CURRICULUM VITAE

JÁN PICH
(b. June 23, 1987; Svidník, Slovakia)
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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 $P \neq NP$ 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 $P \neq NP$ from Extended Frege lower bounds
Simons Institute for the Theory of Computing, Berkeley, March 2023

Learning algorithms versus automatability of Frege systems
Workshop on Meta-complexity, 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