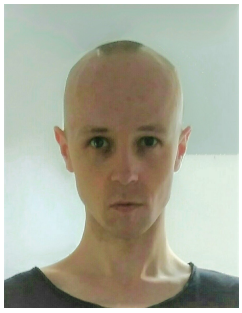
Curriculum vitae

Ján Pich

(b. June 23, 1987; Svidník, Slovakia)

users.ox.ac.uk/~coml0742; jan.pich@cs.ox.ac.uk

Research area: Mathematical Logic & Complexity Theory



Postdoctoral research positions

- University of Oxford (Department of Computer Science) *Sep 2018 - Aug 2019 & Mar 2020 - present*
  Royal Society Research Fellow ('21 -) MSCA Individual Fellow ('20 - '22)
- Czech Academy of Sciences (Institute of Mathematics) *Sep 2019 - Feb 2020*
- University of Vienna (Kurt Gödel Research Center for Mathematical Logic) *Sep 2016 - Aug 2018*
- University of Leeds (School of Computing) *Sep 2015 - Aug 2016*
- University of Toronto (Department of Computer Science) *Jan 2015 - Jun 2015*

Education

Charles University in Prague (Faculty of Mathematics and Physics)

- PhD; Algebra, Theory of Numbers and Mathematical Logic *Sep 2011 - Nov 2014*
  Thesis: *Complexity Theory in Feasible Mathematics*
- Mgr; Mathematical Structures *Sep 2009 - May 2011*
  Thesis: *Hard Tautologies*
- Bc; Mathematics *Sep 2006 - Jun 2009*
  Thesis: *Bounded Arithmetic and Theory of Razborov and Rudich*

Supervisor: Jan Krajíček (2007-2014)

Other academic appointments

- Visiting scholar, Simons Institute for the Theory of Computing, Berkeley, US
  10 January - 12 May 2023, 1 February - 14 May 2021 and 10 October - 29 November 2018
- Intern, National Institute of Informatics, Tokyo, JP, *5 September - 12 October 2014*
- Visiting fellow, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK
  1 March - 11 May 2012
- Erasmus scholarship, Durham University, UK, *October 2010 - February 2011*

Grants

- Royal Society University Research Fellowship *Oct 2021 - Feb 2027*
- Marie Skłodowska-Curie Individual Fellowship *Mar 2020 - Feb 2022*

Research papers

- Towards P≠NP from Extended Frege lower bounds, *with Rahul Santhanam*
  arxiv (Dec 2023)
- Localizability of the approximation method
  arXiv (Dec 2022)
- Learning algorithms versus automatability of Frege systems, *with Rahul Santhanam*
  arXiv (Oct 2021)

- Learning algorithms from circuit lower bounds
  arXiv (Nov 2020)
- Strong co-nondeterministic lower bounds for NP cannot be proved feasibly, *with Rahul Santhanam*
  Symposium on Theory of Computing 2021.
- Beyond natural proofs, *with L.Chen, S.Hirahara, I.C.Oliveira, N.Rajgopal and R.Santhanam*
  Innovations in Theoretical Computer Science 2020. (Nov 2019)
- Why are proof complexity lower bounds hard? *with Rahul Santhanam*
  Symposium on Foundations of Computer Science 2019.
- Hardness magnification near state-of-the-art lower bounds, *with Igor C. Oliveira and Rahul Santhanam*
  Computational Complexity Conference 2019. (Sep 2018)
- Feasibly constructive proofs of succinct weak circuit lower bounds, *with Moritz Müller*
  Annals of Pure and Applied Logic, 2019. (Sep 2017)
- Understanding Gentzen and Frege systems for QBF, *with Olaf Beyersdorff*
  Symposium on Logic in Computer Science 2016.
- Logical strength of complexity theory and a formalization of the PCP theorem in bounded arithmetic
  Logical Methods in Computer Science, 11(2), 2015. (Jun 2014)
- Circuit lower bounds in bounded arithmetics
  Annals of Pure and Applied Logic, 166(1), 2015. (May 2013)
- Nisan-Wigderson generators in proof systems with forms of interpolation
  Mathematical Logic Quarterly, 57(4), 2011. (Mar 2010)

Poetry collection

- Mathesis universalis, *Literis*, 2016.

Some Talks

- *Towards P≠NP from Extended Frege lower bounds*
  Simons Institute for the Theory of Computing, Berkeley, March 2023
- *Learning algorithms versus automatability of Frege systems*
  Workshop on Metacomplexity, Barriers and Derandomization, Rutgers University, 2022
- *Strong co-nondeterministic lower bounds for NP cannot be proved feasibly*
  Symposium on Theory of Computing, virtual, June 2021
- *Why are proof complexity lower bounds hard?*
  Proof complexity workshop, Banff, 2020
- *Beyond natural proofs*
  Academy of Sciences, Prague, October 2019
- *Hardness magnification near state-of-the-art lower bounds*
  Computational Complexity Conference, New Brunswick, July 2019
  University of Cambridge, May 2019
  Academy of Sciences, Prague, December 2018
- *Provability of weak circuit lower bounds*
  Logic and Computational Complexity, Oxford, July 2018
  Proof complexity workshop, Dagstuhl, February 2018

Royal Holloway, University of London, October 2017

- *Gentzen and Frege systems for QBF*
  Logic Colloquium, Leeds, August 2016.
  Proof complexity workshop, St.Petersburg, May 2016
- *Logical strength of complexity theory and a formalization of the PCP theorem in bounded arithmetic*
  Proof complexity workshop, Vienna, July 2014
- *Circuit lower bounds in bounded arithmetics*
  Logic Colloquium, Vienna, July 2014
  32nd Weak Arithmetics Days, Athens, June 2013
- *Proof complexity of circuit lower bounds*
  Logical approaches to barriers in complexity II, Cambridge, March 2012
- *Hard tautologies*
  Isaac Newton Institute, Cambridge, March 2012
- *NW-generators in proof systems with FIP*
  Proof Complexity and Verification seminar, Swansea University, January 2011
  Logic Seminar, Mathematical Institute of Academy of Sciences in Prague, May 2010