# RYAN O'DONNELL

*Curriculum vitae*

February, 2025


CONTACT: odonnell@cs.cmu.edu, @BooleanAnalysis,
https://www.youtube.com/ryanodonnellteaching

CURRENT POSITION: Professor
Computer Science Department, School of Computer Science
Carnegie Mellon University


CITIZENSHIP: Canada, USA

RESEARCH INTERESTS: Quantum computation and information theory
Approximability of optimization problems
Spectral graph theory
Analysis of Boolean functions
Probability
Complexity theory and algorithms
Learning theory

EDUCATION: **Ph.D., Massachusetts Institute of Technology**, 1999 – 2003
Department of Applied Mathematics
Thesis: *Computational applications of noise sensitivity*
Advisor: Madhu Sudan
**B.Sc., University of Toronto**, 1995 – 1999
Joint Specialist degree in Mathematics and Computer Science

PROFESSIONAL EXPERIENCE:
**Sabbatical visitor, University of British Columbia Comp. Sci. Dept.**, 2019
**Professor, Carnegie Mellon Comp. Sci. Dept.**, 2017–present
**Assoc. Professor with Tenure, Carnegie Mellon Comp. Sci. Dept.**, 2014–2017
**Visiting Professor, Boğaziçi University Comp. Eng. Dept.**, 2014
**Associate Professor, Carnegie Mellon Comp. Sci. Dept.**, 2011–2014
**Member, Sch. of Mathematics, Institute for Advanced Study**, 2010–2011
**Assistant Professor, Carnegie Mellon Comp. Sci. Dept.**, 2006–2011
**Lecturer (unofficial), University of Washington**, fall 2005
**Postdoctoral researcher, Microsoft Theory Group**, 2004–2006
**Postdoctoral researcher, Institute for Advanced Study**, 2003–2004

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|---|---|---|---|
| PH.D. STUDENTS SUPERVISED: | Karl Wimmer: | graduated 2009 | (now Duquesne University) |
| | Yi Wu: | graduated 2010 | (now in industry) |
| | Eric Blais: | graduated 2012 | (now University of Waterloo) |
| | Yuan Zhou: | graduated 2014 | (joint w/ V.Guruswami, now Tsinghua) |
| | Aaron Roth: | 2006 – 2008 | (joint w/ A.Blum, now Penn) |
| | Ali Kemal Sinop: | 2008 – 2011 | (w/ V.Guruswami, now Google) |
| | John Wright: | graduated 2016 | (now UC Berkeley) |
| | David Witmer: | graduated 2017 | (joint w/ A.Gupta, now a preacher) |
| | Yu Zhao: | graduated 2021 | |
| | Srivatsan Narayanan: | 2013 | |
| | Sarah Allen: | 2013 – 2017 | (obtained Master's; now Google) |
| | Pedro Paredes | graduated 2022 | (now Princeton) |
| | Kevin Pratt | graduated 2023 | (now NYU) |
| | Costin Bădescu | 2016 – present | |
| | Xinyu Wu | 2019 – present | |
| | William He | 2023 – present | |
| | Noah Singer | 2023 – present | |
| | Jingxun Liang | 2024 – present | (joint w/ W. Kuszmaul) |

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| MS THESIS STUDENTS SUPERVISED: | Corwin de Boor | 2018–19 |
| | Xinyu Wu | 2018–19 |
| | Amulya Musipatla | 2020–21 |
| | Samvitti Sharma | 2025 |

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|---|---|---|
| BS SENIOR THESIS STUDENTS SUPERVISED: | Yongshan Ding: | 2016–17 (now Yale faculty) |
| | Christopher Jones: | 2016–17 (now U. Chicago PhD program) |
| | Calvin Beideman: | 2017–18 (now UIUC PhD program) |
| | Yeongwoo Hwang: | 2017–18 (w/ A. Ada, now Austin PhD prog.) |
| | Sidhanth Mohanty: | 2017–18 (now MIT postdocs) |
| | Ramgopal Venkateswaran | 2020–21 (now Facebook) |

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|---|---|---|
| PH.D. THESIS COMMITTEES: | R. Ryan Williams: | August 2007, Carnegie Mellon University |
| | Per Austrin: | November 2008, Royal Inst. Tech., Sweden |
| | Andrew Wan | April 2010, Columbia University |
| | Daniel Kane | June 2011, Harvard University (Math Dept) |
| | Ali K. Sinop | July 2012, Carnegie Mellon University |
| | Dvir Falik | August 2012, Hebrew University |
| | Pranjal Awasthi | July 2013, Carnegie Mellon University |
| | Amit Weinstein | November 2013, Tel Aviv University |

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|---|---|
| Li-Yang Tan | May 2014, Columbia University |
| Chenggang Wu | June 2014, Tsinghua University |
| Carol Wang | August 2015, Carnegie Mellon University |
| Girish Varma | December 2015, Tata Inst. of Fundamental Research |
| Ziling Jiang | April 2016, Carnegie Mellon University (Math Dept) |
| Misha Lavrov | April 2017, Carnegie Mellon University (Math Dept) |
| Ross Berkowitz | April 2017, Rutgers University (Math Dept) |
| Euiwoong Lee | May 2017, Carnegie Mellon University |
| Nicolas Resch | May 2020, Carnegie Mellon University |
| Vikesh Siddhu | July 2020, Carnegie Mellon Univ. (Physics Dept) |
| Andrii Riazonov | May 2022, Carnegie Mellon University |
| Sai Sandeep | May 2022, Carnegie Mellon University |
| Alex Wang | June 2022, Carnegie Mellon University |
| Ainesh Bakshi | July 2022, Carnegie Mellon University |
| Michael Rudow | April 2023, Carnegie Mellon University |
| Francisco Maturana | August 2023, Carnegie Mellon University |
| Ke Wu | April 2024, Carnegie Mellon University |
| Peter Manohar | July 2024, Carnegie Mellon University |
| Tushant Mittal | July 2024, University of Chicago |

TEACHING:

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|---|---|
| S25: | 15-754: Spectral Graph Theory |
| F24: | 15-459: Undergraduate Quantum Computing (5.00/4.89) |
| S24: | 15-750: Algorithms in the Real World (4.86/4.46) |
| F23: | 15-459: Undergraduate Quantum Computing (4.87/4.77) |
| S23: | 15-750: Algorithms in the Real World (4.36/3.80) |
| F22: | 15-459: Undergraduate Quantum Computing (4.82/4.68) |
| S22: | 15-751: A Theorist's Toolkit (4.92/4.92) |
| F21: | 15-459: Undergraduate Quantum Computing (4.9/4.81) |
| S21: | 15-855: Graduate Computational Complexity Theory (4.93/4.86) |
| F20: | 15-459: Undergraduate Quantum Computing (5.0/4.96) |
| S20: | 15-751: A Theorist's Toolkit (4.84/4.88) |
| F19: | 15-455: Undergraduate Complexity Theory (4.8/4.66) |
| F18: | 15-859BB: Quantum Computation and Information (4.96/4.75) |
| S18: | 15-455: Undergraduate Complexity Theory (4.43/4.13) |
| F17: | 15-855: Graduate Computational Complexity Theory (4.96/4.86) |
| S17: | 15-455: Undergraduate Complexity Theory (4.98/4.74) |
| S17: | 15-252: More Great ideas in Theoretical Computer Sci. (4.93/4.93) |
| F16: | 15-859T: A Theorist's Toolkit (4.86/4.67) |
| S16: | 15-251: Great Theoretical Ideas in Computer Sci. (4.75/4.65) |
| F15: | 15-859BB: Quantum Computation and Information (4.85/4.77) |
| S15: | 15-251: Great Theoretical Ideas in Computer Science (4.58/4.34) |
| F14: | CmpE 587: A Theorist's Toolkit (Bogaziçi University) |
| F13: | 15-859T: A Theorist's Toolkit (4.92/4.75) |

S13: 15-251: Great Theoretical Ideas in Computer Science (4.82/4.34)
F12: 15-859S / 21-801A: Analysis of Boolean Functions (4.9/4.9)
S12: 15-251: Great Theoretical Ideas in Computer Science (4.26/3.77)
F11: 15-859E: Linear and Semidefinite Programming (5.0/5.0)
S10: 15-859U: Theoretical Computer Science's Greatest Hits (4.85/4.77)
F09: 15-359: Probability and Computing (4.67/4.67)
S09: 15-855: Intensive Intro to Complexity (4.5/4.71)
F08: 15-359: Probability and Computing (4.74/4.63)
S08: 15-854B: Advanced Approximation Algorithms (4.8/4.9)
F07: 15-359: Probability and Computing (4.72/4.67)
S07: 15-859S: Analysis of Boolean Functions (4.83)
F05: CSE 533: The PCP Theorem (University of Washington) (5.0/4.8)

## GRANTS, AWARDS, AND HONORS:

**FOCS 20-Year Test of Time Award**
for "Optimal Inapproximability Results for Max-Cut and Other 2-Variable CSPs" (in FOCS 2004)

**NSF Industry-University Cooperative Research Center**
2024 – '29 for Quantum Computing and Information Technologies
Part of a team of ~10 CMU faculty, led by Elias Towe

**Google Gift, Quantum Speedups for Statistical Problems** 2023 ($200,000)

**US ARO Grant, Quantum Characterization of Intermed. Scale Systems**
2021 – 2024, for "Scalable and Efficient Characterization of Noise for Fault-Tolerant Quantum Computation" ($400,000)

**NSF Grant in Foundations of Emerging Technologies**, 2019 – 2022
for "Foundations of Quantum State Learning & Testing" ($470,000)

**NSF Grant in Algorithmic Foundations**, 2017 – 2020
for "The Complexity of Random CSPs" ($450,000)

**Herbert A. Simon Award for Teaching Excellence in Computer Science**
School of Computer Science, Carnegie Mellon University, 2016

**NSF Grant in Algorithmic Foundations**, 2016 – 2019
for "Harmonic Analysis for Quantum Complexity" ($450,000)

**EU Marie Curie International Incoming Fellowship**, 2014 ($119,886)

**NSF Grant in Algorithmic Foundations**, 2013 – 2016
for "CSPs – Approximability versus Time" ($426,376)

**BSF US-Israel Grant**, 2013 – 2017, with Guy Kindler
for "Influence of Fuzzy Boolean Functions" ($97,600)

**Microsoft Research–CMU Computational Thinking Grant**, 2012 – 2013
for "Proof Complexity and Optimization" ($81,081)

**NSF Grant in Algorithmic Foundations**, 2011 – 2014
for "Analysis of Boolean Functions" ($476,388)

**Microsoft Research–CMU Computational Thinking Grant**, 2011 – 2012
for "Constraint Satisfaction Problems: Trichotomies" ($65,263)

**Microsoft Research–CMU Computational Thinking Grant**, 2010 – 2011
for "The Dichotomy Conjecture" ($62,292)
**Von Neumann Fellowship** (IAS School of Mathematics, 2010 – 2011)
**NSF Grant in Algorithmic Foundations**, 2009 – 2012, with Rocco Servedio
for "The Polynomial Method in Learning" ($299,452)
**Alfred P. Sloan Research Fellowship**, 2009 ($50,000)
**Pazy Memorial Award**, 2009 (best BSF math/CS grant) ($5000)
**BSF US-Israel Grant**, 2008 – 2012, with Guy Kindler
for "Fourier-Analytic Methods for Boolean Functions" ($34,000)
**CyLab Grant** for "Fault-Tolerant Voting", 2008 – 2009 ($75,000)
**Okawa Foundation Research Grant**, 2008 ($10,000)
**NSF Faculty Early Career Development (CAREER) Award**, 2008 – 2013
for "Optimal Approximability" ($450,313)
**Best Paper Award, Conference on Computational Complexity**, 2003
for the paper *Extremal properties of polynomial threshold functions*
**Best Student Paper Award, Conf. on Computational Complexity**, 2002
*and* **Best Student Paper Award, MIT Mathematics Department**, 2003
for the paper *Hardness amplification within NP*
**NSERC ("Canadian NSF") Graduate Fellowship**, 1999 – 2001
**Rosenblith Fellowship, MIT Mathematics Department**, 1999 – 2000

SERVICE AND EDITORIAL WORK:

**Simons Institute Scientific Advisory Board**, 2023 –
**ACM Trans. on Computation Theory**, Editor-in-Chief, 2019 – 2023
**STOC 2020 Keynotes and Tutorials** committee organizer
**MSRI (SLMath) Scientific Advisory Council**, 2018 – 2022
**Computational Complexity Conference (CCC)**
Board of Trustees, budget chair, 2016 – 2019
**SIGACT Committee for the Advancement of Theoretical Comp. Sci.**,
member, 2015 – 2021
**Theory of Computing**, editor, 2006 – 2019
**SIAM Journal on Discrete Mathematics**, editor, 2012 – 2017
**Electronic Colloquium on Computational Complexity**,
scientific board 2009 – present
**SIAM Journal of Computing**, special issue editor 2005, 2010

CONFERENCE COMMITTEES:

**CCC** 2005, 2009, 2013, 2017 (**Chair**), 2021; **STOC** 2005, 2007, 2021, 2024 (**Chair**); **FOCS** 2010, 2018, 2023; **SODA** 2012; **SOSA** 2023; **ICALP** 2008; **RANDOM** 2012, 2016, 2020; **ITCS** 2015; **COLT** 2010; **ICML** 2016; **NeurIPS** 2008

CONFERENCE ORGANIZATION:

**Oberwolfach Complexity Theoy Workshop.** Co-organizer, 2027 summer.

**Park City Mathematics Institute (PCMI)**. Co-organizer, 2023 summer graduate school on quantum computation.

**Casa Matematica Oaxaca (BIRS)**. Co-organizer, 2022 workshop on analytic techniques in theoretical computer science.

**Simons Institute.** Co-organizer, 2020 workshop, Comp. Phase Transitions

**Casa Matematica Oaxaca (BIRS)**. Co-organizer, 2018 workshop on analytic techniques in theoretical computer science.

**Harvard.** Co-organizer, 2017 workshop on additive combinatorics.

**Simons Symposium.** Co-organizer, 2016 symposium on Analysis of Boolean Functions: new directions and applications.

**2015 Canadian Discrete and Algorithmic Mathematics Conference** (CanaDAM), program committee member

**Banff International Research Station**. Co-organizer, 2014 workshop on approximation algorithms and the hardness of approximation

**Simons Symposium.** Co-organizer, 2014 symposium on Analysis of Boolean Functions: new directions and applications.

**Simons Symposium.** Co-organizer, 2012 symposium on Analysis of Boolean Functions: new directions and applications.

**Banff International Research Station**. Co-organizer, 2011 workshop on approximation algorithms and the hardness of approximation

**Centre Emile Borel (Institute Henri Poincaré).** Co-organizer, 2011 special semester on metric geometry, algorithms, groups

**Center for Computational Intractability**. Co-organizer, 2010 workshop on analysis and geometry of threshold functions.

REFEREEING:

ACM Transactions on Computation Theory; Annales de l'Institut Henri Poincaré; Annals of Mathematics; Annals of Probability; Combinatorica; Combinatorics, Probability and Computing; Computational Complexity; Discrete Applied Mathematics; Encyclopedia of Algorithms; European Congress of Mathematics, Information Processing Letters; Inventiones Mathematicae; Journal of the ACM; Journal of the AMS; Journal of Computer and System Sciences; Journal of Global Optimization; Journal of Machine Learning Research; Journal of Physics A: Mathematical and Theoretical; Journal of Theoretical Computer Science; Mathematics of Operations Research; Probability Theory and Related Fields; Quantum; SIAM Journal of Computing; SIAM Journal of Discrete Mathematics; Theory of Computing; Transactions on Information Theory.
Conferences: FOCS, STOC, SODA, CCC, ICALP, COLT, QIP, SOSA, NeurIPS, ICML, ITCS, RANDOM, STACS, LATIN, MFCS

GRANT REFEREEING:
National Science Foundation
Israel Science Foundation
European Research Council
Swiss National Science Foundation
Natural Sciences and Engineering Research Council (NSERC Canada)

INVITED SYMPOSIUM TALKS:

**UIUC Distinguished Lecture:** Computer Science/Physics depts., 2024
**Oberwolfach Meeting on Complexity Theory:** invited speaker, 2024
**Isaac Newton Institute:**
2024 Celebration of the mathematics of Timothy Gowers
**University of Washington:**
2023 Distinguished Seminar in Optimization & Data
**Park City Mathematics Institute:** 2023 Cross-Program seminar
**Simons Institute**: invited speaker at 2023 Simons Institute workshop on Rounding Schemes for Quantum Optimization
**Simons Institute**: invited speaker at 2023 Simons Institute workshop on Analysis and TCS: New Frontiers (Beyond the Boolean Cube)
**Cambridge-Warwick Quantum Computing Colloquium:** 2022
**Harvard/MIT Current Developments in Mathematics** 2021 seminar
Invited speaker, 2022
**Schloss-Dagstuhl Seminar**:
fall 2022 seminar on Algebraic Methods in Comp. Complexity
**STEMS 2022 talk:** Organized by Chennai Mathematical Institute
**Oberwolfach Meeting on Complexity Theory:** invited speaker, 2021
**Oberwolfach Meeting on Geom. And Optimization in Quantum Info.:**
invited speaker, 2021
**Simons Foundation:** 2021 conference on High-Dimensional Expanders
**Simons Institute**: invited speaker at 2021 workshop on Rigorous Evidence for Information-Computation Trade-offs
**MIT Foundations of Data Science:** 2020 workshop on
Learning Under Complex Structure
**TCS+**: invited speaker, 2019
**Simons Foundation:** 2019 conference on High-Dimensional Expanders
**Banff International Research Station (BIRS)**: 2019 workshop on Algebraic Techniques in Computational Complexity
**Simons Institute**: 2018 workshop on Beyond Randomized Rounding & The Probabilistic Method, invited speaker
**Clay Mathematics Institute 20th Anniversary Conference:**
invited speaker, 2018 Harmonic Analysis & Probability workshop
**Clay Mathematics Institute:** invited speaker,
Complexity Theory workshop, 2018
**FOCS** 2017 invited speaker: workshop on Frontiers in Distribution Testing

**Simons Institute**: invited speaker at 2017 workshop on Hierarchies, Extended Formulations, and Matrix-Analytic Techniques
**American Institute for Mathematics (AIM) Research workshop** on Random Constraint Satisfaction Problems, summer 2017
**67th Midwest Theory Day:** invited speaker, 2017
**Schloss-Dagstuhl Seminar**:
fall 2016 seminar on Algebraic Methods in Comp. Complexity
**St. Petersburg Low-Depth Complexity Workshop:**
invited tutorial speaker, invited speaker, 2016
**NUS Workshop on Semidefinite and Matrix Methods for Optimization:**
invited speaker, 2016
**TCS+**: invited speaker, 2015
**Charles River Lectures on Probability:** invited speaker, 2015
**Random Structures & Algorithms:** invited speaker, 2015
**Santa Fe Institute workshop on**
**Algebra, Geometry, Pseudorandomness, and Complexity** 2015
**Magic 77 (Manuel Blum Birthday Conference):** invited speaker, 2015
**International Congress of Mathematicians (ICM):**
2014 invited section lecturer
**Swedish Summer School in Computer Science** 2014**:** lecturer
**Bertinoro Workshop on Sublinear Algorithms** 2014
**Simons Institute**: 2013 workshop on real analysis in testing, learning, and inapproximability
**ELC Tokyo Complexity Workshop** 2013
**Bellairs Institute (Barbados) Workshop on Computational Complexity**:
2012's invited speaker (10 lectures)
**Mathematical Sciences Research Institute (MSRI)**:
fall 2011 workshop on Quantitative Geometry in Computer Science
**4th Ann. Eastern Great Lakes (EaGL) Theory of Computation Workshop**
**Fields Institute**: summer 2011 workshop on Approximability of CSPs
**Isaac Newton Institute for Mathematical Sciences:**
spring 2011 semester on discrete analysis
**Centre Emile Borel (Institute Henri Poincaré):**
spring 2011 trimester on approximation algorithms (4 lectures)
**14th Semiannual New York Area Theory Day:** fall 2010
**China Theory Week** 2010: Keynote talk
**Institute for Advanced Study:**
2010 workshop on Pseudorandomness in Mathematical Structures
**Toyota Technological Institute – Chicago (TTI-C)**:
spring 2009 workshop on Approximation Algorithms and their Limitations

**Mathematical Sciences Research Institute (MSRI)**:
fall 2008 workshop on Discrete Rigidity Phenomena in Additive Combinatorics
**Banff International Research Station (BIRS)**:
summer 2008 workshop on Analytic Tools in Computational Complexity
**STOC** 2008: Invited tutorial speaker
**Cornell Workshop on Probability Theory and Computer Science**:
spring 2008 workshop on discrete harmonic analysis and its applications
**American Institute for Mathematics (AIM) Research Workshop**:
fall 2007 seminar on Algorithmic Convex Geometry
**Schloss-Dagstuhl Seminar**:
fall 2007 seminar on Algebraic Methods in Comp. Complexity
**International Center for Mathematical Sciences (ICMS)**:
spring 2007 workshop on Geometry and Algorithms
**Banff International Research Station (BIRS)**:
summer 2006 workshop on Recent Advances in Computational Complexity
**American Mathematical Society (AMS) Central Section Meeting**:
fall 2005 special session on Randomness in Computation
**2nd Annual Pacific Northwest Theory Day**: spring 2005
**Mathematical Sciences Research Institute (MSRI)**:
spring 2005 workshop on Phase Transitions in Computation and Reconstruction
**Yale Workshop on Discrete Mathematics and Theoretical Computer Sci.**:
fall 2004 workshop on Harmonic Analysis of Boolean Functions
**Schloss-Dagstuhl Seminar**:
fall 2004 seminar on Algebraic Methods in Comp. Complexity

INVITED ACADEMIC TALKS:

**Institute for Advanced Study:** Theory seminar 2025
**MIT**: Theory seminar 2025
**Princeton University**: Theory seminar 2024
**University of Pennsylvania**: Theory seminar 2023
**Columbia University**: Theory seminar 2022
**Microsoft Quantum:** Seminar 2021 (twice)
**Amazon Research:** Seminar 2020
**Microsoft Quantum:** Seminar 2020 (twice)
**CWI:** Quantum seminar 2020
**University of Texas, Austin:** Quantum seminar 2020
**Texas A&M:** Mathematics seminar 2020
**MIT:** Theory seminar 2020

**University of Texas, Austin:** Theory seminar 2019
**University of British Columbia:** Probability seminar 2019
**University of British Columbia:** Algorithms seminar 2019
**Institute for Advanced Study**: Theory seminar 2018
**Princeton University**: Theory seminar 2018
**Carnegie Mellon:** Theory seminar 2017
**Center for Quantum Technologies, NUS**: Colloquium 2016
**Harvard University**: Theory seminar 2015 (twice)
**Columbia University**: Theory seminar 2015
**Kent State**: Mathematics seminar 2015
**Microsoft New England Research:** Theory Colloquium 2013 (twice)
**Cornell University:** Probability seminar 2013
**Purdue University:** CS Theory seminar 2012
**Istanbul Center for Mathematical Sciences (IMBM):** Math seminar 2011
**Microsoft Redmond Theory Group**: CS Theory seminar 2011
**Institute for Advanced Study**: Discrete mathematics seminar 2011
**Institute for Advanced Study**: Discrete mathematics seminar 2010
**Microsoft Redmond Theory Group**: CS Theory seminar 2010
**University of Washington**: Probability seminar 2010
**Microsoft Silicon Valley Theory Group**: CS Theory seminar 2009
**Institute for Advanced Study (IAS)**: CS Theory seminar 2009
**Microsoft New England Theory Group:** CS Theory seminar 2009
**MIT:** CS Theory colloquium 2009
**SUNY Buffalo**: CS Theory seminar 2008
**University of Toronto**: CS Theory seminar 2008
**MIT**: CS Theory colloquium 2007
**Carnegie Mellon**: ACO seminar 2007
**Penn State**: CS Theory seminar 2007
**Carnegie Mellon**: CS Theory seminar 2006 (twice)
**UT Austin**: CS Theory seminar 2006
**MIT**: Applied Mathematics seminar 2006
**University of Pennsylvania**: CS Theory seminar 2006
**University of Chicago**: CS Theory seminar 2006
**Georgia Tech**: CS Theory seminar 2006
**Georgia Tech**: CS Theory seminar 2006 (again)
**Dartmouth College**: Mathematics seminar 2006
**University of British Columbia**: Math Colloquium 2006
**University of British Columbia**: Discrete Math seminar 2006
**UC Berkeley**: CS Theory seminar 2005
**UC Berkeley**: CS Theory seminar 2005 (again)
**Simon Fraser University**: CS Theory seminar 2005
**University of Washington**: Probability seminar 2005
**UC Berkeley**: CS Theory seminar 2004

**University of Washington**: CS Theory seminar 2004 (twice)
**Microsoft Redmond Theory Group**: CS Theory seminar 2004
**Columbia University**: CS Theory seminar, 2004
**Yale University**: CS Theory seminar 2004
**Institute for Advanced Study (IAS)**: CS Theory seminar 2004
**Institute for Advanced Study (IAS)**: CS Theory seminar 2003 (twice)
**University of Washington**: CS Theory seminar 2002
**Microsoft Redmond Theory Group**: CS Theory seminar 2002
**University of Toronto**: CS Theory seminar 2002

CONFERENCE TALKS:

QIP 2023 TQC 2021, ITCS 2017, FSTTCS 2014, ICALP 2009, STOC 2008, FOCS 2006, LATIN 2006, FOCS 2005, STOC 2005, FOCS 2003, CCC 2003, STOC 2003, FOCS 2002, STOC 2002, Math. and Comp. Sci. II 2003, SODA 2002.

JOURNAL ARTICLES:

1. S. Flammia, R. O'Donnell.
   Quantum chi-squared tomography and mutual information testing.
   *Quantum* (2024), to appear. Previously in *QIP 2024*.
2. C. Bădescu, R. O'Donnell.
   Improved quantum data analysis
   *TheoretiC* 3:7 (2024). Previously in *STOC 2021*.
3. S. Flammia, R. O'Donnell.
   Pauli error estimation via Population Recovery
   *Quantum* 5, pp. 549 (2021). Previously in *TQC 2021*.
4. R. O'Donnell, J. Wright.
   Efficient quantum tomography.
   *Journal of the ACM*, to appear. Previously in *STOC 2016, QIP 2016*.
5. S. Mohanty, R. O'Donnell, P. Paredes.
   Explicit near-Ramanujan graphs of every degree.
   *SIAM Journal of Computing*, special issue for *STOC* 2020.
6. R. O'Donnell, T.Schramm.
   Sherali-Adams strikes back.
   *Theory of Computing* 17(9), pp. 1-30 (2021).
   Previously in *CCC 2019*.
7. A. De, R. O'Donnell, R. Servedio.
   Sharp bounds for population recovery.
   *Theory of Computing* 16(6), pp. 1-20 (2020).
8. A. De, R. O'Donnell, R. Servedio.
   Optimal mean-based algorithms for trace reconstruction.
   *Annals of Applied Probability* 29(2) pp. 851-874 (2019).
   Previously in *STOC* 2017.

9. R. O'Donnell, A. C. C. Say
   The weakness of CTC qubits and the power of approximate counting.
   *ACM Transactions on Computation Theory* 10(2), no. 5 (2018).
10. R. O'Donnell, J. Wright.
    A new point of NP-hardness for Unique Games.
    *Journal of the ACM*, to appear.
    Previously in *STOC* 2012.
11. G. Kindler, N. Kirshner, R. O'Donnell.
    Gaussian noise sensitivity and Fourier tails.
    *Israel Journal of Mathematics* 225(1), pp. 71-109 (2018).
    Previously in *CCC* 2012.
12. I. Benjamini, S.-O. Chan, R. O'Donnell, O. Tamuz, L.-Y. Tan.
    Convergence, unanimity and disagreement in majority dynamics on unimodular graphs and random graphs.
    *Stochastic Processes and their Applications* 126(9), pp. 2719-2733 (2016).
13. M. Kauers, R. O'Donnell, L.-Y. Tan, Y. Zhou.
    Hypercontractive inequalities via SOS, and the Frankl-Rödl graph.
    *Discrete Analysis* 4 (2016).
    Previously in *SODA* 2014.
14. P. Austrin, R. O'Donnell, L.-Y. Tan, J. Wright.
    New NP-hardness results for 3-Coloring and 2-to-1 Label Cover.
    *Transactions on Computation Theory* 6(1), pp. 2:1-20 (2014).
    Previously in *APPROX* 2012 under the title
    "A new point of NP-hardness for 2-to-1 Label Cover"
15. R. O'Donnell, Y. Wu, Y. Zhou.
    Optimal lower bounds for locality sensitive hashing (except when q is tiny).
    *Transactions on Computation Theory* 6(1), pp. 5:1-13 (2014).
    Previously in *ITCS* 2011.
16. R. O'Donnell, K. Wimmer.
    Sharpness of KKL on Schreier graphs.
    *Electronic Communications in Probability* 18(8), pp. 1-12 (2013).
17. R. O'Donnell, K. Wimmer.
    KKL, Kruskal-Katona, and monotone nets.
    *SIAM Journal on Computing* 42(6), pp. 2375–2399 (2013).
    Invited paper, special issue for *FOCS* 2009.
18. G. Kindler, R. O'Donnell, A. Rao, A. Wigderson.
    Spherical cubes: optimal foams from computational hardness amplification.
    *Communications of the ACM* 55(10), pp. 90-97 (2012).
    Previously in FOCS 2008 under the title
    "Spherical cubes and rounding in high dimensions"

19. Joint with "D.H.J. Polymath" (a mathematical collective, *see* http://michaelnielsen.org/polymath1/)
    A new proof of the density Hales-Jewett theorem.
    *Annals of Mathematics* 175(3), pp. 1283-1327 (2012).
20. R. O'Donnell, R. Servedio.
    The Chow parameters problem.
    *SIAM Journal of Computing* 40(1), pp. 165-199 (2011).
    Previously in *STOC* 2008.
21. P. Gopalan, R. O'Donnell, R. Servedio, A. Shpilka, K. Wimmer.
    Testing Fourier dimensionality and sparsity.
    *SIAM Journal on Computing* 40(4), pp. 1075–1100 (2011).
    Previously in *ICALP* 2009.
22. E. Blais, R. O'Donnell, K. Wimmer.
    Polynomial regression under arbitrary product distributions.
    *Machine Learning* 80(2-3), pp. 273–294 (2010).
    Invited paper, special issue for *COLT* 2008.
23. R. O'Donnell, R. Servedio.
    New degree bounds for polynomial threshold functions.
    *Combinatorica* 30(3), pp. 327–358 (2010).
    Previously in *STOC* 2003.
24. E. Mossel, R. O'Donnell, K. Oleszkiewicz.
    Noise stability of functions with low influences: invariance and optimality
    *Annals of Mathematics* 171(1), pp. 295–341 (2010).
    Previously in *FOCS* 2005.
25. K. Matulef, R. O'Donnell, R. Rubinfeld, R. Servedio.
    Testing halfspaces.
    *SIAM Journal of Computing* 39(3), pp. 2004–2047 (2010).
    Previously in *SODA* 2009.
26. S. Khot, R. O'Donnell.
    SDP gaps and UGC-hardness for Max-Cut-Gain.
    *Theory of Computing* 5, pp. 83–117 (2009).
    Previously in *FOCS* 2006.
27. J. Feldman, R. O'Donnell, R. Servedio.
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