# Thomas Brooks

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## Education

**2016-2020**   **PhD Particle Physics**, *University of Sheffield*.
*Thesis title:* Selecting charged current muon neutrino interactions on argon with the Short-Baseline Near Detector.

**2012–2016**   **MPhys Physics**, *University of Manchester*, Grade: 1st Class (84%).
*Thesis title:* Multivariate algorithms for neutron-antineutron annihilation pre-selection studies and track-shower separation with MicroBooNE.

**2010–2012**   **A Levels**, *Graveney School*, Physics (A*), Chemistry (A*), Maths (A).
GCSEs: 6 A*, 3 A, 2 B.

## Honours & Awards

**Won**   **Hatfield-Heginbottom Scholarship**, *University of Manchester*, 2015.
Best performing physics student in the third year of study

**Nominated**   **Best Placement Prize**, *University of Manchester*, 2015.
Best physics summer research project

**Won**   **Prize for Physics**, *Graveney school*, 2012.

## Professional Experience

**05/2020–**   **Postdoctoral researcher**, *University of Sheffield*, Sheffield.
*Roles:* Geant4 simulation studies, statistical analysis.

**07/2015– 09/2015**   **Mantid Project Intern**, *ISIS*, Rutherford Appleton Laboratory, Oxford.
*Roles:* Investigated the use of atomic simulation software with MantidPlot, liaised with instrument scientists and developed MantidPlot software.

**06/2014– 08/2014**   **Events Staff**, *Flair Events*, London.
*Roles:* Customer services, logistics and managing people within a sporting environment.

**06/2012(3)– 08/2012(3)**   **Premises Assistant**, *Belleville Primary School*, London.
*Roles:* Administration, events organisation and maintenance work.

**2011–2012**   **Rugby Coach (voluntary)**, *Graveney School*, London.
*Roles:* Teaching and organising young people, refereeing and building teamwork.

**07/2010**   **Assistant (voluntary)**, *New Scotland Yard*, London.
*Roles:* Communication with minority organisations and creating outreach media.

## Software Languages

| | | | |
|---|---|---|---|
| **Python** | Advanced | **C/C++** | Advanced |
| **JavaScript** | Intermediate | **Bash** | Advanced |
| **LaTeX** | Advanced | **HTML** | Intermediate |

## Specialist Software

| | | | |
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| **TensorFlow** | Intermediate | **OpenCV** | Basic |
| **Git** | Advanced | **CMake** | Intermediate |
| **LabVIEW** | Intermediate | **Geant4** | Intermediate |

## Other Training

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| 2018 | **STFC data analysis workshop**, *Imperial University*, UK.<br>*Description:* Statistical methods and tools for data analysis with a focus on Bayesian statistics and numerical analysis. |
| 2015 | **Paid summer placement in particle physics**, *University of Manchester*, UK.<br>*Description:* Awarded a research project with the MicroBooNE collaboration based on academic merit and a personal statement. |
| 2011 | **Headstart course in materials science**, *Oxford University*, UK.<br>*Description:* Selected out of an applicant pool. Designed and constructed a protective case, gave presentations and developed laboratory skills. |

## Presentations, Publications and Teaching

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| Preprint | **Construction of precision wire readout planes for the Short-Baseline Near Detector**, *JINST*, Submitted, 20202. |
| Invited tutor | **4th annual LArTPC software analysis workshop**, *University of Manchester*, 2019. |
| Poster | **Reconstruction and selection tools for charged-current muon neutrino cross sections in SBND**, *Users Meeting*, Fermilab, 2019. |
| Talk | **Background removal for $\nu_\mu$ CC selections in SBND**, *IOP HEPP*, Imperial University, 2019. |
| Talk & poster | **Cosmic background removal with the cosmic ray tagger system in the Short-Basline Near Detector**, *NuPhys*, London, 2019. |
| Publication | **A novel electrical method to measure wire tensions for time projection chambers**, *Nuclear Instruments and Methods in Physics A*, Vol 915, 2018. |
| Talk | **SBND in 10 minutes**, *New Perspectives*, Fermilab, 2018. |
| Poster | **A comparison of potential electron lifetime measurements in the Short Baseline Near Detector**, *NuPhys & IOP HEPP*, University of Sheffield, 2017. |

## Skills

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| **Release management** | I acted as the sole release manager for a large particle physics experiment for three years, overseeing over 150 software releases. This gave me a strong grasp of version control, continuous integration and code deployment. |
| **Organisation** | Through the loose structure of a PhD research programme I have learnt how to effectively motivate myself to achieve long term goals and respond to short notice deadlines. |
| **Problem solving** | A rigorous education in mathematics and physics has provided me with excellent analytical skills that I continue to hone by employing them in my development work. |
| **Communication** | I regularly give presentations on complex topics both to experts and more general audiences. I am trained in academic writing designed to deseminate information concisely and accurately. Leading tutorials, coaching and refereeing taught me to instruct and give orders effectively. |
| **Teamwork and leadership** | Working on software development, statistical analysis and hardware projects within a large collaborative experiment has taught me to guide, listen and respond to teams of peers. |
| **Hands-on aptitude** | I have a lot of experience in building, setting up and testing apparatus during laboratory work, including high precision testing and electronics. |

## Interests and Other Activities

- I enjoy creating things whether it's programming video games, tinkering with a raspberry pi or 3D modelling and printing.
- I am very interested in computing; I regularly work on my own open source software projects and I am always looking to improve my programming skills.
- I have been a keen rugby player for over seven years.