Neil Dillip Thapen - Curriculum Vitae 2015

1. Scientific interests: mathematical logic and computational complexity, in particular bounded arithmetic, proof complexity, and related areas of model theory.

2. Education and employment:

   (a) Merton College, University of Oxford, 1994-1998
   BA in Mathematics and Philosophy

   (b) Mathematical Institute, University of Oxford, 1998-2002
   DPhil in Mathematical Logic, supervised by Alex Wilkie

   (c) Department of Computer Science, University of Toronto, 2002-2003
   Postdoctoral research fellow

   (d) St Hilda's College, University of Oxford, 2004-2005
   Tutor and lecturer in pure mathematics

   (e) Institute of Mathematics, Academy of Sciences of the Czech Republic, 2005-2008
   Postdoctoral visitor

   (f) Institute of Mathematics, Academy of Sciences of the Czech Republic, 2008 onwards
   Researcher

   (g) Department of Mathematics, UC San Diego, 2011 (for six months)
   Visiting associate professor

   (h) Isaac Newton Institute for Mathematical Sciences, Cambridge, 2012 (for six months)
   Visiting fellow

3. Publications:

   (a) N. Thapen, *A model-theoretic characterization of the weak pigeonhole principle.* Annals of Pure and Applied Logic, Vol 118(1-2), 2002, pp. 175-195.

   (b) N. Thapen, *Structures interpretable in models of bounded arithmetic.* Annals of Pure and Applied Logic, Vol 136(30), 2005, pp. 247-266.

   (c) N. Thapen and M. Soltys, *Weak theories of linear algebra.* Archive for Mathematical Logic, Vol 44(2), 2005, pp. 195-208.

   (d) N. Thapen, *A note on* Δ_1 *induction and* Σ_1 *collection*, Fundamenta Mathematicae, Vol 186, 2005, pp. 79-84.

   (e) N. Galesi and N. Thapen, *Resolution and pebbling games.* Theory and Applications of Satisfiability Testing, 8th International Conference (SAT 2005), LNCS vol 3569, pp. 76-90.

   (f) S. Cook and N. Thapen, *The strength of replacement in weak arithmetic.* ACM Transactions on Computational Logic, Vol 7(4), 2006, pp. 749-764.

   (g) J. Krajíček, A. Skelley and N. Thapen. *NP search problems in low fragments of bounded arithmetic*, Journal of Symbolic Logic, Vol 72(2), 2007, pp. 649-672.

(h) L. Kołodziejczyk and N. Thapen, *The linear and polynomial hierarchies in models where the weak pigeonhole principle fails.* Journal of Symbolic Logic, Vol 73(2), 2008, pp. 578-592.

(i) L. Kołodziejczyk and N. Thapen, *The polynomial and linear hierarchies in V^0.* Mathematical Logic Quarterly, Vol 55(5), 2009, pp. 509-514.

(j) A. Skelley and N. Thapen, *The provably total search problems of bounded arithmetic.* Proceedings of the London Mathematical Society, Vol 103(1), 2011, pages 106-138.

(k) L. Kołodziejczyk, P. Nguyen and N. Thapen, *The provably total NP search problems of weak second order bounded arithmetic.* Annals of Pure and Applied Logic, Vol 162(6), 2011, pp. 419-446.

(l) N. Thapen, *Higher complexity search problems for bounded arithmetic and a formalized no-gap theorem.* Archive for Mathematical Logic, Vol 50(7-8), 2011, pp 665-680.

(m) P. Pudlák and N. Thapen, *Alternating minima and maxima, Nash equilibrium and Bounded Arithmetic.* Annals of Pure and Applied Logic, Vol 163(5), 2012, pp. 604-614.

(n) Y. Filmus, M. Lauria, J. Nordström, N. Ron-Zewi and N. Thapen, *Space Complexity in Polynomial Calculus.* IEEE Conference on Computational Complexity 2012, pp. 334-344.

(o) M. Lauria, P. Pudlák, V. Rdl and N. Thapen, *The complexity of proving that a graph is Ramsey.* Proceedings of ICALP 2013, LNCS Vol 7965, 2013, pp. 648-695.

(p) B. Kjos-Hanssen, A. Taveneaux and N. Thapen, *How much randomness is needed for statistics?* Annals of Pure and Applied Logic, Vol 165(9) , 2014, pp. 1470-1483.

(q) A. Beckmann, P. Pudlák and N. Thapen, *Parity games and propositional proofs.* ACM Transactions on Computational Logic, Vol 15(2), 2014, article 17.

(r) S. Buss, L. Koodziejczyk and N. Thapen, *Fragments of approximate counting.* Journal of Symbolic Logic, Vol 79(2), 2014, pp. 496-525.

(s) A. Atserias and N. Thapen, *The Ordering Principle in a Fragment of Approximate Counting.* ACM Transactions on Computational Logic, Vol 15(4), 2014, article 29.

(t) I. Bonacina, N. Galesi and N.Thapen. *Total space in resolution.* Proceedings of FOCS 2014, pp. 641-650.

4. Selected invited talks:

(a) *The weak pigeonhole principle in bounded arithmetic*, Workshop on the Complexity of Proofs and Computations, Institute for Advanced Study, Princeton, December 2000

(b) *Δ_1 induction and Σ_1 collection*, Methods of Logic in Mathematics II, Euler Institute, St Petersburg, July 2005

(c) *T^1_2, T^2_2 and search problems*, New Directions in Proof Complexity, workshop at Isaac Newton Institute, Cambridge, April 2006

(d) *The polynomial and linear hierarchies in weak theories of bounded arithmetic*, Special Session on Complexity of Algorithms and Proofs, Computability in Europe, Siena, June 2007

(e) *Bounded arithmetic and search problems*, Mathematical Logic: Proof Theory, Constructive Mathematics, workshop at MFO, Oberwolfach, April 2008

(f) *Bounded arithmetic and search problems*, Journées sur les Arithmétiques Faibles 27, Athens, June 2008

(g) *The provably total search problems of bounded arithmetic*, Special Session on Computability and Arithmetic, ASL Logic Colloquium, Bern, July 2008

(h) *Search problems in bounded arithmetic*, Barriers in Computational Complexity, workshop at CCI, Princeton, August 2009

(i) *The proof complexity of the finite Ramsey theorem*, Ramsey Theory in Logic, Combinatorics and Complexity workshop, Bertinoro, October 2009

(j) *Bounded arithmetic and NP search problems*, plenary talk at ASL North American Annual Meeting, Berkeley, March 2011

(k) *Set functions with small circuits*, Infinity Workshop, Vienna, July 2014

5. Awards:

   (a) Otto Wichterle prize for young researchers, awarded by the Czech Academy of Sciences, 2011

6. Contact details:

   (a) Institute of Mathematics
   Žitná 25, 115 67 Praha 1, Czech Republic

   (b) Email: `thapen@math.cas.cz`
   Web: `http://www.math.cas.cz/~thapen`