Dr Alexander Shires

Experimentelle Physik 5
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Education

Imperial College London, UK

Ph.D., High Energy Physics , *October 2013*

Thesis title: *Exploring $b \to s$ electroweak penguins at LHCb*

Supervisor: Prof. Ulrik Egede

MSci (Hons), Physics with Theoretical Physics, *October 2009*

First Class honours degree.

Masters: *Topological Measures of the Cosmic Microwave Background*

Supervisor: Dr. Carlo Contaldi

Hardenhuish School, Wiltshire, UK

A-Levels, *August 2005*

Physics (A), Maths (A), Further Maths (A), Chemistry (A)

GCSEs, *August 2003*

3 A*, 3 A, 3 B

Professional Experience

Post-doctoral research associate

Technische Universität Dortmund, Germany *June 2013 to present*

Post-doctoral position in the Emmy Nöther group headed by Johannes Albrecht. Worked on experimental measurements of $b \to s\ell^+\ell^-$ decays and phenomological projects whilst supervising MSc and BSc students. Placement at CERN for three months to work on the LHCb trigger system. Currently extending previous measurements of $b \to s\ell^+\ell^-$ decays and measuring $b \to d\ell^+\ell^-$ decays.

PhD student

Imperial College London, UK *Jan 2012 to Apr 2013*

Second part of PhD studentship. Worked on the second angular analysis of $B^0 \to K^{*0}\mu^+\mu^-$, the measurement of the $K\pi$ S-wave in $B^0 \to K^{*0}\mu^+\mu^-$ and . Participated in the running of the LHCb experiment during data-taking in 2011 alongside my research.

CERN, Switzerland *Aug 2010 to Dec 2011*

Placement as part of my PhD studentship, lived in Geneva and worked at CERN. Worked on the first angular analysis of $B^0 \to K^{*0}\mu^+\mu^-$ and developed the trigger for LHCb. Participated in the running of the LHCb experiment during data-taking in 2011 alongside my research.

Undergraduate research placement

Imperial College London, UK *Summer 2008*

Developed and integrated autonomous remote testing for the Ganga project. Added reporting options to show test failure differences between different versions.

Junior engineer

Westinghouse Rail Systems, Wiltshire, UK *Summer 2006, Summer 2007*

As a scholarship given to the best 3 students from local schools, worked as the sole data analyst for the first live railway trial of a multi-million pound project. Invited back for a second year to develop software to test the integration of a new railway track-side communications protocol.

Publications and selected results

D. Das, G. Hiller, M. Jung, and A. Shires, *The $\bar{B} \to \bar{K}\pi\ell\ell$ and $\bar{B}_s \to \bar{K}K\ell\ell$ distributions at low hadronic recoil*, arXiv:1406.6681

LHCb collaboration, R. Aaij *et al.*, *Test of lepton universality using $B^+ \to K^+\ell^+\ell^-$ decays*, arXiv:1406.6482, to appear in Phys. Rev. Lett.

LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of the decay $B^0 \to K^{*0}\mu^+\mu^-$*, JHEP **08** (2013) 131, arXiv:1304.6325

T. Blake, U. Egede, and A. Shires, *The effect of S-wave interference on the $B^0 \to K^{*0}\ell^+\ell^-$ angular observables*, JHEP **03** (2013) 027, arXiv:1210.5279

LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of the decay $B^0 \to K^{*0}\mu^+\mu^-$*, Phys. Rev. Lett. **108** (2012) 181806, arXiv:1112.3515

Additional author on 155 papers as a member of the LHCb collaboration.

Invited talks

Searching for new physics in $b \to (s,d)\ell^+\ell^-$ transitions, Seminar, TU Dortmund, October, 2014

Test of lepton universality using $b \to s\ell^+\ell^-$ decays at LHCb, Collider cross talk, CERN, September, 2014

Rare heavy flavour decays at the LHC, Frontiers in Particle Physics, Aspen, Jan, 2014

Electroweak penguins at LHCb, Seminar, University of Bonn, October, 2013

Exploring $B^0 \to K^{*0}\mu^+\mu^-$ at LHCb, Seminar, TU Dortmund, April, 2013

Testing the helicity structure of new physics with rare decays at LHCb, Spin-PRAHA, Prague, July, 2012

Angular analysis of $B^0 \to K^{*0}\mu^+\mu^-$ at LHCb, IOP HEPP Annual Meeting, Queen Mary, University of London, April, 2012

Teaching experience

2014 Project supervision, 4$^{\text{th}}$ year undergraduate course, TU Dortmund.
2014 Project supervision, 3$^{\text{rd}}$ year undergraduate course, TU Dortmund.
2014 Particle identification seminar, part of the 4$^{\text{th}}$ year particle detectors lecture course, TU Dortmund.
2012 Computational lab demonstrator, 3$^{\text{rd}}$ year undergradudate course, Imperial College London.
2011 Experimental lab demonstrator, 3$^{\text{rd}}$ year undergraduate couse, Imperial College London.

Skills

C++, Python, Fortran, SVN, Git, MS Office, LaTeX, Vim

Windows, Linux (Ubuntu, Scientific Linux), OSX

Full, clean, UK Driving licence (2004).