Hugo Day

PERSONAL DETAILS	Nationality: British Full UK Driver's License

CONTACT INFORMATION

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PROFESSIONAL STATEMENT

I am an applied physicist with extensive experience working in technically challenging, international environments, mostly in an academic or humanitarian setting. 5+ years experience working with particle accelerators, with an emphasis on electromagnetics and RF engineering. I'm active in the hacker community and am committed to continued professional development and outreach/education in STEM subjects.

PROFICIENCIES

Problem solving, experimental work/design, data analysis, RF engineering, complex systems, numerical methods, technical design and presentation

COMPUTING SKILLS

HFSS, CST: Microwave Studio, pSpice, Cadence, C, C++, Matlab, Mathematica, Python, SciPy, Matplotlib, Java, $\mathrm{\LaTeX\,2_\varepsilon}$, R, Git, *nix and Windows administration, openoffice and MS Office

PROFESSIONAL EXPERIENCE

CERN, Geneva, Switzerland

Senior Research Fellow   **July 2013 – June 2016**

Worked in the fast pulsed systems group of the technology department on various topics related to the LHC injection kicker magnets, focused on electromagnetic interactions between the particle beam and the electromagnet. Worked extensively with standard EM software (HFSS, CST:MWS, pSpice, Cadence) and bench RF test stands (VNAs).

- Proposed an upgrade to EM performance of magnet which was subsequently applied to all kicker magnets during 2013 maintenance shutdown
- Lead study of HV behaviour of cathode triple junction as applied to LHC kicker magnet geometry
- Implemented an library of analysis tools for measurements and simulations in python for transparency and reuse

CERN, Geneva, Switzerland

Doctoral Student   **February 2010 – January 2013**

Examining the electromagnetic interactions between charged particle beams and particle accelerator components using simulation suites and bench-top measurements techniques. Focused on normal-conducting fast pulsed electromagnets and collimators (robust beam protection equipment) necessitating dealing with competing design requirements to find optimal solutions.

- Lead simulation and measurement campaign of beam coupling impedance of the LHC injection magnets, collaborating with colleagues in other departments at CERN and in other research institutes in the UK and Germany
- Devised an analysis technique to measure beam impedance in asymmetric structures
- Carried out a systematic review of impedance reduction techniques, their advantages/disadvantages and implementation

University of Manchester, Manchester, United Kingdom

Teaching Assistant   **September 2010 – January 2011**

Teaching assistant for undergraduate courses (Programming in C).

EDUCATION

University of Manchester, Manchester, United Kingdom

Doctor of Philosophy   **September 2009 – June 2013**

- Thesis title: "Measurements and Simulations of Impedance Reduction Techniques in Particle Accelerators" supervised by Professor Roger Jones and Dr Elias Metral (CERN)- Work done under placement at CERN.
- I used theoretical models, commercial EM modelling software (CST Microwave Studio and Ansoft HFSS) and bench top RF measurements to evaluate and characterise the EM properties of accelerator components. Working in an internationally diverse team, results were regularly presented internally for review and feedback, with communication between operational and design teams to integrate the RF results into their design revisions.

University of Southampton, Southampton, United Kingdom

MPhys (Hons) Physics Classification: 1ˢᵗ Class   **October 2005 − July 2009**

- Masters' Thesis: "Controlling the synthesis of branched gold nanoparticles using a wet chemical synthesis method" resulting in a journal publication under the supervision of Dr. Antonios Kanaras
- Courses in experimental design, classical and quantum physics, mathematics, general relativity and fluid dynamics

King Edward VI Grammas School, Chelmsford, United Kingdom

A Levels Physics, Mathematics, Chemistry, History   **2000 − 2005**

PROJECTS   **CosmicPi**   *https://www.cosmicpi.org*
Software and Physics Analysis   **June 2014 − Present**

- Building an low-cost, open source, distributed cosmic ray detector
- Taking lead on physics capabilities and analysis tools. Adapting data for use with HiSPARC's Sapphire framework

OpenCosmics   *https://github.com/OpenCosmics/opencosmics.github.io*

- Providing a framework to allow interoperable analysis of different cosmic ray experiments' data sets
- Building on HiSPARC's Sapphire framework, we're working to import different data sources in a functional manner

VOLUNTEER EXPERIENCE   **THE Port**, Geneva, Switzerland
Fundraising, Event Organisation, Team Mentor   **June 2014 − Present**

- Organisation of a humanitarian hackathon in coordination with Red Cross, UN and other bodies
- Assisted in fundraising, recruiting volunteers for event and mentoring participants

CERN, Geneva, Switzerland
CERN Tour Guide/Conferencier   **November 2010 − June 2016**

- Tour guide to audience from secondary school students to visiting dignitaries
- Gave introductory talks about CERN and it's mission and tours to experimental areas

Pint of Science CH, Geneva, United Kingdom
Geneva Coordinator   **October 2013 − May 2014**

- Managed a city wide public science event serving over 250 members of the public in 2 pubs over 2 nights
- Recruited and coordinated venue managers, and liased with national organising committee

LHComedy/Comedy Collider, Geneve, United Kingdom
Advertisement/Performer   **July 2013 − June 2014**

- Responsible for advertising and marketing
- Stand up comedy events taking place at CERN in September 2013 and June 2014. starring professional physicists giving amateur stand up comedy sets alongside professional comedians to the general public in a sold out 200 seat capacity venue

LANGUAGES   English (Fluent), French (Professional Proficiency), German (Beginner)

REFEREES

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