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Benjamin Beringue

Education

2017 – present **University of Cambridge**, *PhD : Cosmology*, Dr D. Meerburg & Dr J. Fergusson.
Funded by the SFTC Centre for Doctoral Training in Data Intensive Science. Member of 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 **Intersnship 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.

Summer 2016 **MSc internship**, *Paul Scherrer Institute*, Low Enery Muons group.

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 or CEA.

Academic talks

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**, *Simons Observatory Collaboration Meeting*, 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.

Computer skills

Programming Python (incl. pandas, TensorFlow, Scikit-learn) ,
C & Fortran (intermediate), MPI parallelisation, Matlab, Maple

Computing git, CI, LaTeX

Cosmology CAMB, CosmoMC, Healpix

Publications

First authored publications

[1] **Beringue**, Meerburg, Meyers & Battaglia, Cosmolgy with Rayleigh Scattering of the CMB. *arXiv*, 2008:11688, August 2020

Second authored publications

[1] Coulton,**Beringue**, Meerburg, Squeezing bytes out of the cosmic microwave background. *in prep*,xxx, October 2020

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