

## CURRICULUM VITAE

Pavel Hruběš

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Date of birth: 5/5/1980

Nationality: Czech

### EDUCATION

**Charles University in Prague 2004-2007**

Ph.D. degree in mathematics. The theme of the Ph.D. work was 'proof complexity' and the supervisor Pavel Pudlák.

**Charles University in Prague, 1998-2004.**

Master's degree in mathematics and philosophy.

### EMPLOYMENT AND EXPERIENCE

**University of Washington, March 2013 - present time.**

Postdoctoral fellow in theoretical computer science.

**University of Calgary, November 2010 - November 2012.**

Postdoctoral fellow in theoretical computer science.

**Center for Computational Intractability, Princeton, September 2009 - September 2010.**

Postdoctoral fellow in theoretical computer science.

**Institute for Advanced Study, Princeton, September 2008- August 2009.**

Postdoctoral fellow in theoretical computer science/ discrete mathematics group, headed by Avi Wigderson.

**University of Toronto, January 2008 - July 2008.** Postdoctoral fellow at the Department of Computer Science, theory group. The supervisor was Stephen Cook.

**Czech Academy of Science, 2004 - 2007.**

Part-time research position.

**Ludwig-Maximilian University, Munich, 2006.** Short-term MATHLO-GAPS position.

## RESEARCH INTERESTS

### **Proof complexity.**

Complexity of proofs in propositional logic, non-classical logics, and algebraic proof systems.

### **Algebraic circuit complexity.**

Sizes of algebraic circuits computing symbolic polynomials.

### **Mathematical logic and philosophy of mathematics**

Questions concerning logical structure of mathematical reasoning.

## AWARDS AND INVITED LECTURES

**25th International Conference on Computer Aided Verification, Saint Petersburg, Russia, 2013** Invited lecture with title *The interpolation technique in proof complexity*.

**Winter meeting of Association for Symbolic Logic, San Diego, USA, 2008** Invited lecture with title *Proof complexity after  $NP \neq coNP$* .

**Kurt Gödel Centenary Research Prize Fellowship, 2006**

## ACADEMIC REFERENCES

Pavel Pudlák  
Mathematical Institute of Czech Academy of Science, Prague  
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Avi Wigderson  
Institute for Advanced Study, Princeton  
avi@ias.edu

Anup Rao  
Department of Computer Science, University of Washington  
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## PUBLICATIONS

- [1] P. Hrubeš. On the real  $\tau$ -conjecture and the distribution of complex roots. *Theory of Computing*, 9(10):403–411, 2013.
- [2] P. Hrubeš, A. Wigderson, and A. Yehudayoff. An asymptotic bound on the composition number of integer sums of squares formulas. *Canadian Mathematical Bulletin*, 56:70–79, 2013.
- [3] R. Cockett, J. Díaz-Boils, J. Gallagher, and P. Hrubeš. Timed sets, functional complexity, and computability. *Electr. Notes Theor. Comput. Sci.*, 286:117–137, 2012.
- [4] P. Hrubeš and I. Tzameret. Short proofs for the determinant identities. In *STOC' 12 Proceedings of the 44th symposium on Theory of Computing*, pages 193–212, 2012.
- [5] P. Hrubeš, A. Wigderson, and A. Yehudayoff. Non-commutative circuits and the sum of squares problem. *J. Amer. Math. Soc.*, 24:871–898, 2011.
- [6] P. Hrubeš. How much commutativity is needed to prove polynomial identities? *Electronic Colloquium in Computational Complexity*, 2011.
- [7] P. Hrubeš and Amir Yehudayoff. Homogeneous formulas and symmetric polynomials. *Computational Complexity*, 20(3):559–578, 2011.
- [8] P. Hrubeš and A. Yehudayoff. Arithmetic complexity in ring extensions. *Theory of Computing*, 7:119–129, 2011.
- [9] P. Hrubeš, A. Wigderson, and A. Yehudayoff. Non-commutative circuits and the sum of squares problem. In *STOC' 10 Proceedings of the 42nd symposium on Theory of Computing*, pages 667–676, 2010.
- [10] P. Hrubeš, S. Jukna, A. Kulikov, and P. Pudlák. On convex complexity measures. *Theoretical Computer Science*, 411(16):1842–1854, 2010.
- [11] P. Hrubeš, A. Wigderson, and A. Yehudayoff. Relationless completeness and separations. In *IEEE Conference on Computational Complexity*, pages 280–290, 2010.
- [12] P. Hrubeš. On lengths of proofs in non-classical logics. *Annals of Pure and Applied Logic*, 157(194-205), 2009.
- [13] P. Hrubeš and I. Tzameret. Proof complexity of polynomial identities. *CCC*, pages 41–51, 2009.
- [14] P. Hrubeš. Kreisel's conjecture with minimality principle. *Journal of Symbolic logic*, 74(3):976–988, 2009.
- [15] P. Hrubeš and A. Yehudayoff. Monotone separations for constant degree polynomials. *Information Processing Letters*, 110(1): 1-3, 2009.

- [16] P. Hrubeš. Lower bounds for modal logics. *Journal of Symbolic logic*, 72(3):941–958, 2007.
- [17] P. Hrubeš. A lower bound for intuitionistic logic. *Ann. Pure Appl. Logic*, 146:72–90, 2007.
- [18] P. Hrubeš. Theories very close to PA where Kreisel’s conjecture is false. *Journal of Symbolic logic*, 72:123–137, 2007.