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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

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

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 (incl. pandas, TensorFlow, Scikit-learn) , C & Fortran (intermediate), MPI parallelisation, Matlab, Maple
Computing	git, CI, LaTeX
Cosmology	CAMB, CosmoMC, Healpix

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*: 2021,

060, 2021

Second authored publications

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

Other publications, (*) shows direct contributions

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

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

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

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