Dr Alexander Shires

A highly-motivated physicist, I have five years' experience of contributing to the LHCb collaboration at CERN whilst working at Imperial College London and Technische Universität Dortmund. My research is focussed on searching for physics beyond the standard model in $b \to s\ell^+\ell^-$ decays.

Key Skills Physics, Statistics, Data Analysis, Programming

Employment history

2013 to present **Post doctoral researcher**, *Technische Universität Dortmund*, Germany.
Research position in experimental particle physics as part of the LHCb collaboration experiment in the Emmy Nöther group headed by Johannes Albrecht.

Education

Oct 2013 **PhD, High Energy Physics**, *Imperial College London*, UK.
Thesis: *Exploring $b \to s$ electroweak penguins at LHCb*, Supervisor: Prof. Ulrik Egede
Research PhD searching for physics beyond the Standard Model on the LHCb experiment at CERN.

Jun 2009 **MSci (Hons), Physics With Theoretical Physics**, *Imperial College London*, UK.
First Class degree concentrating on the theoretical aspects of physics, specifically to understand current research into particle physics and cosmology. This four year course involved specific modules in applied mathematics, statistics and computing dedicated to implementing algorithms for modelling and data analysis.

Aug 2005 **A-levels, GCSEs**, *Hardenhuish School*, Wiltshire, UK.
A-levels: Physics (A), Mathematics (A), Chemistry (A), Further Mathematics (A).
GCSEs: 3 A*, 3 A, 3 B.

Skills

Computing	C++, Python, Fortran	Frameworks	ROOT, boost, gsl, numpy/scipy
OS	Linux, Windows	Tools	SVN, Git, MS Office, LaTeX, Vim
Languages	English, German	Other	Full, clean UK driving licence

Professional Experience

Professional Delivered multiple high profile results for LHCb, working over timescales ranging from a few months to several years. Record of successful collaboration with multiple researchers across Europe in a highly matrix environment. Requested by the lead physicist in LHCb to independantly review a critical project and delivered a thorough review ahead of schedule. As the sole post–doctoral researcher at my current position, I set a professional example to the post-graduate students. Communication of my work is vital to it's success and I have strong public presentation skills, developed while leading discussions at a number of top academic institutions across Europe.

Software Designed and implemented software across the LHCb collaboration, from local Python scripts to production code in C++ used for data-taking. The data-taking software is a critical requirement to record quality data and the output is used by the entire collaboration. Regularly implement effective code to deliver results with a scalable and maintainable ethos.

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Summer 2008 **Undergraduate research placement**, *Imperial College London*, UK.
The Ganga project has developed front-end software that allows hundreds of researchers to use many distributed computing systems across the world in a coherent format and is the main user software for LHCb and ATLAS. Developed and integrated autonomous remote testing for the Ganga project and added reporting options to show test failure differences between different versions. Worked with established Python framework as part of a small team of 10 developers to implement my changes.

Summer 2006 & 2007 **Junior engineer**, *Westinghouse Rail Systems*, Wiltshire, UK.
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 in C++ on Windows to test the integration of a new railway track-side communications protocol.

Publications

D. Das, G. Hiller, M. Jung, and A. Shires, *The $\overline{B} \to \overline{K}\pi\ell\ell$ and $\overline{B}_s \to \overline{K}K\ell\ell$ distributions at low hadronic recoil*, JHEP **09** (2014) 109, arXiv:1406.6681

LHCb collaboration, R. Aaij *et al.*, *Test of lepton universality using $B^+ \to K^+\ell^+\ell^-$ decays*, Phys. Rev. Lett. **113** (2014) 151601, arXiv:1406.6482

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 more than 200 papers as a member of the LHCb collaboration.

Invited Talks

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

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

Additional regular seminars at UK and German institutions

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References

Available on request

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