

BORIS BOLLIET

Jodrell Bank Centre for Astrophysics (JBCA)
The University of Manchester

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Research Interests

CMB Spectral Distortion, Clusters of Galaxies, Dark Energy, Inflation, Black Holes

Education

- 2014 - 2017 PhD at LPSC Grenoble, supervised by Pr. Aurélien Barrau.
- 2014 MSc. *Physique Subatomique et Astroparticules* (Grenoble University), Highest Honors.
MSc. *Open Course Programme* at ENS Lyon.
- 2010 BSc. at ENS Lyon and Lycée Louis-Le-Grand (Paris).

Languages: French (native), English (fluent), Spanish (advanced), learning Romanian and Hindi.

Grants and Awards

- 2016 *Fulbright Grant* (6k\$), for a 4 months research residency at Louisiana State Univ.
Selected Young Scientist at the 66th *Lindau Nobel Laureate Meeting*.
EOLE Grant (500€) to fund research for two weeks at Radboud University (NL).
- 2015 *CPTGA Grant* (500€) for attending the 14th Marcel Grossmann Meeting.
- 2014 PhD Grant from ENS Lyon (18k€/year over three years).
Diplôme de l'ENS Lyon (Honorary degree).
- 2009 ENS Lyon Studentship Grant (16k€/year over four years).
- 2007 Supporting grant from *Association Promotion des Talents* (8k€/year over two years).

Research Experience and Placements

- 2016 JBCA, *CMB Spectral Distortions* with Pr. Jens Chluba (started in Sept. 2017).
- 2016 University of Manchester, *Dark Energy* with Pr. Richard Battye (1 week).
Radboud University in Nijmegen (NL), *Loop Quantum Cosmology* (1 week).
- 2015 Centre de Physique Théorique in Marseille with Pr. Carlo Rovelli (1 week).
Jagiellonian University in Kraków (PL), *Loop Quantum Cosmology* (1 week).
- 2014 University of Manchester on *Dark Energy* with Pr. Richard Battye (6 months).
- 2013 LPSC Grenoble on *Loop Quantum Cosmology* (6 months).
- 2012 French Embassy in India on *Foreign Science Policy* (6 months).
Utrecht University on *Quark Gluon Plasma* (2 months).
- 2010 Brookhaven National Laboratory on *Quark Gluon Plasma* (3 months).

Computing and Editing: HTML, LaTeX, Git, Mathematica, Python, C/C++, ROOT, CLASS.

Scientific Talks, Posters and Seminars

- 2017 *Cosmology Seminar*, MPA Garching, Munich. *Talk*.
- 2016 *60th Birthday of Carlo Rovelli*, Marseille. *Poster*.
Theoretical Cosmology in the Era of Large Surveys, Firenze. *Talk*.
Astrophysics Seminar, Radboud University, Nijmegen. *Talk*.
- 2015 *Relativity Seminar*, CPT, Marseille. *Talk*.
Theory Seminar, Jagiellonian University, Poland. *Talk*.
Marcel Grossmann 14, Roma, Italia. *Talk*.
LOOPS 15, FAU, Erlangen, Germany. *Talk*.
Cosmology Seminar, IAS Paris. *Talk*.
Quantum Gravity in Kraków n°4, Poland. *Talk*.
- 2013 *LOOPS 13*, Perimeter Institute, Canada. *Poster*.

Teaching Experience

- 2016 *Nuclear Physics*, Bachelor level (15 hours).
Supervisor of a master student's internship (3 months).
- 2015 *Numerical Computing*, Bachelor level (40 hours).
Nuclear Physics, Master level, Experimental (40 hours).
Data analysis, Master level (20 hours).
Supervisor of a bachelor student's internship (3 months).
- 2014 Teaching preparatory classes for *Concours Général de Physique*.

Workshops and Summer Schools Attended

- 2017 *CMB from A to Z*. IESC, Cargèse.
- 2016 *Focus Week on Dark Energy and Modified Gravity*. GGI, Firenze.
- 2015 *Introduction to Mathematical General Relativity*, Institut Henri Poincaré, Paris.
- 2014 *CLASS Code Workshop*, Barcelona, Spain.
SIGRAV School: Gravity and the Quantum, Como, Italia.

Public Outreach

- 2015 Public Lecture at Annemasse City Hall (France) on Cosmology.
Presentations in high schools during the French National Science Week.
- 2014 Volunteered at the charity *Coups de Pouce Étudiants Grenoble* (helping students).

Other Interests and Achievements

Interested in Arts, History, Literature.

- 2009 Authored a video report about post-1990 Central Asia Centrale (Kazakhstan, Kirghizstan, Tadjikistan, Uzbekistan), a two months project funded by local institutions (3k€).
- 2008 Authored a photo report about the rural world in the Middle East (Turkey, Syria, Jordan, Israël, Palestine), a two months project funded by local institutions (3k€).

List of Publications

To access my publications online, please visit my Inspire [profile page](#) or follow the arXiv links bellow.

In preparation:

1. Probing the acceleration of the universe with the thermal Sunyaev-Zel'dovich power spectrum – B. Bolliet, B. Comis, J.-M. Perez, E. Komatsu.
2. CMB Non Gaussianity in LQC – I. Agullo, B. Bolliet, S. Vijaykumar.
3. A unified framework for studying dark sector theories: the equation of state approach and its numerical implementation – B. Battye, B. Bolliet, F. Pace.

Published:

4. A comparison of Einstein-Boltzmann solvers for testing General Relativity – E. Bellini, et al., [arXiv:1709.09135](#), (2016).
5. Some Clarifications on the Duration of Inflation in Loop Quantum Cosmology – B. Bolliet, A. Barrau, K. Martineau, F. Moulin, Class.Quant.Grav. 34 14, [arXiv:1701.02282](#) (2017).
6. Quantum-gravity phenomenology with primordial black holes – A. Barrau, B. Bolliet, M. Shutten, F. Vidotto, C. Weimer, [arXiv:1609.02159](#), Proceedings of the 2015 Karl Schwarzschild Meeting on Gravitational Physics (2016).
7. Conceptual issues in loop quantum cosmology – A. Barrau and B. Bolliet, Int.J.Mod.Phys. D25 no.08, 1642008, [arXiv:1602.04452](#) (2016).
8. The Equation of State Approach to Cosmological Perturbations in $f(R)$ Gravity – B. Bolliet, R.A. Battye, J.A. Pearson, [arXiv:1601.07585](#), Proceedings of the XIV Marcel Grossmann Meeting, World Scientific (2016).
9. Observational exclusion of a consistent quantum cosmology scenario – B. Bolliet, A. Barrau, J. Grain, S. Schander, Phys.Rev. D93 124011, [arXiv:1510.08766](#) (2016).
10. Primordial scalar power spectrum from the Euclidean big bounce – S. Schander, A. Barrau, B. Bolliet, L. Linsefors, J. Mielczarek, J. Grain, Phys.Rev. D93 2, 023531, [arXiv:1508.06786](#) (2016).
11. $f(R)$ as a dark energy fluid – R.A. Battye, B. Bolliet, J.A. Pearson, Phys.Rev. D93 4, 044026, [arXiv:1508.04569](#) (2016).
12. Phenomenology of bouncing black holes in quantum gravity: a closer look – A. Barrau, B. Bolliet, F. Vidotto, C. Weimer, JCAP 1602, 02 022 [arXiv:1507.05424](#) (2016).
13. Comparison of primordial tensor power spectra from the deformed algebra and dressed metric approaches in loop quantum cosmology – B. Bolliet, C. Stahl, J. Grain, L. Linsefors, A. Barrau, Phys.Rev. D91 8, 084035, [arXiv:1502.02431](#) (2015).
14. The Rise and Fall of the Ridge in Heavy Ion Collisions – P. Sorensen, B. Bolliet, Á. Mócsy, Y. Pandit, N. Pruthi, Phys.Lett. B705 71-75, [arXiv:1102.1403](#) (2011).

Publications in French

15. Un corrigé du concours général de physique 2009 : L'art et les sciences physiques - B. Bolliet, H. Lauret, [BUP 918](#) (2009).
16. La science en Inde - Paysage national de la recherche, l'innovation et l'enseignement supérieur – B. Bolliet, E. Layan, V. Briquet-Laugier. Disponible sur www.frenchscienceindia.org (2014).