Chris Beck

CONTACT INFORMATION

Theory Group
Computer Science Department
Princeton University, Princeton, New Jersey, USA

office: +1 (609) 258 1641
mobile: +1 (203) 984 8289
e-mail: cbeck@princeton.edu

RESEARCH INTERESTS

Computational Complexity, Algorithms, Combinatorics

EDUCATION

Princeton University, Princeton, New Jersey, USA

Doctor of Philosophy: Computer Science **Sept 2009 – present**

- Expected graduation date: May 2014
- Advisors: Professor Sanjeev Arora and Professor Russell Impagliazzo

California Institute of Technology, Pasadena, California, USA

Bachelors of Science with Honor: Mathematics **Sept 2005 – June 2009**

Bachelors of Science with Honor: Computer Science **Sept 2005 – June 2009**

- GPA: 3.7/4.0

SELECTED PUBLICATIONS

P. Beame, C. Beck, R. Impagliazzo. Time-Space Tradeoffs in Resolution: Superpolynomial Lower Bounds for Superlinear Space. *Proceedings of the 44th Annual ACM Symposium on Theory of Computing* (STOC 2012). **Invited to SIAM Journal on Computing (SICOMP) special issue for STOC 2012.**

C. Beck, R. Impagliazzo, S. Lovett. Large Deviation Bounds for Decision Trees and Sampling Lower Bounds for AC0-circuits. *Proceedings of the 53rd Annual IEEE Symposium on Foundations of Computer Science* (FOCS 2012).

C. Beck, J. Nordström, B. Tang. Some Tradeoffs in Polynomial Calculus. *Proceedings of the 45th Annual ACM Symposium on Theory of Computing* (STOC 2013).

C. Beck, R. Impagliazzo. Strong ETH Holds for Regular Resolution. *Proceedings of the 45th Annual ACM Symposium on Theory of Computing* (STOC 2013).

INVITED TALKS

Time-Space Tradeoffs in Resolution: Superpolynomial Lower Bounds for Superlinear Space.

- **John Templeton Foundation Workshop**: "Limits of Theorem Proving". Rome, Sept 2012.
- **China Theory Week** Aarhus, August 2012.
- **Symposium on Theory of Computing** New York City, May 2012.
- **University of Toronto** Theory Group Seminar. May 2012.
- **KTH Royal Institute of Technology** Theory Group Seminar. January 2012.
- **Institute for Advanced Study** Computer Science Discrete Math Seminar. December 2011.
- **University of Chicago** Theory Group Seminar. November 2011.
- **BIRS Workshop**: "Proof Complexity". Banff, October 2011.

Large Deviations Bounds for Decision Trees and Sampling Lower Bounds for AC0-circuits.

- **University of Chicago** Theory Group Seminar. December 2012.
- **Symposium on Foundations of Computer Science** New Brunswick, September 2012.

Some Tradeoffs in Polynomial Calculus

- **Symposium on Theory of Computing** Palo Alto, May 2013

Strong ETH Hold for Regular Resolution

- **Symposium on Theory of Computing** Palo Alto, May 2013
- **University of California, San Diego** Theory Group Seminar, August 2013

Honors and Awards

Wu Prize for Excellence, 2013
Simons Award for Graduate Students in Theoretical Computer Science, 2012-2014
NSF GRFP Honorable Mention, 2009
The G. Wallace Ruckert '30 Fellowship, 2009
SURF Fellow, 2006 and 2008
Junior Engineering and Technical Society (JETS) Team National Champions, 2005
Department Award for Excellence in Mathematics and Computer Science, 2004 and 2005
US Physics Olympiad Semifinalist, 2004
Bausch & Lomb Award for Outstanding Achievement in Science, 2004
USA Mathematical Talent Search Silver Medalist, 2003 and 2004
MathCounts National Finalist Rank 81st, 2002

Professional Experience

Princeton University, Princeton, New Jersey, USA

Teaching Assistant **Sept 2011 – May 2012**
Teaching assistant for undergraduate courses in theory of computation, computational geometry.

California Institute of Technology, Pasadena, California, USA

Teaching Assistant **Mar 2009 – June 2009**
Teaching assistant for undergraduate course in approximation algorithms.

SURF Research Fellow **June 2008 – September 2008**
Investigated Polynomial Calculus proofs of Graph Nonisomorphism, and related issues in algebraic graph theory. Mentored by Professor Richard Wilson.

SURF Research Fellow **June 2006 – September 2006**
Investigated a conjecture concerning the Σ_2^P hardness of the Graph Ramsey Numbering problem. Mentored by Professor Christopher Umans.

Fairfield University, Fairfield, Connecticut, USA

Research Assistant **June 2004 – August 2006**
Assisted Professor Adam King in developing data analysis and cleanup tools in Matlab for psychophysical data. The data was obtained in part by a laser which continuously measures the position of mice, with the goal of understanding the nature of errors made by mice trying to remember distances. Such data has been used to rule out certain models of memory formation in animals.

Programming

C, C++, Java, Matlab, Mathematica, Lisp, Haskell.

References

Additional contact information available upon request.

Professor Sanjeev Arora
Professor of Computer Science
Princeton University
Princeton, New Jersey, USA
e-mail: arora@cs.princeton.edu

Professor Russell Impagliazzo
Professor of Computer Science
University of California, San Diego
San Diego, California, USA
e-mail: russell@cs.ucsd.edu

Professor Shachar Lovett
Asst. Professor of Computer Science
University of California, San Diego
San Diego, California, USA
e-mail: slovett@math.ias.edu

Professor Paul Beame
Professor of Computer Science
University of Washington
Seattle, Washington, USA
e-mail: beame@cs.washington.edu