Henry Yuen

Postdoctoral Associate

617 Soda Hall
University of California at Berkeley
Berkeley, CA 94720
✉ *hyuen@cs.berkeley.edu*
http://www.henryyuen.net

Research Interests

Complexity theory, quantum computing, quantum information, and quantum cryptography.

Education and employment

2016-current **Postdoctoral Associate**, *University of California*, Berkeley, CA.
Supervisor: Umesh Vazirani

2011-2016 **Ph.D. in Computer Science**, *MIT*, Cambridge, MA.
Adviser: Dana Moshkovitz
Thesis: *Games, Protocols, and Quantum Entanglement*

2006 – 2010 **B.A. in Mathematics**, *University of Southern California*, Los Angeles, CA.
Minor: Computer Science
Summa cum laude

Awards

2015-2017 Simons Graduate Award for Theoretical Computer Science

2012-2015 NSF Graduate Fellowship

2011 MIT Presidential Fellowship

2010 USC Graduate Provost Fellowship

2010 1st place in USC Undergraduate Research Symposium, for *"DNA Sequencing via Machine Learning and Quantum Mechanics"*

Conference Publications

2017

[1] **Multiplayer parallel repetition for expander games**, Irit Dinur, Prahladh Harsha, Rakesh Venkat, and Henry Yuen.
In ***Innovations in Theoretical Computer Science (ITCS) 2017***, Berkeley, CA
Invited Talk

[2] **Parallel repetition via fortification: analytic view and the quantum case**, Mohammad Bavarian, Thomas Vidick, and Henry Yuen.
In ***Theory of Quantum Computing (TQC) 2016*** conference, Berlin, Germany
In ***Innovations in Theoretical Computer Science (ITCS) 2017***, Berkeley, CA

2016

[3] **A parallel repetition theorem for all entangled games**, Henry Yuen.
In ***International Colloquium on Automata, Languages, and Programming (ICALP) 2016***, Rome, Italy
In ***Quantum Information Processing (QIP) 2017***, Seattle, WA

[4] **New security notions and feasibility results for authentication of quantum data**, Sumegha Garg, Henry Yuen, and Mark Zhandry.
In ***International Conference on Quanutm Cryptography (QCrypt) 2016***, Washington D.C.

[5] **A No-Go Theorem for Derandomized Parallel Repetition: Beyond Feige-Kilian**, Dana Moshkovitz, Govind Ramnarayan, and Henry Yuen, 2016.
In ***RANDOM 2016***, Paris, France

[6] **Anchoring games for parallel repetition**, Mohammad Bavarian, Thomas Vidick, and Henry Yuen.
In ***Quantum Information Processing (QIP) 2016***, Banff, Canada
Invited as a **plenary talk**

[7] **On the sum-of-squares degree of symmetric quadratic functions**, Troy Lee, Anupam Prakash, Ronald de Wolf, and Henry Yuen.
In ***Computational Complexity Conference (CCC) 2016***, Tokyo, Japan

2015

[8] **Parallel repetition for entangled k-player games via fast quantum search**, Kaimin Chung, Xiaodi Wu and Henry Yuen.
In ***Computational Complexity Conference (CCC) 2015***, Portland, OR

2014

[9] **Infinite Randomness Expansion and Amplification with a Constant Number of Devices**, Matthew Coudron and Henry Yuen.
In ***Symposium on Theory of Computing (STOC) 2014***, New York, NY
In ***Quantum Information Processing (QIP) 2014***, Barcelona, Spain

Before 2014

[10] **Robust Randomness Amplifiers: Upper and Lower Bounds**, Matthew Coudron, Thomas Vidick, and Henry Yuen.
In ***RANDOM 2013***, Berkeley, CA

[11] **Continuous Time Channels with Interference**, Ioana Ivan, Michael Mitzenmacher, Justin Thaler, and Henry Yuen.
In ***International Symposium on Information Theory (ISIT) 2012***, Cambridge, MA

Journal Publications

[1] **Rescuing Complementarity With Little Drama**, Ning Bao, Adam Bouland, Aidan Chatwin-Davies, Jason Pollack, and Henry Yuen, 2016.
To appear in the ***Journal of High Energy Physics (JHEP)***.

[2] **A quantum lower bound for distinguishing random functions from random permutations**, Henry Yuen.
In ***Quantum Information and Computation***, 14(9-10), 2014.

[3] **DNA Sequencing via Data Mining and Quantum Mechanics**, Henry Yuen, Fuyuki Shimojo, Kevin Zhang, Aiichiro Nakano, Kenichi Nomura, Priya Vashishta..
In ***International Journal of Computational Science***, Vol. 4, No. 4, 2010.

Preprints

[1] **A simple proof of Renner's exponential de Finetti theorem**, Thomas Vidick and Henry Yuen, 2016.
Manuscript

[2] **On the limits of communication with non-local resources**, Xiaodi Wu and Henry Yuen, 2015.
In preparation

Academic visits

February 2016 **Weizmann Institute of Science**, Rehovot, Israel.
Host: Irit Dinur

July 2015 **IQIM**, California Institute of Technology, Pasadena, CA.
Host: Thomas Vidick

Summer 2015 **CWI**, Amsterdam, The Netherlands.
Host: Ronald de Wolf

Summer 2014 **CWI**, Amsterdam, The Netherlands.
Host: Ronald de Wolf

Spring 2014 **Simons Institute**, Berkeley, CA.
Host: Quantum Hamiltonian Complexity semester program

Summer 2012 **University of Washington**, Seattle, WA.
Hosts: Aram Harrow, Anup Rao

Talks and Presentations

Quantum parallel repetition with polynomial decay

July 2016 International Colloquium on Automata, Languages, and Programming (Rome, Italy)

June 2016 Joint Center for Quantum Information and Computer Science (College Park, Maryland)

Anchoring games for parallel repetition

February 2016 — Weizmann Institute of Science (Rehovot, Israel)

February 2016 — Hebrew University Quantum seminar (Jerusalem, Israel)

January 2016 — Quantum Information Processing conference (Banff, Canada)

January 2016 — Caltech IQIM seminar

Parallel repetition for entangled free games

July 2015 — Caltech IQIM Group Meeting (Pasadena, CA)

June 2015 — Computational Complexity Conference (Portland, OR)

June 2015 — CWI Seminar (Amsterdam, Netherlands)

April 2015 — Simons Institute Workshop on Information Theory in Complexity and Combinatorics (Berkeley, CA)

April 2015 — MIT Algorithms and Complexity Seminar (Cambridge, MA)

Infinite randomness expansion

October 2015 — Foundations of Randomness Workshop (Stellenbosch Institute of Advanced Study, Stellenbosch, South Africa)

May 2015 — Princeton CS Theory Group Meeting (Princeton, NJ)

July 2014 — CWI Seminar (Amsterdam, Netherlands)

June 2014 — Symposium on the Theory of Computing 2015 conference (New York City, NY)

February 2014 — Simons Institute Quantum Games Workshop (Berkeley, CA)

February 2014 — Simons Institute Quantum Gathering seminar (Berkeley, CA)

December 2013 — MIT Quantum Computing Group Meeting (Cambridge, MA)

Robust Randomness Amplifiers: Upper and Lower Bounds

August 2013 — APPROX-RANDOM 2013 conference (Berkeley, CA)

Service

Program committee — Innovations in Theoretical Computer Science (ITCS) 2017

Reviewer — Reviewer for STACS 2012, QIP 2014, STOC 2014, SICOMP, TQC 2014, SODA 2015, STOC 2015, FOCS 2015, SODA 2016, QIP 2016, Theory of Computing Journal, and the Foundations and Trends in Theoretical Computer Science.

Organizer Co-organizer of the MIT Algorithms and Complexity seminar for Fall 2013, Fall 2014, Fall 2015.

Teaching

Spring 2015 *Graduate Instructor*, Advanced Complexity Theory, MIT

Fall 2012 *Teaching Assistant*, Advanced Complexity Theory, MIT

References

Dana Moshkovitz (Ph.D. advisor), UT Austin, danama@cs.utexas.edu

Scott Aaronson, UT Austin, aaronson@cs.utexas.edu

Thomas Vidick, CalTech, vidick@cms.caltech.edu

Ronald de Wolf, Centrum Wiskunde & Informatica (CWI), Ronald.de.Wolf@cwi.nl

Umesh Vazirani (Postdoc supervisor), UC Berkeley, vazirani@cs.berkeley.edu