

## Duncan Robin Hewitt

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### EMPLOYMENT

- *October 2015 - present*: **Research Fellow (JRF)**, Gonville and Caius College, University of Cambridge, U.K.
- *August 2014 - September 2015*: **Killam Postdoctoral Fellow**, Department of Mathematics, University of British Columbia, Vancouver, Canada, and **Pacific Institute for the Mathematical Sciences (PIMS) Postdoctoral Fellow** (honorary).
- *March-August 2014*: **Research Associate**, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, U.K.

### EDUCATION

- *2010 - 2014*: **Department of Applied Mathematics and Theoretical Physics, University of Cambridge**. PhD in Applied Mathematics (supervised by Professor John Lister and Dr Jerome Neufeld). Thesis entitled '*High Rayleigh Number Convection in a Porous Medium*'.
- *2009 - 2010*: **University of Cambridge, Sidney Sussex College**. M.Math. (Part III of the Mathematical tripos: a taught masters course) (*Distinction*)
- *2006 - 2009*: **University of Cambridge, Sidney Sussex College**. B.A. Mathematics (*First class honours in all three years*)

### AWARDS AND GRANTS

- *2015*: I was a co-applicant for a successful industrial grant, based at the University of British Columbia, Canada (#*CRDPJ 479552-15*; value ~\$400,000 CAD; 4 year duration from Jan 2016).
- *2014*: I was the winner of the **2014 Leonardo Da Vinci Prize**: a Europe-wide competition organised by ERCOFTAC (The European Research Community on Flow, Turbulence and Combustion), with the prize awarded for outstanding PhD studies.
- *2014*: **Research Fellowship**, Gonville and Caius College, University of Cambridge (deferred to 2015).
- *2014*: **Killam Postdoctoral Fellowship**, University of British Columbia.
- *2014*: Attendee of the Global Young Scientist's Summit 2014, Singapore.
- *2012*: **Geophysical Fluid Dynamics Fellowship** at the GFD Program, Woods Hole Oceanographic Institution, USA.
- *2012*: **Smith-Knight Prize** (Distinction; 1st Class - the highest of six groups): awarded by the University of Cambridge for an extended essay on 'any subject in Mathematics and its applications'.
- *2009*: **Vensi Thawani Tripos Prize, & (2007-2010) Willian Pochin College Scholarship**: both awarded by Sidney Sussex College, University of Cambridge, for academic achievement in the Mathematical Tripos.

### TEACHING

- *2014*: Lecturer for 'Differential Equations' (MATH256) undergraduate course, Mathematics Department, University of British Columbia (approx. 150 students).

- 2011-2014, 2015 - present: Supervisor (small group teacher) for undergraduate students at the University of Cambridge (at Christ's College, Sidney Sussex College, Trinity College and Gonville and Caius College) in the following courses of the Mathematical Tripos: Vectors and Matrices, Vector Calculus, Dynamics and Relativity, (Mathematical) Methods, Fluid Dynamics.

## PUBLICATIONS

Under review:

1. Balmforth, N.J., Craster, R.V., **Hewitt, D.R.**, Hormozi, S. and Maleki, A., 2016. 'Viscoplastic boundary layers'.

Accepted for publication:

1. Liu, Y., Balmforth, N.J., Hormozi, S., and **Hewitt, D.R.**, 2016. 'Two-dimensional viscoplastic dambreaks', *Journal of Non-Newtonian Fluid Mechanics*, (in press).
2. **Hewitt, D.R.**, Paterson, D.T., Balmforth, N.J., and Martinez, D.M., 2016. 'Dewatering of fibre suspensions by pressure filtration', *Physics of Fluids*, 28 (063304).
3. **Hewitt, D.R.**, Nijjer, J.S., Worster, M.G. and Neufeld, J.A., 2016. 'Flow-induced compaction of a deformable porous medium', *Physical Review E*, 93 (023116).
4. **Hewitt, D.R.**, Balmforth, N.J., Dasani, M. and Martinez, D.M., 2016. 'Obstructed and channelized viscoplastic flow in a Hele-Shaw cell', *Journal of Fluid Mechanics*, 790 (173-204).
5. **Hewitt, D.R.**, Neufeld, J.A. and Balmforth, N.J., 2015. 'Shallow, gravity-driven flow in a poro-elastic layer', *Journal of Fluid Mechanics*, 778 (335-360).
6. **Hewitt, D.R.**, Neufeld, J.A. and Lister, J.R. 2014 'High Rayleigh number convection in a porous medium containing a thin low-permeability layer', *Journal of Fluid Mechanics*, 756 (844-869).
7. **Hewitt, D.R.**, Neufeld, J.A. and Lister, J.R. 2014. 'High Rayleigh number convection in a three-dimensional porous medium', *Journal of Fluid Mechanics* 748 (879-895).
8. **Hewitt, D.R.**, Neufeld, J.A. and Lister, J.R. 2013. 'Stability of columnar convection in a porous medium', *Journal of Fluid Mechanics* 737 (205-231).
9. **Hewitt, D.R.** and Balmforth, N.J. 2013. 'Thixotropic gravity currents', *Journal of Fluid Mechanics* 727 (56-82).
10. **Hewitt, D.R.**, Neufeld, J.A. and Lister, J.R. 2013. 'Convective shutdown in a porous medium at high Rayleigh number', *Journal of Fluid Mechanics* 719 (551-586). [Paper also selected for a 'Focus on Fluids' review article in the journal and a front-cover picture of the journal.]
11. **Hewitt, D.R.**, Neufeld, J.A. and Lister, J.R. 2012. 'Ultimate regime of high Rayleigh number convection in a porous medium', *Physical Review Letters*. 108, (224503).

Non-peer-reviewed report in a proceedings volume:

**Hewitt, D.R.** 2012. Report on thixotropic gravity currents, *Proceedings of the Geophysical Fluid Dynamics program, WHOI* (168-198).

## REVIEWS

- I have reviewed papers for *Nature Physics*, *Journal of Fluid Mechanics*, *Physics of Fluids*, *Physical Review Fluids*, *Proceedings of The Royal Society A*, *Journal of Non-Newtonian Mechanics*, *Journal of Engineering Mathematics*, *Physics Letters A*, *Journal of Rheology*, *Transport in Porous Media*, *Computers and Fluids*, *International Journal of Greenhouse Gas Control*, *Water Resources Research*, *Powder Technology*.

## **OTHER**

- I am a member of scientific committee for the ERCOFTAC Montestigliano Fluid Mechanics Spring Schools, 2015-2019.
- I have interviewed undergraduate applicants for Mathematics at Sidney Sussex College and Gonville and Caius College, Cambridge.
- My other interests include music (I sing and play the French Horn), history, geology, classics, theology, reading generally, and, most especially, the outdoors; natural history, walking, and mountain climbing.