Dwayne SPITERI

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After completing my doctorate on the ATLAS experiment, I am looking for a research position that involves some level of data analysis, statistical modelling, and simulation work. Preferably this would be on a different experiment such that I can obtain new skills and diversify my knowledge-base.

Education

University of Birmingham (2012 - 2016) : MSci Physics with Particle Physics and Cosmology - 1st Class

University of Glasgow (2016 - 2020) : PhD in Experimental Particle Physics. Based at CERN, Geneva from July 2017 - December 2018. Thesis Hyperlink - Higgs boson studies: associated production with a vector boson and decay into b-quarks using the ATLAS Run-2 dataset.

Research Experience

FLC: Internship at Deutsches Elektronen Synchotron (DESY) (July 2015 - September 2015)

- Worked in a clean room laboratory testing the electronic properties of silicon sensors for a DESY-based prototype.
- Wrote C++ code to interpret data taken from the laboratory and fit it to various curves.
- Gave several presentations describing my work and wrote a 17 page report summarising my findings.

ATLAS experiment: Tracking Combined Performance Group (July 2017 - November 2018)

- Investigated track objects created as a result of incorrect combinations of hits made in the Inner Detector (fake tracks) of the ATLAS detector.
- Parametrised the differences between Monte Carlo modelling of track objects and tracks reconstructed from data.
- Derived recommendations for the uncertainty on the number of fake tracks found in Monte Carlo simulations for the entire ATLAS collaboration.

ATLAS experiment: VHbb Analyses Member (March 2018 - May 2020)

- Member of two analysis teams using data collected by the ATLAS detector between 2015 and 2018 to make the first observation and measurements of the Higgs boson decay to b-quarks via associated Vector Boson production (VHbb).
- Contributed to a shared data analysis software framework based in C++ with Python wrapper scripts.
- Developed the event selection for the analyses by testing alternative trigger regimes and implementing the ones that increased the analysis sensitivity.
- Investigated and corrected unexpected fluctuations in a statistical fit model containing thousands of nuisance parameters.
- Contributed to the following publications:
  - Observation of $H \to b\bar{b}$ decays and VH production with the ATLAS detector. [Phys. Lett B786, p59-86, (2018)]
  - Measurement of $H \to b\bar{b}$ as a function of the vector-boson transverse momentum in 13 TeV pp collisions with the ATLAS detector [J. High Energ. Phys, vol. 141, (2019)].
  - Measurements of WH and ZH production in the $H \to b\bar{b}$ decay channel in pp collisions at 13 TeV with the ATLAS detector. [arXiv 2007.02873 (2020)]
  - Measurement of the associated production of a Higgs boson decaying into b-quarks with a vector boson at high transverse momentum in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector. [arXiv 2008.02508 (2020)]

Public Engagement Experience

Pint Of Science Festival Organiser (November 2016 - April 2020)

- A worldwide science festival bringing researchers to a local pub/café/space to share scientific discoveries.
- Organised events for the Glasgow branch of the festival in 2017 (Creative Reactions), 2019 (Our Society) and 2020 (Planet Earth).
- Led a team of four people to create themed events over three nights for around 90-120 members of the public.

Co-ordinator for ATLAS Virtual Visit Programme (January 2018 - March 2020)

- Managed a team of Volunteers at the CERN lab in Geneva delivering video conferences to schools and the general public on behalf of the ATLAS collaboration.
- Talked with students from many differing education levels and ages about the ATLAS experiment, CERN, and the life of a scientist.
- Explaining physics concepts in talks using a variety of perspectives to deepen understanding or teach advanced concepts.

Institute of Physics (IoP) Festival of Physics (May 2019 - October 2019)

- Liaised with volunteers at the University of Edinburgh and Glasgow to create a joint experience.
- Constructed an immersive exhibit explaining the history of particle physics with: several physical demonstrations of particle detection experiments past and present, interactions with individual detector components, and a live link to the CERN lab.
- Managed volunteers, obtained funding, organised deliveries of components, liaised with event organisers, and oversaw the arrangement of exhibit at the venue for the three-day long event.

Technical Skills

Computer languages (proficient)

- MATLAB, Python and C++, git.
- Taught undergraduates in Python and MATLAB courses.

Computer languages (familiar)

- SQL

Hardware (familiar)

- basic electronics, clean room procedures and equipment.

Achievements and Interests

- Completed the University of Birmingham Personal Skills Award (PSA) Advanced (2015). Short-listed for PSA Student of the Year.
- Completed CMI-accredited Level 3 Project Management Course (2019).
- SISA Level 1 Accreditation Glasgow Business School (2020).
- I play badminton and go bouldering once or twice a week. I also enjoy snowboarding
- I enjoy tabletop games of skill such as bridge and chess and I have a variety of board games.

References

Professor Aidan Robson
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