

# BORIS BOLLIET

*French, born on March 11th 1990 (33 years old)*

Phone: +33781267783 ◊ email: [boris.bolliet@gmail.com](mailto:boris.bolliet@gmail.com) ◊ webpage: [borisbolliet.github.io](http://borisbolliet.github.io)

**Senior Research Associate at Cambridge University (DAMTP)** Starting September 2022  
Guest Researcher at the Flatiron Institute (CCA) in New York (since 2021)  
Co-Leading the SZ analysis working group in *The Simons Observatory* (since 2020)  
Member of ACT, SO, CMB-S4 and LSST DESC

## *Previous Positions:*

Research Associate at Columbia University September 2020 - August 2022  
*Post-doc in Colin Hill's group*  
Research Associate at the University of Manchester September 2017 - August 2020  
*ERC-funded position in Jens Chluba's group*

**Research Interests:** Theoretical, Observational, Computational Cosmology and Astrophysics. Thermal and kinetic Sunyaev Zeldovich Effects, Weak Lensing, CMB Spectral Distortions, Dark Matter, Dark Energy, Inflation.

**Citation Summary:** 38 citeable papers/28 published - Total citations: 594 - Citations/paper: 15.6  
h-index: 16 - Link to publication list: [inspire-hep](https://arxiv.org/archive/hep).

## EDUCATION

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**Université Grenoble Alpes** September 2013 - August 2017  
Grenoble, France  
Ph.D. (2017), M.A. Phys. (2014)  
[Ph.D. Thesis:](#) *Beyond Einstein's Theory of Gravitation: Some Aspects of Loop Quantum Cosmology, Black Holes and the Dark Universe*  
Thesis Advisor: Aurélien Barrau

**École Normale Supérieure de Lyon** September 2009 - August 2014  
Lyon, France  
S.B. Phys. (2010), M.A. Phys. (2014)

**Lycée Louis-Le-Grand** September 2007 - August 2009  
Paris, France  
Classes Préparatoires in Physics (Selective scientific studies for the French Grandes Écoles)

## OTHER POSITIONS HELD

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**Fulbright Fellow at Louisiana State University** August - December 2016  
Baton Rouge, LA, USA  
Fulbright Visiting Student Researcher  
Research Project: *Non-Gaussianity in Loop Quantum Cosmology*  
Advisor: Ivan Agullo

**Intern at The University of Manchester** March - August 2014  
Manchester, UK  
Master's Thesis: *The Equation of State Approach to Cosmological Perturbations in Dark Energy*  
Thesis Advisor: Richard Battye

**Consultant at the French Embassy in India** July - December 2012  
New Delhi, India  
Project: *Report on the Scientific Landscape and Higher Education in India*  
Advisor: Véronique Briquet-Laugier

**Intern at Brookhaven National Laboratory**

June - August 2010

Upton, NY, USA

Bachelor's Thesis: *Two-particle correlations in heavy ion collisions at RHIC*

Thesis Advisor: Paul Sorensen

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**HONORS AND AWARDS**

Selected Participant at the Aspen Center for Physics workshop on CMB	2021
Fulbright Fellowship (~15 Grantees/year in France)	2016
Invited Young Scientist at the Lindau Nobel Laureate Meeting	2016
Diplôme de l'ENS Lyon, awarded for my work at the French Embassy in India	2014
Élève de l'ENS Lyon (~30 positions/year in Physics)	2009-2014

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**TEACHING EXPERIENCE**

<b>Modern Cosmology - Columbia Science Honors Program</b>	Since September 2021
New York, USA	
Saturday morning program specifically designed for selected high school students	
Teaching the full course (2h weekly)	
<b>Invited Lecturer at the Bard Summer School On Quantum Gravity</b>	June 2019
Bard College, Annandale-On-Hudson, NY, USA	
Lecture and Computing Lab on CMB phenomenology (~6h)	
<b>Assistant in Instruction at Université Grenoble Alpes</b>	2015-2017
Grenoble, France	
- Numerical Methods in Physics (Lecture and Computing Lab ~40h)	
- Special Relativity (Exercise Classes ~20h)	
- Nuclear Physics (Lab and Exercise Classes ~40h)	
- Data Analysis (Computing Lab ~20h)	

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**SEMINARS & CONFERENCE PRESENTATIONS**

Below are the main topics I have covered in my talks and the list of places I visited.

**Cosmological Constraints with the thermal and kinetic Sunyaev Zeldovich effects** Talks given at Yale, Princeton, Stony Brook, NYU/CCA, Oxford (invited), Grenoble (invited), Geneva, Munich, Marcel Grossmann, Moriond, MPA, IAS Paris, Sesto, Aspen in 2017-2021.

**CMB Spectral Distortions from Photon Injection Processes**

Talks given at Marcel Grossmann Meetings, Barcelona, CCA, Cambridge in 2018-2021.

**Cosmological Perturbations in Dark Energy and Modified Gravity**

Talks given at Radboud University, ENS Lyon, Marcel Grossmann, Geneva, Manchester, in 2014-2017.

**Phenomenology of Loop Quantum Cosmology**

Talks given at Perimeter Institute, Penn State, LSU, Erlangen, CPT Marseille, Krakow, in 2013-2017.

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**SERVICES TO THE PROFESSION & OUTREACH**

Referee for *Physical Review*, *Reviews of Modern Physics* and *Classical and Quantum Gravity*.

Organizer of the theory seminars at Columbia (since September 2021).

Organizer of the weekly Journal Club at JBCA, Manchester (2018-19).

Organizer of the weekly Student Seminars at Université Grenoble Alpes (2015-17).

Outreach Talks in schools, community centers and at private events.

## SKILLS

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<b>Languages</b>	French (Native); English (Fluent); Spanish (Conversational); Italian, Romanian, Hindi (Basics).
<b>Coding</b>	C/C++, Python, Tensorflow, Jupyter, Mathematica, Git, Latex Fortran, HTML;
<b>Astrophysics Software</b>	CLASS, Cobaya, MontePython, CCL, SZFAST, CAMB, CosmoMC.

## COMPUTING PROJECTS

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### Main Author

- CLASS\_SZ: Full-fledged parallelized cosmological inference code for CMB x LSS analyses, accelerated with neural nets.
- CLASS\_EOS\_FR: Cosmological perturbations in Horndeski theory
- CLASS\_LQC: Primordial power spectrum and non-gaussianity in loop quantum cosmology

### Co-Author

- CosmoTherm: CMB Spectral Distortions (lead: Jens Chluba, *unreleased*)
- BremsstrahlungPKG: Gaunt Factors in Astrophysics (lead: Jens Chluba, *unreleased*)
- EOS\_CLASS: Cosmological Perturbations in Horndeski Models (lead: Francesco Pace)