

CLAIRE BAKER

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Ambitious 1st year Engineering & Technology PhD student whose Physics background provides a strong command of technical problem-solving, computation & mathematics. Currently investigating the feasibility of using on-board vehicle sensors to predict in real-time the severity of Traumatic Brain Injury during Road Traffic Collisions through a multidisciplinary collaboration between Imperial (Dyson Design Engineering & Medicine departments) and the industry leading Transport Research Laboratory.

EDUCATION

Imperial College London, UK

October 2017 - present

MRes+PhD CDT Neurotechnology co-sponsored by TRL and EPSRC **Distinction (MRes)**

- Engineering MRes with taught machine learning, statistics, data analysis & neuroscience
- 25% time spent within industry at TRL Ltd, using the Road Accident In Depth Study database
- More information at <https://expertwitness.trl.co.uk/trl-and-imperial-college-of-london-join-forces/>
- Invite speaker for Neurotrauma UK (2018) conference

Harvard-Smithsonian Center for Astrophysics, USA

August 2016 – May 2017

Researching Gravitational Microlensing Events using Gaia Astrometry **1st Class**

- Used Python & Fortran to conduct catalogue cross-matches, identifying the lens in events
- Predicting future lensing events using astrometry data of 2 million potential lenses
- Presented a poster at 229th American Astronomical Society Conference, Grapevine, TX, USA
- Audited biomedical engineering and imaging course at Harvard University

University of Southampton, UK

October 2013 – June 2017

MPhys (Hons) Astrophysics with a Year Abroad, IoP accredited degree **1st Class**

Modules include Mathematical Methods for Physical Scientists, Practical and Computational Laboratory work, Quantum and Wave Physics. *Transcript available on request.*

- 100% grade for a scientific paper on diffraction, part of a practical photonics experiment
- Observational Astronomy Field Trip to Teide Observatory, Tenerife (top 12): part collaborative satellite design project with La Laguna and UC Dublin students culminating in a presentation to CEOs, part individual research producing a symposium poster & scientific-style paper
- Best Academic Performance (Award, 1st Year), selected for 4th year Harvard University research

The Cherwell School, UK

September 2007 – July 2013

2011-13 **GCE A levels** *Physics (A*) Mathematics (A*) Further Mathematics (A) Art & Design (A*)*

2011-12 **GCE AS Levels** *French (A) General Studies (A)*

2009-11 **GCSE** *12 A*s and 1 A including English, French, German, Sciences & Astronomy*

EMPLOYMENT

Imperial College London, UK

October 2018 - present

Graduate Teaching Assistant for first year undergraduate mechanics module

- Communicate problem-solving skills and knowledge to students within a weekly workshop setting
- Provide formalised feedback and assessment for summative reports and exams

Fire Tech, UK

May 2018 - present

Lead Tutor teaching & overseeing up to 75 children for week-long STEM focused camps

- Responsible for all running and safety from set up to set down, ensuring high teaching quality
- Interface between the 9-17 year olds who attend, tutors & parents (safe-guarding lead)

University of Southampton, UK

April - July 2016

Research Astrophysicist (Astrophysics Department)

Studied rare transient class known as Super Luminous Supernovae (SLSNe) whose physical properties and energy production mechanism are not well understood.

- Used Python to analyse and fit models to data from 13 known SLSNe, presented findings
- Co-author on related scientific paper (Prajs et al., in prep, expected late 2017)

STFC, Rutherford Appleton Laboratories, UK

June – August 2015

Physics Research & Design Intern and Laboratory Technician (Particle Physics Department)

Technology development for particle accelerators used in healthcare through studying the lifetime of different candidate metals under high thermal stress to be used for the target.

- Designed part of, constructed and operated an Ultra-High Vacuum Rig (>50kV used)
- Created and took data using a novel cooling system
- Communicated my work and its wider societal benefits to different audiences (the public and scientists) at 2 poster presentations, and the APAE Conference

Tim Baker (Violin Bow Maker), UK

January 2013 - July 2016

Administrative duties, photographer and marketing designer

- Efficiently catalogued properties of and photographed a collection of ~1000 bows
- Designed time-sensitive promotional material such as business cards and posters

University of Oxford, UK

June & August 2012

Outreach Materials Researcher and Designer (Physics & Astronomy Department)

- Work experience: Learnt Cel scripting language from scratch, employed as a result of this work
- Independently created 5 sets of 'Top Trump' cards for Astrophysics Outreach education

SKILLS

Computing

Coding Languages Python, Matlab, Fortran, SQL (basic)

Operating Systems Linux, OSX, Windows

Data Analytics Large datasets (1 billion) & machine learning approaches

Miscellaneous MS Office, Origin, LaTeX, Topcat, RSpec, ImageJ, DS9

Technical

Slit Spectrograph used with Meade telescope

Equipment

Cooling Systems Developed and monitored Binary Ice machine

Vacuum Systems Built Ultra-High Vacuum Rig from basic parts

High Voltage Conducting experiments using >50kV

Communication

Languages English (fluent), German & French (strong command)

Presentation Skills Invite Conference Speaker (Neurotrauma 2018), poster presentations, sports coaching, University Guide & RAL Public Outreach

Scientific Writing Proficient, first author paper expected early 2019

Leadership

Sport Captain of GB Women's Ultimate U24 National team (2017-2018), captain & coach multiple University teams (2014-present)

Employment Promoted to Lead Tutor (camp manager) within 1 week

Volunteering Fully trained & first aid qualified Scout Leader (ages 8-18)

INTERESTS

Sport

Elite Ultimate Frisbee Athlete, Great Britain Women (U24 captain)

15th Place 2018 World Championship finish & European Silver Medallist (Iceni Women)
Imperial College London Sports Scholarship Athlete (2017-2019) shortlisted for Imperial Sportswoman of the Year Award (2018), Coach, Captain & Sports Photographer
2015 National Champion and European Bronze Medallist (Reading Mixed)

Creative Art Photography, sculpture, ceramics, painting, drawing, gamelan player