THOMAS POWELL

# Curriculum Vitae (April 2018)

## Personal Information


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|---|---|
| **Full Name** | Thomas Rhidian John Powell |
| **Date of Birth** | 11 November 1986 |
| **Place of Birth** | Haverfordwest, Wales, United Kingdom |
| **Nationality** | British |
| **Email** | powell@mathematik.tu-darmstadt.de |
| **Webpage** | http://www.mathematik.tu-darmstadt.de/~powell/ |


## Academic Positions

**Oct 2016 -** **Postdoctoral Researcher**
Department of Mathematics
Technische Universität Darmstadt

**Oct 2014 - Sep 2016** **Postdoctoral Researcher**
Institute of Computer Science
University of Innsbruck

**Oct 2013 - Sep 2014** **CARMIN Postdoctoral Research Fellow**
Insitut des Hautes Etudes Scientifiques
(with a three month combined visit at Institut Henri Poincare)

## Education

**Oct 2009 - Aug 2013** **PhD in Theoretical Computer Science**
Queen Mary University of London
Supervised by Dr Paulo Oliva and Professor Edmund Robinson

**Oct 2008 - Jun 2009** **MMath/Certificate of Advanced Study in Mathematics**
University of Cambridge

**Oct 2005 - Jun 2008** **BA in Mathematics**
University of Cambridge

## Articles

### Preprints

- *A proof theoretic study of abstract termination principles*
  arXiv:1706.03577, 2017.

### Publications in Journals or Conference Proceedings

- *A functional interpretation with state*
  To appear in Proceedings of Logic in Computer Science (LICS 2018).
- *Spector bar recursion over finite partial functions*
  with Paulo Oliva. Annals of Pure and Applied Logic 168(5):887-921, 2017.
- *Gödel's functional interpretation and the concept of learning*
  Proceedings of Logic in Computer Science (LICS 2016), IEEE Computer Society, 136-145, 2016.

- *Parametrised bar recursion: A unifying framework for realizability interpretations of classical dependent choice*
  To appear in Journal of Logic and Computation, published online August 2015.
- *On the computational content of termination proofs*
  with Georg Moser. Proceedings of Computability in Europe (CiE 2015), LNCS 9136:276-285, 2015.
- *A constructive interpretation of Ramsey's theorem via the product of selection functions*
  with Paulo Oliva. Mathematical Structures in Computer Science 25(8):1755-1778, 2015.
- *The equivalence of bar recursion and open recursion*
  Annals of Pure and Applied Logic 165(11):1727-1754, 2014.
- *Applying Gödel's Dialectica interpretation to obtain a constructive proof of Higman's lemma*
  Proceedings of Classical Logic and Computation (CL&C'12), EPTCS 97:49–62, 2012.
- *On Spector's bar recursion*
  with Paulo Oliva. Mathematical Logic Quarterly, 58(4-5):356–365, 2012.
- *System T and the product of selection functions*
  with Martín Escardó and Paulo Oliva. Proceedings of Computer Science Logic (CSL'11), LIPIcs 12:233–247, 2011.

**Book Chapters**

- *Well quasi-orders and the functional interpretation*
  Chapter in 'Well Quasi-Orders in Computation, Logic, Language and Reasoning', P. Schuster, M. Seisenberger, A. Weiermann (eds.), Trends in Logic, Springer (upcoming).
- *A game-theoretic computational interpretation of proofs in classical analysis*
  with Paulo Oliva. Chapter in 'Gentzen's Centenary: The Quest for Consistency', R. Kahle, M. Rathjen (eds.), Springer, ISBN 978-3-319-10102-6, 2015.

**PhD Thesis**

- *On Bar Recursive Interpretations of Analysis*
  Queen Mary University of London, pp. xii+174, August 2013.

## Talks and Invitations

**Selected Talks at Seminars and Conferences**

- Oberwolfach Workshop on Mathematical Logic: Proof Theory, Constructive Mathematics, MFO, Oberwolfach (invited speaker), Germany, 5-11 November 2017.
- Minisymposium on Applied Proof Theory and the Computational Content of Mathematics Joint ÖMG and DMV Congress, Salzburg, Austria, 14 September, 2017
- Humboldt-Kolleg: Proof Theory as Mathesis Universalis (invited speaker), Villa Vigoni, Como, Italy, 24-27 July 2017.
- Logic Research Seminar, LMU Munich, Germany, 12 July 2017.
- Logic Research Seminar, University of Bern, Switzerland, 27 October 2016.
- Logic, Complexity and Automation, Obergurgl, Austria, 5-9 September 2016.
- Logic in Computer Science (LICS 2016), New York City, USA, 5-8 July 2016.
- Classical Logic and Computation (CL&C 2016), Porto, Portugal, 23 June 2016.
- Mathematics for Computation, Niederaltaich, Germany, 8-13 May 2016.

- Proof, Computation, Complexity (PCC 2016), LMU Munich, Germany, 5-6 May 2016.
- Dagstuhl Seminar on Well Quasi-Orders in Computer Science (invited speaker), Schloss Dagstuhl, Germany, 17-22 January 2016.
- Workshop on Efficient and Natural Proof Systems, University of Bath, UK, 14-16 December 2015.
- Mathematical Logic Seminar, Ludwig-Maximilians-Universität, Germany, 4 November 2015.
- Continuity, Computability, Constructivity: From Logic to Algorithms (invited speaker). Kochel, Germany, 14-18 September 2015.
- Computability in Europe 2015. Bucharest, Romania, 29 June - 3 July 2015.
- Workshop on Hilbert's Epsilon and Tau in Logic, Informatics and Linguistics, University of Montpellier. France, 10-12 June 2015.
- Theory Seminar, Swansea University, UK, 4 December 2014.
- Second Workshop on the Two Faces of Complexity (invited speaker), Vienna Summer of Logic, Austria, 12 July 2014.
- Séminaire de Mathématiques, Insitut des Hautes Études Scientifiques, France, 14 January 2014.
- PLUME Seminar, Laboratoire de l'Informatique du Parallélisme, ENS Lyon, France, 8 January 2014.
- Theory Seminar, Swansea University, UK, 17 December 2013.
- Semantics Seminar, PPS lab, Université Paris Diderot, France, 12 November 2013.
- Fourth International Workshop on Classical Logic and Computation (CL&C'12). University of Warwick, UK, 8 July 2012.
- Theoretical Computer Science Seminar. University of Birmingham, UK, 3 July 2012.
- Computer Science Logic 2011. Bergen, Norway, 12-15 September 2011.

**Invitations to major international workshops**

- Oberwolfach Workshop on Mathematical Logic: Proof Theory, Constructive Mathematics. MFO, Oberwolfach, Germany, 5-11 November 2017.
- Dagstuhl Seminar on Well Quasi-Orders in Computer Science, Schloss Dagstuhl, Germany, 17-22 January 2016.
- Oberwolfach Workshop on Mathematical Logic: Proof Theory, Constructive Mathematics. MFO, Oberwolfach, Germany, 16-22 November 2014.

## Academic Service

**Organisation**

- *Minisymposium on Applied Proof Theory and the Computational Content of Mathematics (co-organised with Sam Sanders)*, part of the joint annual conference of the Austrian Mathematical Society (ÖMG) and German Mathematical Society (DMV), Salzburg, September 11-15 2017.
- *Workshop on Logic, Complexity and Automation (co-organised with Georg Moser)*, part of Computational Logic in the Alps 2016, Obergurgl, 5-9 September 2016.

**Reviewing**

I have reviewed papers for the following journals and conferences: Annals of Pure and Applied Logic, Archive for Mathematical Logic, CSR, LICS, Logic Journal of the IGPL, RTA, TYPES, Theoretical Computer Science.

## Academic Prizes and Grants

- Scholarship, Gonville and Caius College, Cambridge, 2006.
- Senior Scholarship, Gonville and Caius College, Cambridge, 2007.
- EPSRC Doctoral Training Grant (full PhD funding for 3.5 years), 2009.
- One of two postdoctoral fellowships of the CARMIN programme, 2013.

## Supervision and Teaching

**Undergraduate tutorials (Queen Mary University of London)**

- Introduction to Algebra (1st year)
- Introduction to Probability (1st year)
- Geometry I (1st year)
- Probability Models (2nd year)
- Convergence and Continuity (2nd year)
- Number Theory (3rd year)

**Teaching assistant (TU Darmstadt)**

- Analysis (1st year)
- Linear Algebra (1st year)
- Automaten, formale Sprachen und Entscheidbarkeit (1st year)

**Supervision.**

- Philipp Wirtenberger. *Analysing the Complexity of Monotone Prolog.* Bachelor project, University of Innsbruck (co-supervised with Georg Moser), November 2016.

## Languages

English (native), German (fluent), Welsh (fluent), French (basic)