

# CURRICULUM VITAE

Charles Brett

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## 1 Personal details

**Date of birth:** 17th November 1987

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**Website:** [http://www2.warwick.ac.uk/fac/sci/masdoc/people/studentpages/students\\_2010/charlesbrett](http://www2.warwick.ac.uk/fac/sci/masdoc/people/studentpages/students_2010/charlesbrett) (<http://goo.gl/zuWXq>)

**Languages:** English (native), German (intermediate), Japanese (intermediate)

## 2 Education

- 2011–2014: Working towards PhD in Mathematics at the University of Warwick. Fully funded by EPSRC as part of the Mathematics and Statis-

tics Centre for Doctoral Training (MASDOC). Supervised by Professor Charlie Elliott and Dr Andreas Dedner. Expected to finish in October 2014.

- 2010–11: MSc in Mathematics and Statistics (Distinction) at MASDOC, University of Warwick. Fully funded by EPSRC.
- 2006-2010: Mathematics single-honours MMath (First class) at University of Warwick.
- 1999-2006: Helsby High School, Cheshire. A levels: Maths (A), Further Maths (A), Physics (A), Chemistry (A). AS level in German (A). 9 GCSEs, all A\* grade, including English Language, English Literature, Geography, and History.

### 3 Publications

- Mesh adaptivity in optimal control of elliptic variational inequalities with point-tracking of the state. C. Brett, C. M. Elliot, M. Hintermüller, C. Löbhard. (Submitted to *Interfaces and Free Boundaries*).
- Phase field methods for binary recovery. C. Brett, A. S. Dedner, C. M. Elliott. (Accepted in *ESF OPTPDE Proceedings*).
- Accuracy and stability of filters for dissipative PDEs. C. Brett, K. F. Lam, K. J. H. Law, D. S. McCormick, M. R. Scott, A. M. Stuart. *Physica D: Nonlinear Phenomena*, 245(1):34-45, 2013. Online publication.
- Phase diagrams for knotted and unknotted ring polymers. A. Swetnam, C. Brett, M. P. Allen. *Physical Review E*, 85(3), 2012. Online publication.

### 4 Research projects

- Liquid crystal transitions. At MASDOC Modelling Course 2012, University of Warwick. Supervised by Prof. John Ockendon.
- Do barnacles understand advection and diffusion? At GSMMC (Graduate Student Mathematical Modelling Camp) 2012, RPI (Rensselaer Polytechnic Institute), New York. Supervised by Prof. Dan Anderson.
- Modelling of abrasive waterjet etching. At OCCAM Graduate Modelling Camp 2012, Oxford. Supervised by John Billingham.
- Inverse problems including interfaces and free boundaries. MSc thesis. Supervised by Prof. Charlie Elliott and Dr Andreas Dedner. September 2011.

- Stability of filters for the Navier-Stokes equation. For Data Assimilation MASDOC RSG (Research Study Group). Supervised by Prof. Andrew Stuart and Dr Kody Law. May 2011.
- Biomembranes. For phase 1 of MASDOC RSG (Research Study Group) module. Supervised by Prof. Charlie Elliott and Dr. Bjorn Stinner. March 2011.
- Monte Carlo simulations of lattice polymers. 4th year project. Supervised by Prof. Mike Allen. April 2010.

## 5 Talks and presentations

- An Introduction to Optimal Control and an Example of Binary Source Recovery, MiR@W day: Model based emission control, University of Warwick, 28th October 2013.
- Binary image recovery using phase field methods, Phase Field: Models, Applications, Software, University of Leicester, 9-11th September 2013.
- Control of PDEs with point evaluations in the objective functional, MASDOC Summer Retreat, Cumbria, 13-15th May 2013.
- A phase field approach to image reconstruction, Symposium on Variational Inequalities and PDE-constrained Optimization, Humboldt University, Berlin, 21st February 2013. (**Invited and fully funded by HU Berlin**)
- Control of variational inequalities, Applied PDEs Seminar, University of Warwick.
- A phase field approach to image reconstruction, Young Researchers in Mathematics (YRM), University of Bristol, 3rd April 2012.
- A phase field approach to image reconstruction, MASDOC/CCA Student workshop, University of Cambridge, 20th March 2012.
- A phase field approach to image reconstruction, Postgraduate open day, University of Warwick, 16th November 2011.
- Data assimilation, MASDOC open day, University of Warwick, 9th December 2011 A phase field approach to image reconstruction, Postgraduate open day, University of Warwick, 16th November 2011.
- A phase field approach to image reconstruction, MASDOC seminar, University of Warwick, 15th November 2011.

## 6 Research visits

- Prof. Michael Hintermüller and Caroline Löbhard, Humboldt University Berlin, 18-22nd February 2013. (**Fully funded by HU Berlin**)
- Prof. Michael Hintermüller and Caroline Löbhard, Humboldt University Berlin, 13-17th August 2012. (**Partially funded by HU Berlin**)

## 7 Conferences and events organised

- Organiser of Applied PDEs Working Seminar, 2012-2014.
- Organiser of SIAM National Student Chapter Conference 2013.

## 8 Conferences and events attended

- SIAM Conference on Control and its Applications, San Diego, 8-10th July 2013.
- SIAM Annual Meeting, San Diego, 8-12th July 2013. (**Selected to represent Warwick SIAM Student Chapter and funded by SIAM**)
- MASDOC Summer Retreat, Cumbria, 13-15th May 2013.
- SIAM National Student Chapter Conference, University of Warwick, 10th May 2013. (**Organiser**)
- Interfaces and Free Boundaries: Analysis, Control and Simulation, Oberwolfach, 24th-30th March 2012. (**Invited**)
- Symposium on Variational Inequalities and PDE-constrained Optimization, Humboldt University, Berlin, 20th-21st February 2013. (**Invited and fully funded by HU Berlin**)
- SIAM Oxford/Warwick Day, University of Warwick, 14th November 2012.
- MASDOC Mathematical Modelling Course, University of Warwick, 5th-21st November.
- MASDOC Applied Mathematics Summer School, University of Warwick, 2nd-6th July.
- Mathematical Problems in Industry, University of Delaware, 11-15th June 2012. (**Fully funded by RPI**)
- Graduate Student Mathematical Modelling Camp, Rensselaer Polytechnic Institute, New York, 5-8th June 2012. (**Invited to attend and fully funded by RPI**)

- 85th European Study Group with Industry, University of East Anglia, 16th-20th April 2012. (**Fully funded by OCCAM**)
- OCCAM 4th UK Graduate Modelling Camp, University of Oxford, 10th-13th April 2012. (**Invited to attend and fully funded by OCCAM**)
- Young Researchers in Mathematics, University of Bristol, 2nd-4th April 2012.
- MASDOC-CCA workshop, University of Cambridge, 19th-23rd April 2012.
- Numerical Analysis Postgraduate Seminar Day, University of Reading, 30th March 2012.
- Annual SIAM UKIE Meeting, University of Leicester, 6th January 2012.
- LMS-EPSRC Short Course: Theoretical Fluid Dynamics, Heriot-Watt University, 29th August-2nd September 2011.
- Nonlinear Diffusion: Algorithms, Analysis and Applications, University of Warwick, 6th-8th June 2011.
- Inverse Problems and Optimal Control for PDEs, University of Warwick, 23rd-27th May 2011.
- Young Researchers in Mathematics, University of Warwick, 14th-16th April 2011.

## 9 Responsibilities

- President of Warwick University Sub Aqua Club, 2013/14.
- Vice President of Warwick SIAM Student Chapter, 2012/13.
- Captain of Warwick University Underwater Hockey Team, 2012/13.
- Chairman of MASDOC Student Staff Liaison Committee (SSLC), 2011/12.

## 10 Achievements

- Won 'Best Poster' for my poster titled A phase field approach to image reconstruction. At SIAM Oxford/Warwick Day, University of Warwick, 14th November 2012