Greig A. Cowan

CONTACT DETAILS

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RESEARCH CAREER

University of Edinburgh
STFC Ernest Rutherford fellow: LHCb **Jun 2013 - present**
Research Associate: LHCb **Feb 2013 - Jun 2013**

École Polytechnique Fédérale de Lausanne, Switzerland
Research Associate: LHCb **Aug 2010 - Jan 2013**

University of Edinburgh
Research Associate: GridPP/LHCb **Apr 2005 - Jul 2010**

RESEARCH EXPERIENCE

- **Physics coordinator** of the LHCb-UK collaboration (Oct 2014-present).
- **Convenor** of the LHCb "*b*-hadrons to charmonia" physics working-group.
- Convener of the LHCb "*b*-hadron lifetimes" sub-group of B2CC.
- LHCb data processing (a.k.a. stripping) coordinator.
- LHCb shift-leader and grid-expert on-call.
- Supervise(d) 1 PDRA, 2 PhD, 2 MSc students and numerous UG projects.

EDUCATION

University of Glasgow

Ph.D. Theoretical Physics **April 2005**
- Thesis: "*Single-flavour, single-colour colour superconductivity*"
- Advisor: Dr. Mark G. Alford

M.Sci. Mathematics and Physics (1st class) **1997 - 2001**
- Project: "*Lattice QCD calculation of f_B from moving B mesons*"
- Advisor: Prof. Christine T. H. Davies

GRANTS AS PI (1-3) OR CO-I (4-6)

1. 2013-2018: STFC Ernest Rutherford Fellowship (ERF). Award value: £527,726.
2. 2015-2018: STFC ERF research grant titled "Disentangling QCD and new physics with charmonium resonances at LHCb". Award value: £296,436.
3. 2016-2017: Institute for particle physics phenomenology (IPPP) associateship on "Exotic hadron spectroscopy". Award value: £3,000.
4. 2015-2019: STFC consolidated grant titled "Experimental Particle Physics". Award value: £2,980,875.
5. 2014-2020: STFC research grant titled "LHCb Upgrade: Beyond the Energy Frontier. Award value: £431,996.
6. 2014-2017: STFC research grant titled "UK Strategy for Long Baseline Neutrino Oscillation Experiments". Award value: £91,946.

TEACHING EXPERIENCE

- 2013-2016: Lecturer, co-organiser for "Numerical recipes", 4^{th}-year course.
- 2013-2015: Teaching assistant, "Research methods in physics", 3^{rd}-year course.
- 2015-2016: Teaching assistant, "Data acquisition and handling", 3^{rd}-year lab.
- 2011-2012: Supervisor for UG laboratory project on spectroscopy, EPFL.

OUTREACH

- 2016: Co-organised "Antimatter matters" exhibit at the Royal Society summer science exhibition.
- 2015-present: Organiser for "Cloud-chambers for schools" project in Edinburgh.
- 2013-present: Regular demonstrator at Edinburgh International Science festival.
- 2014-2015: Lecturer at Sutton Trust summer school (widening University participation for disadvantaged students).
- 2014: Participated in "Im a scientist, get me out of here!" online competition.
- 2014-present: regular poster on social media about LHC-related science output.
- 2014-present: regularly talk to students at high schools and student-led science clubs.

CONFERENCE AND WORKSHOP ORGANISATION

- 2017: "UK-flavour" conference, IPPP, University of Durham, UK.
- 2016: "Exotic hadron spectroscopy" workshop, Higgs centre, Uni of Edinburgh.
- 2016: "Heavy flavor: quo vadis?", IPPP meeting, Ardbeg distillery, Islay, UK.
- 2016: "HyperK-UK" meeting, University of Edinburgh.
- 2015: "Beauty" conference, University of Edinburgh, UK.
- 2014-present: Three annual LHCb-UK meetings (Oxford, Liverpool, Bristol).
- 2012: "Implications of LHCb measurements and future prospects", CERN.
- 2007: Grid storage workshop and tutorial, Edinburgh.

SELECTED CONFERENCE PRESENTATIONS (INVITED IN BOLD)

- **2017 UK flavour** (Durham), "Exotic hadron spectroscopy".
- **2016 HASPECT** (Genoa), "Observation of exotics in $B^+ \to J/\psi\phi K^+$ decays".
- 2016 CKM workshop (Mumbai), "Measurements of ϕ_s at LHCb".
- 2016 Rencontres de Blois (France), Exotic hadron spectroscopy with LHCb.
- 2016 RICH (Slovenia), "Characterisation of the 6x6 cm^2 ANL-MCP detector".
- **2016 Franco-Italian meeting on B physics** (Paris) "Penta and tetraquarks".
- **2015 UK HEP forum** (Abingdon) "Anomalies and deviations in flavour physics".
- 2015 EPS (Vienna) "*CP* violation in $B^0_{(s)}$ mixing using $B \to J/\psi X$ decays".
- 2015 PPAP community meeting (London) "LHCb status report".
- 2015 HL-LHC workshop (CERN) "Experimental prospects for studies of *CP* violation in the charm and bottom systems".
- 2014 Beauty (Edinburgh) "Amplitude analysis in $B \to J/\psi X$ decays".
- 2014 CERN seminar "Confirmation of the $Z(4430)$ resonance".
- 2014 SM@LHC (Madrid) "Recent results on B decays".
- 2014 Epiphany (Krakow) "LHCb overview".
- 2012 ICHEP (Melbourne) "Measurement of ϕ_s at LHCb".

SELECTED PAPERS

I am an author on all LHCb papers, with an h-index of 64. The h-index for the following ten papers is 8. The first seven publications describe a few of my analyses from LHCb in the analysis of b-hadron decays to final states containing charmonium. I worked on every aspect of them, from data collection, performing the analysis and writing the paper. I am contact author for five of the publications. As convener of the LHCb "b hadron to charmonia" physics working group I was responsible for guiding a further 17 analyses through to publication in addition to acting as LHCb-internal reviewer to 6 publications.

1. "First study of *CP*-violation and decay width difference in $B_s^0 \to \psi(2S)\phi$ decays", R. Aaij et al. [LHCb Collaboration], Phys. Lett. B762 (2016) 253, 2 citations.
2. "Observation of the decay $\overline{B}_s^0 \to \psi(2S)K^+\pi^-$", R. Aaij et al. [LHCb Collaboration], Phys. Lett. B747 (2015) 484, 5 citations.
3. "Precision measurement of *CP* violation in $B_s^0 \to J/\psi K^+K^-$ decays", R. Aaij et al. [LHCb Collaboration], Phys. Rev. Lett. 114 (2015) 041801, 81 citations.
4. "Observation of the resonant character of the $Z(4430)^-$ state", R. Aaij et al. [LHCb Collaboration], Phys. Rev. Lett. 112 (2014) 222002, 215 citations.
5. "Measurements of the B^+, B^0, B_s^0 meson and Λ_b^0 baryon lifetimes", R. Aaij et al. [LHCb Collaboration], JHEP 04 (2014) 114, 55 citations.
6. "Measurement of *CP*-violation and the B_s^0-meson decay width difference with $B_s^0 \to J/\psi K^+K^-$ and $B_s^0 \to J/\psi\pi^+\pi^-$ decays", R. Aaij et al. [LHCb Collaboration], Phys. Rev. D87 (2013) 112010, 162 citations.
7. "Measurement of the *CP*-violating phase ϕ_s in the decay $B_s \to J/\psi\phi$", R. Aaij et al. [LHCb Collaboration], Phys. Rev. Lett. 108 101803 (2012), 180 citations.

The following papers are those written independently from the LHCb collaboration. The first is a phenomenology paper describing the formalism for controlling an important aspect in the *CP* violation analyses used in four of the above LHCb papers. The final two publications are the product of my theoretical physics PhD research into new states of high-density quark matter.

8. "Determination of $2\beta_s$ in $B_s^0 \to J/\psi K^+K^-$ decays in the presence of a K^+K^- S-wave contribution", Y. Xie, P. Clarke, G. Cowan and F. Muheim, JHEP 0909 074 (2009), 50 citations.
9. "Single-flavor and two-flavor pairing in three-flavor quark matter", M. G. Alford and G. A. Cowan, J. Phys. G 32 511 (2006), 18 citations.
10. "Single color and single flavor color superconductivity", M. G. Alford, J. A. Bowers, J. M. Cheyne, G. A. Cowan, Phys. Rev. D67 054018 (2003), 110 citations.