

# Barry Haycock

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## Professional Profile

Computational Solid-State Physicist with a passion for problem-solving. Seeking a new challenge that allows me to solve unique problems and exploits my experience and skills developed in academia. An IRCSET Scholar.

## Experience

### PostDoctoral Researcher, West Virginia University; W.V. – Oct. 2011 - Present

- Developed *ab-initio* computational physics package, FIREBALL, spearheading new version of the FIREBALL package for very high throughput applications
- Designed and delivered week-long lecture course and workshop in the University of Central Florida for developers of FIREBALL and similar code
- Wrote the FIREBALL developers' manual and user guide
- Supervised five undergrad students through research projects
- Developed novel materials research strategy by combining high throughput methodologies with *ab-initio* tight binding calculations and data mining techniques

### Ph.D. Scholar, Dublin Institute of Technology; Ireland – 2004 - 2011

- First ever science student in DIT to receive the prestigious IRCSET Scholarship.
- Thesis titled: "*Calculation of Electronic and Optical Properties of Nanoscale Systems*"  
- Available at [www.barryhaycock.com](http://www.barryhaycock.com)
- Duties include: *Ab-initio* Analytical and computational calculations of atomic systems. Assisting researchers with the fundamental elements involved in Density Functional Theory. Building and enhancing possible collaborations both theoretical and experimental physicists.

### Tutor, Dublin Institute of Technology, Ireland – 2004 - 2007

- Developed and delivered Labview course for second year students 2005 - 2007. No graduate student had previously developed and delivered their own course in DIT Physics.
- Supervised undergrad labs first through third year in both Physics and Engineering classes ranged from first year mature students (12 students) to third year undergraduates (20 students)
- Unique to DIT, delivered tutorials across all aspects of second year physics course, rather than tutorials specific to just one course.

### Research Executive, IDT Ltd.; London, UK – 2004

- Responsible for all Irish clients of U.K.-based medical physics company.
- Developed backwards-compatibility solutions for DICOM-standard data from CAT scans.
- Hosted three training sessions (schools) in the Dublin Dental School and Hospital, Trinity College on surgical planning using computer aided techniques and CT.
- Carried out regular on-site training days for on principles of 3D segmentation and basic CT technologies

### Account Executive, TaxBack International, Dublin, Ireland – 2002

- Responsible for for development of the company's diversification into Business-To-Business operations.
- Developed and implemented information gathering methodology used by all colleagues.

## **Education**

Dublin Institute of Technology, Ireland – Ph.D. (Physics), 2011

Dublin Institute of Technology, Ireland – B.Sc. (Physics) *First Class Honours*, 2004

Institute of Technology, Tallaght, Ireland – Diploma (Physics), *2.1 Honours*, 2002

Institute of Technology, Tallaght, Ireland – Certificate (Physics), *1.1 Honours*, 2001

## **Skills**

Working knowledge of WEDA (open source data mining package), R (open source statistics package), gnuplot (open source data analysis)

Python programmer

Fortran 95+ programmer

Working knowledge of C, C++, and related programming languages (e.g. Java, Objective-C)

Experience with computational-cluster computers, including Titan, the worlds most powerful supercomputer

P4-level (yellow belt) student of Krav Maga, a modern martial art

## **Awards**

IRCSET Scholarship 2005 (Irish Research Council for Science Education and Technology). First awardee in Physics in the DIT to receive this prestigious award.

FOCAS Award for academic achievement, 2004.

LIS Award for academic achievement, 2001/2.

## **Other Information**

Active mentor of the high school robotics team “Mountain Area Robotics Society (MARS)”.

Services include: Peer review of papers for *Physica Status Solidi* and *The Journal of Physical Chemistry*.

Hobby roboticist.

Completed Coursera courses: “*Introduction to Data Science*” (taught by Bill Howe from University of Washington) and “*Machine Learning*” (by Andrew Ng of Stanford University)

(Full course details available at [coursera.org](http://coursera.org)).

## **Referrals**

Available on request.