

# Baptiste RAVINA

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: France, 13 August 1995  
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## RESEARCH EXPERIENCE

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| <p>OCT 2016 - PRESENT<br/>(3.5 YEARS)</p> | <p>ATLAS PhD student at the UNIVERSITY OF SHEFFIELD<br/> <i>Supervisors:</i> <a href="#">Prof. Davide Costanzo</a> and <a href="#">Prof. Daniel Tovey</a><br/>         Search for a supersymmetric partner to the top quark in final states with two b-quarks and large missing energy, together with a measurement of the <math>t\bar{t}Z</math> cross-section to better understand the main irreducible background. An additional study of <math>t\bar{t}\gamma</math> processes is made to provide an estimation of <math>t\bar{t}Z</math> in regions of low statistics.</p>  |
| <p>OCT 2016 - PRESENT<br/>(~ 1 YEAR)</p>  | <p>ATLAS author qualification task<br/> <i>Supervisor:</i> <a href="#">Dr Jana Schaarschmidt</a><br/>         Run and test the in-time pileup with the fast chain, and monitor the performance. Contribute to the development of out-of-time pileup with the fast chain: A new FastCaloSim service is being written that supports the simulation of particles generated for different BCIDs, and then applies appropriate weights to the cell energies, depending on the cell position. This method needs to be tested and validated against reference samples that are produced containing the standard pile-up overlay. Explore possible simplifications by reducing the number of additional BCIDs, ie. energy weights.</p>   |
| <p>JUN 2015 - SEP 2015<br/>(3 MONTHS)</p> | <p>CERN Summer Student at the LHCb experiment (PH-ULB)<br/> <i>Supervisor:</i> <a href="#">Dr Marco Pappagallo</a>      EXPERIMENTAL PARTICLE PHYSICS<br/>         First observation of the <math>D_{s1}(2460)^+</math> excited meson state at a hadron collider, study of a possible rare (suppressed) radiative decay channel of the <math>D_{s0}^*(2317)^+</math>, and analysis of decay rates and branching fractions. Extensive use of C/C++ and ROOT. Gave a general presentation of the project to the LHCb team, and a technical presentation of the results to the Charm Working Group; wrote a detailed report (for internal use only).<br/><br/>         THEORETICAL PARTICLE PHYSICS<br/>         Attended a series of Master's level classes in Theoretical Particle Physics, given as part of the CERN Summer Student scheme by world-leading researchers from top universities and institutes. Subjects included Particle Physics, Quantum Field Theory, Physics beyond the Standard Model, Neutrino Physics, Dark Matter, Astroparticle Physics and Cosmology, String Theory, Heavy Ions Physics and Particle Colliders Physics.</p> |
| <p>JUL 2014 - SEP 2014<br/>(2 MONTHS)</p> | <p>Summer Research Intern at the LHCb experiment at CERN (PH-LBD)<br/> <i>Supervisor:</i> <a href="#">Dr Angelo Di Canto</a>      EXPERIMENTAL PARTICLE PHYSICS<br/>         Test and development of new data analysis methods for the study of D-Mesons oscillations, from data collected in previous runs of the LHC. Study of charm physics and mixing. Extensive use of C/C++ and ROOT.<br/><br/>         THEORETICAL PARTICLE PHYSICS<br/>         2014 CERN Summer Studentship lectures series - see above.</p>  |

*Supervisor:* [Dr Heinrich Schindler](#) APPLIED PHYSICS  
 Worked with the LHCb team responsible for the VERTex LOCator (VELO) upgrade (planned for 2019), using the current Timepix3 pixel chip to study the mechanisms of particle detection in the LHCb experiment, and develop a new method to assess the calibration of a chip. This method will be implemented on the new VeloPix, with the benefits of enabling precise evaluation of radiation damage. Extensive use of C++ and of the system design software LabView (to create a functional computer interface to be used with a generator, in order to produce precise variations of voltage and current on the microamp scale).

JUN 2013 - MAR 2014  
 (6 MONTHS) Undergraduate Research Assistant at KING'S COLLEGE LONDON  
*Supervisor:* [Dr Gregory Wurtz](#) OPTICS AND INTERFEROMETRY  
 Part-time project consisting in the realisation and study of a high-finesse optical cavity, and its possible application to the non-destructive observation of quantum entanglement (based on the 2012 Nobel Prize in Physics awarded to Haroche and Wineland). Design of a functional Fabry-Pérot cavity and of an experimental setup to precisely measure resonances of the optical cavity. Study of the coupling of the cavity modes with the emission spectrum of a dye.

## EDUCATION

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OCT 2016 - PRESENT **PhD in Particle Physics** UNIVERSITY OF SHEFFIELD (ATLAS)  
*Ongoing ATLAS authorship qualification*

- Funded by ERC grant
- Regular attendance to relevant seminars (Sheffield and ATLAS)
- Literature review: *Measurement of the top quark coupling to SM particles*

Supervised by [Prof. Davide Costanzo](#) and [Prof. Daniel Tovey](#)

OCT 2015 - JUNE 2016 **MASt in Applied Mathematics** UNIVERSITY OF CAMBRIDGE (DAMTP)  
*2.1 (Part III of the Maths Tripos)*

- Regular attendance to the Cosmology, HEP/GR and Mathematical Physics seminars
- Part III talk:  *$\mathcal{PT}$ -symmetry and non-Hermitian Hamiltonians*
- Part III essay: *Cosmological Axions*

Supervised by [Dr David Marsh](#)

SEP 2012 - JUL 2015 **BSc in Physics & Philosophy** KING'S COLLEGE LONDON  
*First Class Honours*

- 3rd Year Project: *Cosmological Inflation*  
 Prize for best poster presentation  
 Supervised by [Prof. Mairi Sakellariadou](#)
- Literature Review: *Supersymmetric Quantum Mechanics*  
 Supervised by [Prof. Sarben Sarkar](#)

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|---------------------|--|--------------------------------|
| SEP 2012 - JUL 2015 | <b>Associate's Degree (AKC)</b><br><i>Merit</i>  | KING'S COLLEGE LONDON          |
|                     | <ul style="list-style-type: none"> <li>○ 3-year course on modern religious, philosophical and social issues</li> <li>○ Leathes prize for second best final year results</li> </ul> |                                |
| JUNE 2012           | <b>French Baccalaureate</b><br><i>First Class Honours &amp; Best GPA (18.92/20)</i>  | LYCÉE LA PRÉSENTATION DE MARIE |
|                     | Scientific Section, Major in Physics, Options Latin & Ancient Greek  |                                |

## PROFESSIONAL AND ACADEMIC MEMBERSHIPS

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| IAPS:                       | Member (international Association of Physics Students)     |
| PHYSICS SOCIETY:            | Member (University of Sheffield)                           |
| CUGMS:                      | Member (Cambridge University Graduate Mathematics Society) |
| HUGHES HALL:                | College member (University of Cambridge)                   |
| MAXWELL SOCIETY:            | Member (King's College London)                             |
| INSTITUTE OF PHYSICS (IOP): | Associate Member   |

## LANGUAGES

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| ENGLISH: | Fluent         |
| FRENCH:  | Mother tongue  |
| SPANISH: | Conversational |
| ITALIAN: | Beginner       |

## COMPUTER SKILLS

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| Basic Knowledge:        | HTML, FORTRAN, MATHEMATICA, JAVASCRIPT, CSS                            |
| Elementary Proficiency: | C, LABVIEW   |
| Working Proficiency:    | C++, PYTHON, ROOT, WINDOWS, MS OFFICE, L <sup>A</sup> T <sub>E</sub> X |

## OUTREACH

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| NOV 2016 - PRESENT | <b>Blog:</b> <a href="http://baptisteravina.com">baptisteravina.com</a>                                 |
| MARCH 2017         | <b>PubHD</b> , Sheffield<br>Talk: <i>Doodling particle physics</i>                                      |
| JUNE 2016          | <b>Prize for best essay</b> , JIAPS (journal of IAPS)<br><i>Solving Problems in Theoretical Physics</i> |

## TEACHING (GTA)

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| SPRING 2017 | <b>Graduate lectures on HEPP</b> , University of Sheffield – PhDs<br>One lecture: <i>Spontaneous symmetry breaking and the Higgs mechanism</i>        |
| SPRING 2017 | <b>Core Physics 2</b> , University of Sheffield – Second years<br>Covers: Thermodynamics & Stat. Mech., QM II, Solids II, Nuclear Phys., Atomic Phys. |
| AUTUMN 2016 | <b>Programming in Python</b> , University of Sheffield – First years<br>Also (substitute): <b>Python for Astrophysics</b> – Second year               |

## CONFERENCES, PRESENTATIONS AND SUMMER SCHOOLS

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| OCT 2016 - PRESENT  | Frequent attendance to relevant meetings<br>Sheffield: HEP, ATLAS, journal club<br>CERN: SUSY, stop0L, $t\bar{t}Z$ , $t\bar{t}\gamma$ , Simulation  |                     |
| 10 - 12 APR 2017    | <b>Joint APP and HEPP Annual IoP Conference</b> , University of Sheffield<br><i>participated</i><br>Poster: <i>The ATLAS Monte Carlo Fast Chain: overview and recent developments</i>   |                     |
| 11 - 12 JAN 2017    | <b>YTF 9</b> , University of Durham<br>Young Theorists Forum  | <i>attended</i>     |
| 8 - 11 JAN 2017     | <b>YETI 2017</b> , University of Durham<br>Young Experimentalists and Theorists Institute : <i>Gravitational probes of fundamental physics</i>  | <i>attended</i>     |
| 4 - 6 JAN 2017      | <b>ATLAS UK 2017</b> , University of Liverpool  | <i>attended</i>     |
| 11 - 17 AUG 2016    | <b>ICPS 2016</b> , University of Malta<br>International Conference of Physics Students<br>Talk: <i>Cosmological Axions: Dark Matter candidates</i><br>Essay: <i>Solving Problems in Theoretical Physics</i> (won prize)   | <i>participated</i> |
| 23 - 26 JUN 2016    | <b>CAPS 2016</b> , University of Glasgow<br>Conference of Astronomy and Physics Students<br>Talk: <i>Cosmological Axions: Dark Matter candidates</i>  | <i>participated</i> |
| 15 - 19 SEP 2015    | <b>PIC 2015</b> , University of Warwick<br>XXXV International Physics In Collision Symposium: electroweak phenomena, neutrino physics, QCD, heavy flavor physics, heavy ion physics, Higgs physics, searches for BSM physics, astroparticle physics   | <i>attended</i>     |
| 24 AUG - 4 SEP 2015 | <b>BUSSTEPP 2015</b> , King's College London<br>45 <sup>th</sup> British Universities Summer School in Theoretical Elementary Particle Physics, aimed at PhD students and covering: renormalization group in QFT, phenomenology, BSM physics, SUSY, AdS/CFT, neutrino physics, cosmology, lattice field theory, string phenomenology, experimental particle physics | <i>attended</i>     |
| 30 JUN - 7 AUG 2015 | <b>CERN Summer Student Lectures</b> , CERN  | <i>attended</i>     |
| 25 - 28 JUN 2015    | <b>CAPS 2015</b> , University of Manchester   | <i>participated</i> |

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|---------------------|---|-----------------|
|                     | Conference of Astronomy and Physics Students<br>Talk: <i>From Maxwell to MoEDAL - a review of magnetic monopoles</i><br>Poster: <i>Cosmological Inflation</i>   |                 |
| 2 - 6 DEC 2014      | <b>DISCRETE 2014</b> , King's College London<br>Fourth Symposium on Prospects in the Physics of Discrete Symmetries: T/C/P/CP/CPT symmetries, accidental symmetries, decoherence and entangled states, Lorentz symmetry breaking, neutrino mass and mixing, implications for cosmology and astroparticle physics, dark matter searches, experimental prospects at LHC, cosmological aspects of non-commutative space-times, PT-symmetric Hamiltonians | <i>attended</i> |
| 3 JUL - 7 AUG 2014  | <b>CERN Summer Student Lectures</b> , CERN  | <i>attended</i> |
| 28 FEB - 2 MAR 2014 | <b>Cumberland Lodge KCL Physics Conference</b><br><i>Matter matters</i> : particle phenomenology, dark matter and cosmology   | <i>attended</i> |
| 1 - 3 MAR 2013      | <b>Cumberland Lodge KCL Physics Conference</b><br>Space exploration and astrophysics  | <i>attended</i> |

## AVAILABLE REFERENCES (IN ORDER)

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**Prof. Davide Costanzo**  
*First PhD supervisor*  
[d.costanzo@sheffield.ac.uk](mailto:d.costanzo@sheffield.ac.uk)  
University of Sheffield  
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**Dr Robyn Veal**  
*Personal tutor (MASt)*  
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**Dr Gregory Wurtz**  
*Personal Tutor (BSc)*  
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**Prof. Daniel Tovey**  
*Second PhD supervisor*  
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1211 Geneva 23, CH

**Dr Marco Pappagallo**  
*CERN Supervisor (2015)*  
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**Prof. Mairi Sakellariadou**  
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**Dr Jean Alexandre**  
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