CURRICULUM VITAE — BARNABY THOMAS PETER ROWE

ADDRESS & PERSONAL DETAILS

146 Tachbrook Street
Ground Floor Flat
London
SW1V 2NE
Tel: +44 (0)7786 719915

Date of birth: 12 September 1982
Nationality: British Citizen
Email: *barney@barnabyrowe.net*
Website: *http://barnabyrowe.net*

EMPLOYMENT

Postdoctoral Research Associate at University College London
Gower Street, London, WC1E 6BT, United Kingdom

- July 2011 — *present*
  Part of the European Research Council-funded *Capitalizing on Gravitational Shear* (COGS) Project, led by Professor Sarah Bridle (Manchester).

Caltech Postdoctoral Scholar at the NASA Jet Propulsion Laboratory
4800 Oak Grove Drive, Pasadena, CA 91109, USA

- January 2010 — July 2011 & February 2012 — August 2012
  Optimizing the choice of pixel scale and detector technology for cosmic shear in the NASA/Department of Energy *Joint Dark Energy Mission* (now NASA *WFIRST*), with Jason Rhodes (JPL) & Christopher Hirata (Caltech).

DUEL Fellow at the Institut d'Astrophysique de Paris
98 bis, boulevard Arago, 75014 Paris, France

- November 2007 — December 2009
  With Yannick Mellier, a Fellowship as part of the *Dark Universe through Extra-galactic Lensing* (DUEL) EU FP6 Research Training Network.

EDUCATION

Institute for Astronomy, University of Edinburgh, UK

PhD, September 2004 — October 2007
Thesis Topic: *'Cosmological applications of weak gravitational flexion'*
Supervisors: David Bacon, Andy Taylor

University of Oxford, UK

Honours MPhys (Class I) in Physics, October 2000 – July 2004
Awarded Magdalen College Demyship (Prize Scholar) 2001 – 2004

RECENT PROJECTS

GREAT3 — *http://great3challenge.info*
Jointly led with Professor Rachel Mandelbaum (CMU, Pittsburgh) since November 2011, the third Gravitational Lensing Accuracy Testing Challenge (GREAT3) is an ambitious research competition to improve measurement algorithms for the huge, noisy datasets of moderm cosmology.

The GREAT3 project has involved coordinating an international team to build weak lensing simulations of unprecedented realism and statistical power, using online collaborative development tools for coordination and to develop a large object-oriented Python framework for simulation production.

GalSim — *https://github.com/GalSim-developers/GalSim*
An open source, collaborative software development project to build a shared image simulation resource to the extremely large telescope projects of the next decade. I am a founding and leading contributor to GalSim, which consists of over 80k unique lines of code. GalSim employs a Python Class library interface, but wraps an extensive C++ back-end for performance.

RECENT PROJECTS (CONT.)

IMCOM — *http://barnabyrowe.wikispaces.com/IMCOM+public+page*
In a project funded by the NASA WFIRST mission, I worked on the implementation of an image combination algorithm which we called IMCOM (IMage COMbination). The IMCOM algorithm allows for careful treatment of aliasing in noisy, undersampled imaging data, and has been used to test the feasibility of multi-exposure observing strategies for space telescopes such WFIRST and ESA's Euclid mission.

The IMCOM software is written in highly parallelized, multi-threaded Fortran 95 to give optimal performance handling large matrix operations in shared memory HPCC environments. It is fully open source, and has recently been moved to a GitHub page (*https://github.com/barnabytprowe/imcom*).

CFHTLenS — *http://www.cfhtlens.org*
The benchmark-setting analysis of weak gravitational lensing in extragalactic survey data, using images from the Canada-France-Hawaii Telescope. The project constructed the largest map of dark matter yet made, and placed new constraints on the validity of Einstein's General Relativity on cosmological scales.

PROGRAMMING LANGUAGES

- Bash, C, C++, Fortran 77/90/95/03, IDL, LaTeX, Python (Highly experienced)
- Excel, Matlab, Mathematica, SuperMongo, SQL, R (General experience)

SPOKEN LANGUAGES

- English (Native)
- French (Professional working proficiency)

SELECTED RECENT PRESENTATIONS & PUBLIC TALKS

- *The GREAT3 Challenge* — The UK Cosmology Consortium Meeting, King's College London, 20 January 2014 (*http://www.ukcosmo.info/*).
- *Weak lensing simulations beyond the ordinary* — Workshop on Weak Gravitational Lensing – Beyond the Ordinary, Nice, France, 3 June 2013 (*http://wl.cosmostat.org/*).
- *Using distant galaxies to explore the accelerating expansion of the Universe* — The UCL Diploma Club, graduates of the UCL Certificate of Higher Education in Astronomy, 16 May 2013 (*http://www.ucl.ac.uk/phys/admissions/certificate*).
- *The universe is expanding...* — TEDx@UCAFarnham, University for the Creative Arts, 15 May 2013 (*http://www.tedxucafarnham.com*).
- *The Hunt for Dark Energy* — The Cranbrook & District Science & Astronomy Society, 11 February 2013 (*http://cadsas.com/events*).

PUBLICATIONS

Please see full list at *http://barnabyrowe.net*.

REFERENCES

- Professor Sarah Bridle (research director) – *sarah.bridle@manchester.ac.uk*
  Jodrell Bank Center for Astrophysics, School of Physics and Astronomy, University of Manchester, Oxford Road, Manchester, M13 9PL. Tel: +44 (0)161 275 4042.
- Dr David Bacon (PhD supervisor) – *david.bacon@port.ac.uk*
  Institute of Cosmology & Gravitation, University of Portsmouth, 1-8 Burnaby Rd, Portsmouth PO13. Tel: +44 (0)23 9284 5831.
- Professor Alan Heavens — *a.heavens@imperial.ac.uk*
  Director, Imperial Centre for Inference & Cosmology, Imperial College London, Blackett Laboratory, Prince Consort Road, London SW7 2AZ. Tel: +44 (0)20 7594 2930.