

# Antoine BOURGET

## PERSONAL DATA

---

PLACE AND DATE OF BIRTH: Colombes, France | 3 January 1989  
PHONE: +33 6 32 05 57 74  
EMAIL: [antoine.bourget@polytechnique.org](mailto:antoine.bourget@polytechnique.org)  
WEBSITE: [antoinebourget.org](http://antoinebourget.org)

## EDUCATION

---

Jul 2016 | PhD in theoretical physics, ÉCOLE NORMALE SUPÉRIEURE, Paris, France  
*Mention très bien avec les félicitations du jury*  
Thesis: Modularity and Vacua in  $\mathcal{N} = 1^*$  Supersymmetric Gauge Theories  
Advisor: Jan Troost  
Examiners: O. Aharony, C. Bachas, A. Hanany, M. Petrini, S.P. Kumar, H. Samtleben

Jun 2013 | Master in theoretical physics, ÉCOLE NORMALE SUPÉRIEURE, Paris, France  
*With High Honours*

Sept 2011 | ÉCOLE NATIONALE SUPÉRIEURE DES MINES, Paris, France  
Admission to the *Corps des Mines* (rank 3).

2008-2011 | ÉCOLE POLYTECHNIQUE, Palaiseau, France  
Major in Mathematics and Theoretical Physics. GPA: 4.0  
Minor in Biology and Mechanics.  
Admission from the MP\* Classe Préparatoire (rank 2).

## WORK EXPERIENCE

---

<i>Current</i> OCT 2018	IMPERIAL COLLEGE, London, UK <i>Postdoctoral researcher in High Energy Physics</i> String theory, supersymmetric quantum field theory and mathematical physics.
<i>Sep 2018</i> SEP 2016	UNIVERSITY OF OVIEDO, Spain <i>Postdoctoral researcher in High Energy Physics</i> String theory, supersymmetric quantum field theory and mathematical physics.
AUG 2016 SEPT 2013	ÉCOLE NORMALE SUPÉRIEURE, Paris, France <i>PhD in High Energy Physics</i> Laboratoire de Physique Théorique de l'ENS (LPTENS).
AUG 2016 SEP 2011	MINISTRY OF ECONOMIC AFFAIRS, Paris, France <i>State Engineer of the Mines (Ingénieur du Corps des Mines)</i> .
AUG 2012 OCT 2011	FASTLITE, Orsay, France <i>Research Engineer</i> One full year internship in a technological start-up (non-linear optics, acousto-optics, laser physics).
JUL 2011 MAR 2011	ÉCOLE NORMALE SUPÉRIEURE, Paris, France <i>Research internship</i> Master thesis under the supervision of Jean Iliopoulos. Title: The Higgs mechanism in Quantum Field Theory

## TEACHING

---

2014-2016	TA in QUANTUM MECHANICS Giving exercise classes for students majoring in Physics at ENS (L3 year). Lecture by Frédéric Chevy.
2015-2016	TA in GENERAL RELATIVITY Giving exercise classes for students majoring in Physics at ENS (Master 1). Lecture by Gilles Esposito-Farèse.
2014-2016	PHYSICS FOR EVERYONE This course is designed for non scientific students at ENS, and aims at introducing the fundamental concepts of modern physics.

## LANGUAGES

---

FRENCH:	Mothertongue
ENGLISH:	Fluent
SPANISH:	Fluent
CHINESE:	Intermediate

## INTERESTS AND ACTIVITIES

---

Piano (12 years under the supervision of Pr. Anne GOLDENBERG) · Scientific popularization  
· European and World History · Orienteering

TALENS : Teaching maths and physics classes to highschool students with high potential  
as a member of a volunteer organization at ENS.

## PUBLICATIONS

---

1. AB and Jan Troost, *Duality and modularity in elliptic integrable systems and vacua of  $\mathcal{N} = 1^*$  gauge theories*, JHEP **1504** (2015) 128.
2. AB and Jan Troost, *Counting the massive vacua of  $\mathcal{N} = 1^*$  super Yang-Mills theory*, JHEP **1508** (2015) 106.
3. AB and Jan Troost, *On the  $\mathcal{N} = 1^*$  Gauge Theory on a Circle and Elliptic Integrable Systems*, JHEP **01** (2016) 097.
4. AB and Jan Troost, *The Covariant Chiral Ring*, JHEP **03** (2016) 163.
5. AB, *Modularity and Vacua in  $\mathcal{N} = 1^*$  Supersymmetric Gauge Theory*, July 2016, PhD thesis.
6. AB and Jan Troost, *The Arithmetic of Supersymmetric Vacua*, JHEP **07** (2016) 036.
7. AB and Jan Troost, *Permutations of Massive Vacua*, JHEP **1705** (2017) 042.
8. AB and Alessandro Pini, *Non-Connected Gauge Groups and the Plethystic Program*, JHEP **1710** (2017) 033.
9. AB, Alessandro Pini, Diego Rodríguez-Gómez, *Towards the deconstruction of the type D (2,0) theory*, JHEP **1712** (2017). arxiv:1710.10247.
10. AB and Jan Troost, *The Conformal Multiplets*, arXiv:1712.05415.
11. AB, Diego Rodríguez-Gómez, Jorge Russo, *A limit for large R-charge correlators in N=2 theories*, arXiv:1803.00580.
12. AB, Alessandro Pini, Diego Rodríguez-Gómez, *The Importance of Being Disconnected, A Principal Extension for Serious Groups*, arxiv:1804.01108.
13. AB, Diego Rodríguez-Gómez, Jorge Russo, *Universality of Toda equation in N=2 superconformal field theories*, arXiv:1810.00840.
14. Guillermo Arias-Tamargo, AB, Alessandro Pini, Diego Rodríguez-Gómez, *Discrete gauge theories of charge conjugation*, arXiv:1903.06662 .
15. Philip Argyres, AB, Mario Martone, *Classification of all  $\mathcal{N} \geq 3$  moduli space orbifold geometries at rank 2*, arXiv:1904.10969.
16. AB, Santiago Cabrera, Julius F. Grimminger, Amihay Hanany, Marcus Sperling, Anton Zajac, Zhenghao Zhong, *The Higgs Mechanism - Hasse Diagrams for Symplectic Singularities*, arXiv:1908.04245.
17. AB, Santiago Cabrera, Julius F. Grimminger, Amihay Hanany, Zhenghao Zhong, *Brane Webs and Magnetic Quivers for SQCD*, arXiv:1909.00667.

## TALKS AND PRESENTATIONS

---

- 19/02/2015 LPTHE Jussieu, "Duality and Modularity in Elliptic Integrable Systems".
- 10/11/2015 CNAM Paris (RJP), "Do we live in a hologram ?".
- 01/07/2016 LPTENS (Soutenance de thèse), "Modularity and Vacua in  $N=1^*$  supersymmetric gauge theories"
- 04/10/2016 Universidad de Oviedo, "A dance with supersymmetric vacua"
- 27/09/2017 Imperial College London, "Higgs branch Hilbert series and non-connected gauge groups"
- 31/10/2017 Università Milano-Bicocca, "Towards deconstruction of type D (2,0) theory"
- 30/11/2017 LPMT, Tours, "Théories de carquois et Séries de Hilbert"
- 04/12/2017 CPHT, Ecole Polytechnique, "Quivers, Hilbert series and Deconstruction"
- 07/10/2017 Universitat de Barcelona, "Towards deconstruction of type D (2,0) theory".
- 22/01/2018 Nordita, "Towards deconstruction of type D (2,0) theory".
- 24/01/2018 Uppsala University, "Towards deconstruction of type D (2,0) theory".
- 12/02/2018 Oviedo University, "Nilpotent orbits and quiver theories".
- 05/06/2018 University of Torino, "The importance of being disconnected: principal extension gauge theories".
- 02/07/2018 Institut de Physique Nucléaire de Lyon, "Moduli spaces of theories with disconnected gauge groups".
- 18/07/2018 Albert Einstein Center at the University of Bern, "The importance of being disconnected".
- 09/10/2018 Imperial College London, "Extremal correlators in 4d  $\mathcal{N} = 2$  SCFTs and Toda equations".
- 30/11/2018 Imperial College London, "Computing Hilbert series from free resolutions".
- 03/04/2019 DESY, Hamburg, "Brane webs and the SQCD Higgs Branch".
- 21/05/2019 Oviedo University, "Magnetic quivers and Brane Webs for 4d  $N=2$  SQCD".
- 30/09/2019 CEICO, Prague, "Hasse diagrams and Higgs branches".
- 09/10/2019 Joint seminar, Institute for Theoretical Physics, Leuven, "Hasse diagrams and Higgs branches".
- 21/10/2019 University of Oxford, "Hasse diagrams and Higgs branches".
- 25/10/2019 Durham University, "Hasse diagrams and Higgs branches".

## CONFERENCES, WORKSHOPS, SCHOOLS

---

- 2-14 June 2014: String Theory and Holography, Cargèse Summer Institute.
- 1-5 February 2016: CERN Winter School on Supergravity, Strings, and Gauge Theory.
- 11-15 April 2016: Mathematics of String Theory, CIRM.

- 16-18 November 2016: Postgraduate Meeting On Theoretical Physics, Oviedo University.
- 11-23 June 2017: Gauge theories, supergravity and superstrings, Centro de Ciencias de Benasque.
- 5-6 October 2017: Holography and Quantum Gravity workshop, Universidad de Oviedo.
- 16-18 July 2018: Supersymmetric theories, dualities and deformations, Institute for Theoretical Physics of the Albert Einstein Center at the University of Bern.
- 19-27 July 2018: IHES Summer School on Supersymmetric localization and exact results, IHES.
- 3-21 June 2019: Mathematical and Geometric Tools for Conformal Field Theories, Pollica Summer Workshop.
- 9-13 July 2019: Strings 2019, Bruxelles.
- 21 July - 4 August 2019: Cosmology and String Theory, Simons Summer Workshop, Stony Brook.
- 3-6 September 2019: Geometry and Strings 2019, Oxford.