

BORIS BOLLIET

Columbia Astrophysics Laboratory

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Current Position:

Research Associate at Columbia University

September 2020 - Present

Working with Colin Hill on theoretical cosmology

and analyses for Atacama Cosmology Telescope and The Simons Observatory.

Previous Position:

Research Associate at the University of Manchester

September 2017 - August 2020

ERC-funded position in Jens Chluba's group.

Research Interests: Theoretical Cosmology and Numerical Tools for Astrophysics.

CMB Spectral Distortions, Sunyaev Zeldovich Effect, Dark Matter, Inflation, Black Holes, Dark Energy.

Collaboration: The Simons Observatory (since Summer 2019).

EDUCATION

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

Fulbright Fellow at Louisiana State University

August 2016 - 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 2014 - 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 2012 - 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 2010 - August 2010

Upton, NY, USA

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

Thesis Advisor: Paul Sorensen

HONORS AND AWARDS

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

TEACHING EXPERIENCE

Invited Lecturer at the Bard Summer School On Quantum Gravity	June 2019
Bard College, Annandale-On-Hudson, NY, USA	
Lecture and Computing Lab on CMB phenomenology (~6h)	
Assistant in Instruction at Université Grenoble Alpes	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)	

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 Sunyaev Zeldovich Power Spectrum and Cluster Counts

Talks given at Yale (invited), Princeton, Stony Brook, NYU/CCA, Oxford (invited), Grenoble (invited), Geneva, Munich, Marcel Grossmann, Moriond, MPA, IAS Paris, in 2017-2019.

CMB Spectral Distortions from Photon Injection Processes

Talks given at Marcel Grossmann and Barcelona, in 2018.

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.

SERVICES TO THE PROFESSION & OUTREACH

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

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 High Schools, Community Halls and at private events.

SKILLS

Languages	French (Native); English (Fluent); Spanish (Conversational); Italian, Romanian, Hindi (Basics).
Coding	C/C++, Python, Jupyter Notebook, Mathematica, Git, Latex (Expert); Fortran, HTML (Advanced); TensorFlow (Basics).
Astrophysics Software	CLASS, MontePython, SZFAST (Expert); CAMB, CosmoMC (Advanced).

COMPUTING PROJECTS

Main Author

- CLASS_SZ: Sunyaev Zeldovich power spectrum and galaxy cluster counts
- CLASS_EOS_FR: Cosmological perturbations in $f(\mathcal{R})$ gravity

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)