**Beringue**, Meerburg, The primordial information content of Rayleigh Anisotropies. *PRD*, 103, 043501, 2021.

[2] Zhu,**Beringue**, Choi, Battaglia, Meerburg & Meyers, Estimating the impact of foregrounds on the future detection of Rayleigh scattering. *JCAP* 09(2022)048

Other publications, (*) shows direct contributions

[1] (*) **CCAT-prime collaboration** CCAT-prime Collaboration: Science Goals and Forecasts with Prime-Cam on the Fred Young Submillimeter Telescope *arXiv*: 2107.10364, accepted to ApJ.

[2] (*) Sehgal **et al.** Science from an Ultra-Deep, High-Resolution Millimeter-Wave Survey. *arXiv*: 1903.03263, Astro2020 white paper.

[3] (*) Stacey **et al.** CCAT-prime: Science with an Ultra-widefield Submillimeter Observatory at Cerro Chajnantor. *arXiv*: 1807:04354, 2018

[4] (*) **CCAT-prime collaboration**. The CCAT-Prime Submillimeter Observatory. *arXiv*: 1909.02587, 2019

[5] **SO collaboration**, The Simons Observatory: Science goals and forecasts. *JCAP*, 1902 056, 2019