

# Greig A. Cowan

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I have fifteen years experience at the leading edge of scientific research in high-energy particle physics at the CERN Large Hadron Collider, leading. I currently lead international teams of scientists within the 800-strong "LHCb" collaboration in the analysis of massive datasets collected at the LHC, using custom-developed software and machine learning algorithms. I am now searching for a new opportunity in the commercial sector where I can apply my excellent leadership, technical and communication abilities to a novel set of challenges.

## Career

- **University of Edinburgh** **UK**  
*STFC Ernest Rutherford research fellow* 2013–2018
- **École Polytechnique Fédérale de Lausanne** **Switzerland**  
*Research scientist* 2010–2013
- **University of Edinburgh** **UK**  
*Research scientist* 2005–2010

## Education

- **University of Glasgow** **UK**  
*Ph.D. Theoretical Physics* 2001–2005
- **University of Glasgow** **UK**  
*M.Sci. Mathematics and Physics, 1st class* 1997–2001

## Key Skills

### Leadership

- **LHCb-UK physics coordinator:** 2014–2018  
This elected position role requires liaising between research institutes, the preparation of funding applications, organisation of an annual meeting (approx. 100 participants), publishing news articles ([www.lhcb.ac.uk](http://www.lhcb.ac.uk)) and interacting with the media. Through this role I have helped to win over £5M of research funding.
- **LHCb physics group leader:** 2012–2014  
I managed a distributed group of approximately 40 physicists (students to senior professors) to successfully deliver a series of scientific measurements/publications using the latest LHC data. I acted as the liaison between the group and the senior management of the collaboration.
- **LHCb data processing coordinator:** 2010–2011  
I was responsible for the World-wide data processing of the collaboration. This operations role sat between the experimental hardware, the distributed computing infrastructure and the end-user analysts.
- **Distributed computing deployment/operations:** 2005–2010

I led the international deployment, commissioning and operations of the distributed computing/storage infrastructure for the LHC. This is used to transfer, process and store all raw and derived data from the CERN experiments.

## Data analysis and software.....

- **Senior analyst:** *2014–2018*  
The LHCb experiment at CERN produces huge quantities of data that can be mined to perform measurements of fundamental physics quantities. I have led teams of physicists in the different stages of data preparation, distributed processing, machine-learning based classification and regression. This uses a custom-built software framework combining C, C++ and python, tested using the CERN-based continuous integration system.
- **Lead developer:** *2010–2018*  
I was lead developer (in a small team) of a C++ event simulator application ([github.com/gcowan/RapidSim](https://github.com/gcowan/RapidSim)) that is regularly used within the LHCb collaboration to gain insight on particular data analysis tasks. Previously, I led the development of a C++ model fitting application ([github.com/gcowan/RapidFit](https://github.com/gcowan/RapidFit)) that served as the foundation to multiple physics measurements using LHCb data.
- **Machine learning:** *2014–2018*  
Machine-learning is now being used through all stages of the scientific discovery process, both for event classification and for measurement through regression algorithms. My latest project is leading a small team in the development of a new tool based on the Google TensorFlow package, which aims to significantly speed-up our complex multi-dimensional data analyses.
- **Systems administration:** *2005–2009*  
When commissioning the LHC distributed computing infrastructure I developed expert-level knowledge of the SQL-based databases systems, low-level networking protocols and Linux systems administration.

## Communication.....

- **Lead publication author:** *2001–2018*  
I have authored numerous scientific papers (approx. 2-3/year) that have been published in leading high-energy physics journals. I am in the final stages of writing a short online book for the Institute of Physics to describe my research to a less expert audience.
- **Public speaking:** *2001–2018*  
I am regularly invited to present my research at leading international conferences (approx. 4/year) and have organised several conferences/workshops in Europe to discuss the latest scientific advances. I frequently present my ongoing technical work to my international collaborators via conference calls and in person at CERN.
- **Public outreach:** *2001–2018*  
In 2016 I co-organised the week-long “Antimatter matters” exhibit at the Royal Society in London ([antimatter-matters.org](https://antimatter-matters.org)) that reached over 10000 visitors. I currently operate a service for high schools to access kits that demonstrate basic particle physics principles.