

# Eshwen Bhal

PHD STUDENT

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## Education

### University of Bristol

Bristol, United Kingdom

DOCTOR OF PHILOSOPHY IN PHYSICS

Sep. 2016 – Present

- Thesis title: **Hadronic Dark Matter Searches at CMS at 13 TeV** — Under supervision of H. Flücher. Expected submission in April 2020
- **Postgraduate student representative** for the particle physics group, 2019–20 — Role in the Student-Staff Liaison Committee for the School of Physics
- **CERN**, Geneva, Switzerland — Long term attachment, Oct. 2017 – Mar. 2019
- **Calorimeter Layer-2 on call expert** and **Level-1 Trigger shifter**, Geneva, Switzerland — Additional responsibilities at CERN

### University of Exeter

Exeter, United Kingdom

MASTER OF PHYSICS WITH HONOURS IN PHYSICS WITH ASTROPHYSICS. AWARD: FIRST CLASS (77 %)

Sep. 2012 – Jul. 2016

- Dissertation title: **Simulations of Exoplanet Light Curves** — Under supervision of T. Harries
- Recipient of a **Dean's Commendation**, 2016 — In recognition of outstanding achievement at the fourth stage of my degree
- Recipient of a **Physics Award**, 2015 — Being one of the three students with the highest marks at the third stage of my degree
- Recipient of a **Dean's Commendation**, 2014 — In recognition of outstanding achievement at the second stage of my degree
- Recipient of a **Physics Award**, 2013 — Being one of the three students with the highest marks at the first stage of my degree
- Recipient of a **Dean's Commendation**, 2013 — In recognition of outstanding achievement at the first stage of my degree

### Monmouth Comprehensive School

Monmouth, United Kingdom

SECONDARY SCHOOL QUALIFICATIONS

Sep. 2005 – Aug. 2012

- **A Level**, 2011–12 — Biology (A\*), Mathematics (A\*), Physics (B), Chemistry (AS Level) (B)
- **Open University**, 2012 — Introducing Astronomy (10 credit course)
- **GCSE**, 2010 — 10 including English Language and Mathematics at grades A\* (4) to A (6)
- **WJEC Key Skill**, 2010 — Communication (Level 2)

## Skills

### Data analysis

- The primary focus of my PhD concerns statistical analysis of large (multi-terabyte) datasets collected by the CMS experiment from the Large Hadron Collider.
- Developed analysis software in Python and C++, using modern data science tools and distributed computing.
- Visualisation with ROOT and matplotlib. Formal presentations of results with LaTeX.

### Collaboration

- Belonging to several working groups of around a dozen people as well as a wider collaboration of over 4,000 people.

### Problem solving

- Predominant component of a physics degree. As an undergraduate, conducted more traditional pen-and-paper problem solving in many topics. As a PhD student, wrote code to solve physics problems numerically and perform data analysis.

### Multitasking

- Often working on multiple projects at once with different working groups during PhD.

### Organisation

- Coordinating different aspects of analyses in my PhD, meticulously documenting programming instructions and procedures of analysis components.

### Communication

- Presented formally in my PhD at all levels: regular working group updates, research group and collaboration-wide talks, and several conference posters and talks.

## Experience

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### University of Bristol

*Bristol, United Kingdom*

COMPUTING DEMONSTRATOR

*Oct. 2019 – Present*

- Teaching third year undergraduate students Python and its applications for numerically solving physics problems. Also involves formal marking of assignments and providing feedback.

### University of Bristol

*Bristol, United Kingdom*

MATHEMATICS TUTOR

*Jan. 2017 – May 2017*

- Taught mathematics for physicists to first year undergraduate students. Also involved formal marking of problem sheets, discussions with the students, and teaching concepts for subsequent assignments.