

# William Fawcett

DPHIL STUDENT · PARTICLE PHYSICS · UNIVERSITY OF OXFORD  
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## Education and Awards

### University of Oxford

United Kingdom

DPHIL IN PARTICLE PHYSICS

Oct. 2013 – PRESENT

- Supervisor: Professor Alan Barr.
- Thesis title: “Phenomenological studies of supersymmetry and searches for the Gluino with the ATLAS detector”.
- Collingwood Prize for exceptional academic achievement (Pembroke College, 2016).
- 2nd place: Perkins Prize for the best DPhil candidate in Particle Physics (2014).

### University of Manchester

United Kingdom

MPhys (HONS) PHYSICS, 1ST CLASS

2009 – 2013

- Supervisor: Professor Chris Parks.
- Thesis title: “Searching for matter–antimatter differences in charm meson decays”.
- Platt Prize for the best master’s thesis (2013).
- University commendation for finishing in the top 5% of my year group.
- Achievement scholarship for consistent 1st class results (awarded annually, 2009–2012).

## Experience

### European Organization for Nuclear Research (CERN)

Geneva, Switzerland

EXTERNAL ASSOCIATE

Oct. 2013 – PRESENT

- Analysis of LHC data to search for new physics.
- Operation of the ATLAS detector.
- Developed data analysis techniques to enhance signal over background processes.
- Analysis leader: chaired meetings, wrote and edited papers, coordinated group work, addressed comments from referees.

### Rutherford Appleton Laboratory

Didcot, United Kingdom

SUMMER STUDENT

July 2012 – Sept 2012

- Analysis of LHC data to search for differences between matter and anti-matter.
- Used machine learning algorithms to optimise the selection of rare decays of the B meson particle.

## Publications

### PAPERS

Search for new phenomena in final states with large jet multiplicities and missing transverse momentum with ATLAS using

$\sqrt{s} = 13$  TeV proton-proton collisions, *Phys. Lett. B.* **757** (2016) 334.

- Was the first search for supersymmetry published with 2015 data from the LHC.

Summary of the ATLAS experiment’s sensitivity to supersymmetry after LHC Run 1 – interpreted in the phenomenological MSSM,

*JHEP* **10** (2015) 134.

- The most comprehensive analysis of Run-1 Supersymmetry searches, combining 22 different search papers.
- Selected by the ATLAS Collaboration as a physics highlight and also Oxford Physics as a highlight.
- Featured in the CERN courier (Nov 2015) and on Résonances blog, and inspired several spin-off papers.

### CONFERENCE NOTES

Pursuit of new phenomena in final states with high jet multiplicity, high jet masses and missing transverse momentum with ATLAS at

$\sqrt{s} = 13$  TeV, *ATLAS-CONF-2016-095*

- Was the publication containing the most LHC data at the time of release.

## CONFERENCE PROCEEDINGS

pMSSM studies with ATLAS and CMS, *to appear in Proceedings of Science*.

Summary of SUSY constraints from ATLAS using the phenomenological MSSM, *PoS (LP2015) 081*

Can LHCb Study Three Body Decays with Neutrals? *arXiv:1312.0023*

## Leadership

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### President of the MCR

*Oxford, United Kingdom*

PEMBROKE COLLEGE, OXFORD

*Nov. 2015 – June 2016*

- Elected president of the postgraduate community “Middle Common Room” of Pembroke College, Oxford.
- Responsible for management and running of MCR committee, day-to-day operation of MCR and special events.
- Member of Pembroke College Governing Body, Finance and Planning Committee, Academic Committee, Operations Committee, and Student Development Committee.
- Representative of all postgraduate students at Pembroke College to Oxford University Student Union and to the University of Oxford.
- Started a mentoring scheme, where undergraduates can get advice from graduates.

### Junior Under Officer

*Manchester, United Kingdom*

MANCHESTER UNIVERSITY OFFICERS’ TRAINING CORPS

*Sept. 2009 – Sept. 2012*

- Taught military skills including team work, communication, leadership and time management.
- Promoted to Junior Under Officer, received training in teaching adults, taught military skills lessons.
- Lead teams of officer cadets in field training and arduous battle exercises.

## Skills

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**Advanced** C/C++, Python, Bash, Linux, LaTeX, Vim

**Intermediate** Microsoft office, Windows, Mac OS

**Beginner** Perl, Mathematica, Matlab, CSS/HTML

## Conferences

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- 2016 UK HEP forum, Abingdon. SEARCH, Oxford. Large Hadron Collider Physics Conference, Lund, Sweden. Joint annual High Energy Particle Physics Conference, Brighton. ATLAS supersymmetry workshop, Brighton. ATLAS UK, Sheffield.
- 2015 International Symposium on Lepton Photon Interactions at High Energies, Ljubljana, Slovenia. ATLAS UK, Brighton.
- 2014 ATLAS Supersymmetry workshop, Oxford. ATLAS UK, Edinburgh.
- 2013 International Workshop on Charm Physics, Manchester.

## Teaching

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- 2016 Mentor for undergraduate physicists, Pembroke College, University of Oxford.
- 2015 Marker for 4th year undergraduate particle physics course, University of Oxford.
- 2010 Mentor for undergraduate physicists, University of Manchester.

## Schools

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- 2016 11th Hadron Collider Physics Summer School, Fermilab, Chicago, USA.
- 2016 Terascale statistics school, DESY, Hamburg, Germany.
- 2014 STFC High energy physics summer school, Warwick University, United Kingdom.

## Outreach

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- 2014 **Bang! magazine** published a public engagement article on matter–antimatter differences for a student science magazine. *Oxford*
- 2014 **Big Bang fair** engaged the general public with the physics of the Higgs boson. This was a national event with attendance of over 20,000. *Birmingham*
- 2014 **Stargazing Oxford** manned the particle physics stand at Oxford’s equivalent of the BBC’s Stargazing Live *Oxford*
- 2014 **Particle physics masterclass** guided A-level students through a two-day course at Oxford University. *Oxford*