

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 tripos.**
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, Analytical 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, (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.
- Summer 2016 **MSc internship, Paul Scherrer Institute**, Low Energy Muons group.

Teaching & Outreach

- 2019 – 2020 Part III Cosmology *Example classes supervision*
- 2013 – 2014 ASTEP program *Science popularisation for 6 years old.*

Workshops & Summer Schools

- July 2019 **Centre for Doctoral Training in Data Intensive Science Summer School, University College London, UK.**
Lectures from 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