Mark M. Wilde

Associate Professor
School of Electrical and Computer Engineering
Rhodes Hall
Cornell University
Ithaca, New York, USA 14850 http://www.markwilde.com/

Education

University of Southern California,
Ph.D., Electrical Engineering,
Los Angeles, California, August 2008.

Tulane University,
M.S., Electrical Engineering,
New Orleans, Louisiana, August 2004.

Texas A&M University,
B.S., Computer Engineering,
College Station, Texas, May 2002.

Academic and Research Experience

Associate Professor — July 2022—present
Cornell University — Ithaca, New York
Teaching courses on quantum information theory and quantum computation. Working with students and postdocs on research topics in quantum information theory and quantum computation.

Visiting Scholar — October 2022
Pembroke College, University of Cambridge — Cambridge, UK
Collaborated with Prof. Nilanjana Datta and her group members on research topics in quantum information theory. Delivered lecture entitled "Postselected quantum hypothesis testing" at the workshop "Mathematics of Quantum Information Theory and Many-body Systems."

Visiting Associate Professor — July 2021—July 2022
Cornell University — Ithaca, New York

Associate Professor — August 2018—June 2022
Louisiana State University — Baton Rouge, Louisiana
Taught courses on quantum information theory and quantum computation. Worked with students and postdocs on research topics in quantum information theory and quantum computation.

Visiting Professor (Sabbatical Leave) — January 2020—December 2020
Patrick Hayden, Stanford University — Stanford, California
Collaborated with group members of Patrick Hayden's research group within the Stanford Institute for Theoretical Physics at Stanford University.

Assistant Professor — August 2013—August 2018
Louisiana State University — Baton Rouge, Louisiana

Visiting Professor — June 2013—August 2013
Seth Lloyd and Jeffrey Shapiro, MIT — Boston, Massachusetts

Developed the notion of the "locking capacity" of a quantum channel and proved several properties of it for certain channels. Proved that a strong converse theorem holds for the classical capacity of the pure-loss bosonic channel when imposing a maximum photon number constraint. Identified a second-order coding rate for the pure-loss bosonic channel.

Visiting Professor — April 2013—May 2013
Andreas Winter, Autonomous Univ. of Barcelona — Barcelona, Spain
Proved that it is possible to violate the no-cloning theorem of quantum mechanics if one is allowed access to a closed timelike curve behaving according to the model of David Deutsch. Proved that a strong converse theorem holds for the classical capacity of entanglement-breaking and Hadamard channels.

Postdoctoral Fellow — October 2009—April 2013
Patrick Hayden, McGill University — Montreal, Quebec
Completed a 670-page textbook on quantum information theory (published by Cambridge University Press). Constructed polar codes for transmitting classical, private, and quantum data. Furthered the theory of quantum rate distortion (lossy quantum data compression). Advanced network quantum information theory with the discovery of a quantum simultaneous decoder. Determined channels for which two full triple trade-off regions are tractable, implying that we have a complete understanding of the communication abilities of these channels for classical communication, quantum communication, and entanglement consumption/generation and for public classical communication, private classical communication, and secret key consumption/generation. Determined a relation between the correlations available in Leggett-Garg tests of macrorealism and the cut vectors from the cut polytope in polyhedral combinatorics. Showed how postselected closed timelike curves enable enhanced information processing abilities. Determined achievable rates for the discrete memoryless and bosonic quantum interference channel. Developed a theory of entanglement-assisted quantum turbo codes and simulated their performance.

Visitor — October 2008—December 2008
Andreas Winter, Centre for Quantum Technology, National University of Singapore — Singapore
Proved trade-off capacity theorems for the transmission of classical and quantum information over an entanglement-assisted quantum channel.

Visitor — September 2008
Martin Rötteler, NEC Laboratories America — Princeton, New Jersey
Investigated the simulation of entanglement-assisted quantum codes under the assumption that entanglement may not be ideal. Investigated improving performance of the algorithm for encoding general quantum convolutional codes.

Research Assistant — September 2006–August 2008
Todd A. Brun, University of Southern California — Los Angeles, California
Developed several methods for error correction of quantum information including entanglement-assisted quantum convolutional coding, convolutional entanglement distillation, and entanglement-assisted operator error correction for continuous-variable systems. Derived several formulae that determine the number of entangled qubits that several variations of an entanglement-assisted quantum code require. Developed the continuous-variable coherent channel.

Research Assistant — Summer 2006, 2007
Jonathan P. Dowling, Louisiana State University — Baton Rouge, Louisiana
Developed a linear-optical implementation of a controlled-phase gate. Discovered a method to implement the coherent channel experimentally in a linear-optical system.

Research Assistant — September 2005–September 2006

Bart Kosko, University of Southern California — Los Angeles, California
Developed a model for stochastic resonance in a quantum-optical system. Highlighted the applications of this model in quantum key distribution. Also constructed models for stochastic resonance in quantum teleportation and continuous-variable superdense coding.

Industry Experience

Quantum Information Scientist — January–October 2009
Science Applications International Corporation — Arlington, Virginia
Developed the theory of a quantum shift register. Such a device may be useful in the implementation of a quantum error correction code for quantum communication. Proved the ultimate capability of a noisy quantum channel for consuming or generating noiseless quantum communication, noiseless classical communication, and noiseless entanglement. Proved the ultimate capability of a noisy quantum channel and a secret key to generate noiseless public communication and noiseless private communication. Developed a Leggett-Garg test for "quantumness" in a biomolecule.

Summer Intern — Summer 2005
Jet Propulsion Laboratory — Pasadena, California
Developed a low complexity, lossless image software in the C language that compresses hyperspectral images obtained from the Airborne Visible/Infrared Imaging Spectrometer (AVIRIS). Wrote a specialized tool to select specific regions of a hyperspectral image for output to a new image.

Current Research Grants

3. "Quantum Programs for Simulating Open Systems," Air Force Office of Scientific Research, $600K, September 2024–September 2027.
2. "Quantum Algorithms and Entanglement Verification Methods for Communication and Networking," Air Force Research Laboratory FA8750-23-2-0031, $826K, September 2023–September 2026.
1. "Frontiers of Quantum Shannon Theory," National Science Foundation #2329662, $600K, December 2023–November 2026.

Past Research Grants

13. International Collaboration Increment for "Quantifying and Optimizing the Performance of Continuous-Variable Quantum Logic Operations," National Science Foundation #2304816, $30K, July 2020–June 2024.
12. "Quantifying and Optimizing the Performance of Continuous-Variable Quantum Logic Operations," National Science Foundation #2304816, $300K, July 2020–June 2024.
11. "Device-Independent Quantum Information," Air Force Office of Scientific Research, $257K, July 2020–July 2023.
10. International Collaboration Increment for "Resource Theories of Quantum Channels," National Science Foundation #1907615, $30K, July 2020–October 2023.
9. "Resource Theories of Quantum Channels," National Science Foundation #1907615, $456K, October 2019–February 2024.
8. "Recoverability and Markovianity in Quantum Information," National Science Foundation #1714215, $400K, September 2017–September 2021.
7. "Quantum Security for Communication," LSU Economic Development Assistantship, $100K, July 2016–July 2020.

6. "Communications and Networking with Quantum operationally-Secure Technology for Maritime Deployment," Office of Naval Research #N00014-16-C2069, $300K, September 2016–September 2019, Joint with Jeffrey H. Shapiro (MIT), and Saikat Guha (Raytheon BBN Technologies, University of Arizona).
5. "Covert Communication using Quantum Mechanical Effects," Louisiana State University Board of Regents, $7K, May 2016–October 2016.
4. "Short Course on Quantum Information Theory," APS-IUSSTF Professorship Award in Physics, $4K, June 2014.
3. "Closed Timelike Curves and Quantum Information Processing," Foundational Questions Institute, $5K, January 2014–December 2014.
2. "CAREER: Theoretical and Practical Aspects of Quantum Commuication," National Science Foundation, $500K, May 2014–May 2019 (NSF Career Grant).
1. "Quantum Secured Communications," Defense Advanced Research Projects Agency under the Macroscopic Quantum Communications (Quiness) program #W31P4Q-12-1-0019, $150K, September 2012–September 2015, Joint with Jeffrey H. Shapiro (MIT), Seth Lloyd (MIT), Saikat Guha (Raytheon BBN Technologies).

Books

2. Mark M. Wilde, "Quantum Information Theory," Published by *Cambridge University Press* in June 2013. Second edition published in February 2017. Book preprint "From Classical to Quantum Shannon Theory," available at `http://markwilde.com/qit-notes.pdf` and arXiv:1106.1445, 774 pages, 301 exercises, 81 figures. This book has been used in graduate courses on quantum information theory at Caltech, University of Cambridge, McGill University, University of Southern California, University of Bristol, University of California, Davis, University of Washington, Leibniz Universitat Hannover, and Louisiana State University.
1. Sumeet Khatri and Mark M. Wilde, "Principles of Quantum Communication Theory: A Modern Approach." Book preprint available at `https://arxiv.org/abs/2011.04672v2`. 1240 pages, 60 figures.

Journal Articles

arXiv identifier: `http://arxiv.org/a/wilde_m_1`

Google Scholar profile: `http://scholar.google.com/citations?user=vANLRiYAAAAJ&hl`

181. Zixin Huang, Ludovico Lami, Mark M. Wilde, "Exact quantum sensing limits for bosonic dephasing channels," *PRX Quantum*, vol. 5, no. 2, page 020354, June 2024. arXiv:2402.05793
180. Hemant K. Mishra, Michael Nussbaum, Mark M. Wilde, "On the optimal error exponents for classical and quantum antidistinguishability," *Letters in Mathematical Physics*, vol. 114, page 76, June 2024. arXiv:2309.03723
179. Theshani Nuradha, Mark M. Wilde, "Fidelity-Based Smooth Min-Relative Entropy: Properties and Applications," *IEEE Transactions on Information Theory*, vol. 70, no. 6, pages 4170-4196, June 2024. arXiv:2305.05859
178. Aby Philip, Soorya Rethinasamy, Vincent Russo, Mark M. Wilde, "Schrödinger as a Quantum Programmer: Estimating Entanglement via Steering," *Quantum* vol. 8, page 1366, June 2024. arXiv:2303.07911
177. Dhrumil Patel, Patrick J. Coles, Mark M. Wilde, "Variational Quantum Algorithms for Semidefinite Programming," *Quantum*, vol. 8, pages 1374, June 2024. arXiv:2112.08859

176. Bartosz Regula, Ludovico Lami, Mark M. Wilde, "Postselected quantum hypothesis testing," *IEEE Transactions on Information Theory*, vol. 70, no. 5, pages 3453–3469, May 2024. arXiv:2209.10550

175. Zixin Huang, Ben Q. Baragiola, Nicolas C. Menicucci, Mark M. Wilde, "Limited quantum advantage for stellar interferometry via continuous-variable teleportation," Physical Review A, vol. 109, no. 5, page 052434, May 2024. arXiv:2311.05159

174. Theshani Nuradha, Ziv Goldfeld, Mark M. Wilde, "Quantum Pufferfish Privacy: A Flexible Privacy Framework for Quantum Systems," Accepted for publication in *IEEE Transactions on Information Theory*, May 2024. arXiv:2306.13054

173. Hemant K. Mishra, Ludovico Lami, Prabha Mandayam, Mark M. Wilde, "Pretty good measurement for bosonic Gaussian ensembles," *International Journal of Quantum Information*, special issue dedicated to Alexander S. Holevo on the occasion of his 80th birthday, May 2024. arXiv:2303.04949

172. Bjarne Bergh, Nilanjana Datta, Robert Salzmann, Mark M. Wilde, "Parallelization of Sequential Quantum Channel Discrimination in the Non-Asymptotic Regime," *IEEE Transactions on Information Theory*, vol. 70, no. 4, pages 2617–2636, April 2024. arXiv:2206.08350

171. Kun Wang, Xin Wang, Mark M. Wilde "Quantifying the unextendibility of entanglement," *New Journal of Physics*, vol. 26, page 033013, March 2024. arXiv:1911.07433

170. Ziv Goldfeld, Dhrumil Patel, Sreejith Sreekumar, Mark M. Wilde, "Quantum Neural Estimation of Entropies," *Physical Review A*, vol. 109, no. 3, page 032431, March 2024. arXiv:2307.01171

169. Yihui Quek, Eneet Kaur, Mark M. Wilde, "Multivariate trace estimation in constant quantum depth," *Quantum*, vol. 8, page 1220, January 2024. arXiv:2206.15405

168. Dhrumil Patel, Mark M. Wilde, "Wave Matrix Lindbladization II: General Lindbladians, Linear Combinations, and Polynomials," *Open Systems & Information Dynamics*, vol. 30, no. 03, page 2350014, September 2023. arXiv:2309.14453

167. Rahul Bandyopadhyay, Alex H. Rubin, Marina Radulaski, Mark M. Wilde, "Efficient quantum algorithms for testing symmetries of open quantum systems," *Open Systems & Information Dynamics*, vol. 30, no. 03, page 2350017, September 2023. arXiv:2309.02515

166. Margarite L. LaBorde, Mark M. Wilde, "Testing symmetry on quantum computers," *Quantum*, vol. 7, page 1120, September 2023. arXiv:2105.12758

165. Rochisha Agarwal, Soorya Rethinasamy, Kunal Sharma, Mark M. Wilde, "Estimating distinguishability measures on quantum computers," *Physical Review A*, vol. 108, no. 1, page 012409, July 2023. arXiv:2108.08406

164. Hemant K. Mishra, Samad Khabbazi Oskouei, Mark M. Wilde, "Optimal input states for quantifying the performance of continuous-variable unidirectional and bidirectional teleportation," *Physical Review A*, vol. 107, no. 6, page 062603, June 2023. arXiv:2210.05007

163. Dhrumil Patel, Mark M. Wilde, "Wave Matrix Lindbladization I: Quantum Programs for Simulating Markovian Dynamics," *Open Systems & Information Dynamics* , vol. 30, no. 02, page 2350010, June 2023. arXiv:2307.14932

162. Zachary P. Bradshaw, Margarite L. LaBorde, Mark M. Wilde, "Cycle Index Polynomials and Generalized Quantum Separability Tests," *Proceedings of the Royal Society A*, vol. 479, no. 2274, page 20220733, June 2023. arXiv:2208.14596

161. Ludovico Lami, Mark M. Wilde, "Exact solution for the quantum and private capacities of bosonic dephasing channels," *Nature Photonics*, vol. 17, pages 525–530, June 2023. arXiv:2205.05736

160. Dawei Ding, Sumeet Khatri, Yihui Quek, Peter W. Shor, Xin Wang, and Mark M. Wilde, "Bounding the forward classical capacity of bipartite quantum channels," *IEEE Transactions on Information Theory*, vol. 69, no. 5, pages 3034–3061, May 2023. arXiv:2010.01058

159. Bartosz Regula, Ludovico Lami, Mark M. Wilde, "Overcoming entropic limitations on asymptotic state transformations through probabilistic protocols," *Physical Review A*, vol. 107, no. 4, page 042401, April 2023. arXiv:2209.03362

158. Nic Ezzell, Elliott M. Ball, Aliza U. Siddiqui, Mark M. Wilde, Andrew T. Sornborger, Patrick J. Coles, Zoë Holmes, "Quantum Mixed State Compiling," *Quantum Science and Technology*, vol. 8, page 035001, April 2023. arXiv:2209.00528

157. Aliza U. Siddiqui, Mark M. Wilde, "The SWAP Imposter: Bidirectional Quantum Teleportation and its Performance," *AVS Quantum Science*, vol. 5, no. 1, page 011407, March 2023. arXiv:2210.10882

156. Tharon Holdsworth, Vishal Singh, Mark M. Wilde, "Quantifying the performance of approximate teleportation and quantum error correction via symmetric two-PPT-extendibility," *Physical Review A*, vol. 107, no. 1, page 012428, January 2023. arXiv:2207.06931

155. Xin Wang, Mark M. Wilde, "Exact entanglement cost of quantum states and channels under PPT-preserving operations," *Physical Review A*, vol. 107, no. 1, page 012429, January 2023. arXiv:1809.09592

154. Aby Philip, Eneet Kaur, Peter Bierhorst, Mark M. Wilde, "Multipartite Intrinsic Non-Locality and Device-Independent Conference Key Agreement," *Quantum*, vol. 7, page 898, January 2023. arXiv:2111.02596

153. Mark M. Wilde, "On distinguishability distillation and dilution exponents," *Quantum Information Processing*, vol. 21, no. 12, Article number 392, December 2022. arXiv:2202.12433

152. Margarite L. LaBorde, Mark M. Wilde, "Quantum Algorithms for Testing Hamiltonian Symmetry," *Physical Review Letters*, vol. 129, no. 16, page 160503, October 2022. arXiv:2203.10017

151. András Gilyén, Seth Lloyd, Iman Marvian, Yihui Quek, Mark M. Wilde, "Quantum algorithm for Petz recovery channels and pretty good measurements," *Physical Review Letters*, vol. 128, no. 22, page 220502, June 2022. arXiv:2006.16924

150. Christopher Vairogs, Vishal Katariya, Mark M. Wilde, "Quantum State Discrimination Circuits Inspired by Deutschian Closed Timelike Curves," *Physical Review A*, vol. 105, no. 5, page 052434, May 2022. arXiv:2109.11549

149. Kunal Sharma, Barry C. Sanders, Mark M. Wilde, "Optimal tests for continuous-variable quantum teleportation and photodetectors," *Physical Review Research*, vol. 4, no. 2, page 023066, April 2022. arXiv:2012.02754

148. Arshag Danageozian, Mark M. Wilde, Francesco Buscemi, "Thermodynamic Constraints on Quantum Information Gain and Error Correction: A Triple Trade-Off," *PRX Quantum*, vol. 3, no. 2, page 020318, April 2022. arXiv:2112.05100

147. Lior Cohen, Mark M. Wilde, "Towards Optimal Quantum Ranging – Hypothesis Testing for an Unknown Return Signal," *Physical Review Applied*, vol. 17, no. 4, page 044053, April 2022. arXiv:2109.01601

146. Ryuji Takagi, Bartosz Regula, Mark M. Wilde, "One-shot yield-cost relations in general quantum resource theories," *PRX Quantum*, vol. 3, no. 1, page 010348, March 2022. arXiv:2110.02212

145. Eric P. Hanson, Vishal Katariya, Nilanjana Datta, Mark M. Wilde, "Guesswork with quantum side information," *IEEE Transactions on Information Theory*, vol. 68, no. 1, pages 322–338, January 2022. arXiv:2001.03598

144. Vishal Katariya, Mark M. Wilde, "Evaluating the advantage of adaptive strategies for quantum channel distinguishability," *Physical Review A*, vol. 104, no. 5, page 052406, November 2021. arXiv:2001.05376

143. Li Gao and Mark M. Wilde, "Recoverability for optimized quantum f-divergences," *Journal of Physics A: Mathematical and Theoretical*, vol. 54, no. 38, page 385302, September 2021. arXiv:2008.01668

142. Robert Salzmann, Nilanjana Datta, Gilad Gour, Xin Wang, Mark M. Wilde, "Symmetric distinguishability as a quantum resource," *New Journal of Physics*, vol. 23, Article No. 083016, August 2021. arXiv:2102.12512

141. Eneet Kaur, Siddhartha Das, Mark M. Wilde, Andreas Winter, "Resource theory of unextendibility and non-asymptotic quantum capacity," *Physical Review A*, vol. 104, no. 2, page 022401, August 2021. arXiv:1803.10710

140. Vishal Katariya and Mark M. Wilde, "RLD Fisher information bound for multiparameter estimation of quantum channels," *New Journal of Physics*, vol. 23, page 073040, July 2021. arXiv:2008.11178

139. Gilad Gour, Mark M. Wilde, "Entropy of a quantum channel," *Physical Review Research*, vol. 3, no. 2, page 023096, May 2021. arXiv:1808.06980

138. Vishal Katariya, Mark M. Wilde, "Geometric distinguishability measures limit quantum channel estimation and discrimination," *Quantum Information Processing*, vol. 20, Article no. 78, February 2021. arXiv:2004.10708

137. Eneet Kaur, Saikat Guha, Mark M. Wilde, "Asymptotic security of discrete-modulation protocols for continuous-variable quantum key distribution," *Physical Review A*, vol. 103, no. 1, page 012412, January 2021. arXiv:1901.10099

136. Xin Wang, Mark M. Wilde, "α-Logarithmic negativity," *Physical Review A*, vol. 102, no. 3, page 032416, September 2020. arXiv:1904.10437

135. Soorya Rethinasamy, Mark M. Wilde, "Relative Entropy and Catalytic Relative Majorization," *Physical Review Research*, vol. 2, no. 3, page 033455, September 2020. arXiv:1912.04254

134. Xin Wang and Mark M. Wilde, "Cost of quantum entanglement simplified," *Physical Review Letters*, vol. 125, no. 4, page 040502, July 2020. arXiv:2007.14270

133. Sumeet Khatri, Kunal Sharma, Mark M. Wilde, "Information-theoretic aspects of the generalized amplitude damping channel," *Physical Review A*, vol. 102, no. 1, page 012401, July 2020. arXiv:1903.07747

132. Mark M. Wilde, Mario Berta, Christoph Hirche, Eneet Kaur, "Amortized channel divergence for asymptotic quantum channel discrimination," *Letters in Mathematical Physics*, vol. 100, pages 2277–2336, August 2020. arXiv:1808.01498

131. Xin Wang, Mark M. Wilde, Yuan Su, "Efficiently computable bounds for magic state distillation," *Physical Review Letters*, vol. 124, no. 9, page 090505, March 2020. arXiv:1812.10145

130. Kunal Sharma, Mark M. Wilde, "Characterizing the performance of continuous-variable Gaussian quantum gates," *Physical Review Research*, vol. 2, no. 1, page 013126, February 2020. arXiv:1810.12335

129. Kunal Sharma, Eyuri Wakakuwa, Mark M. Wilde, "Conditional quantum one-time pad," *Physical Review Letters*, vol. 124, no. 5, page 050503, February 2020. arXiv:1703.02903

128. Eneet Kaur, Mark M. Wilde, Andreas Winter "Fundamental limits on key rates in device-independent quantum key distribution," *New Journal of Physics*, vol. 22, page 023039, February 2020. arXiv:1810.05627

127. Mark M. Wilde "Optimal uniform continuity bound for conditional entropy of classical–quantum states," *Quantum Information Processing*, vol. 19, Article number 61, January 2020. arXiv:1909.01755

126. Siddhartha Das, Stefan Bäuml, Mark M. Wilde, "Entanglement and secret-key-agreement capacities of bipartite quantum interactions and read-only memory devices," *Physical Review A*, vol. 101, no. 1, page 012344, January 2020. arXiv:1712.00827

125. Xin Wang, Mark M. Wilde, "Resource theory of asymmetric distinguishability for quantum channels," *Physical Review Research*, vol. 1, no. 3, page 033169, December 2019. arXiv:1907.06306

124. Xin Wang, Mark M. Wilde, "Resource theory of asymmetric distinguishability," *Physical Review Research*, vol. 1, no. 3, page 033170, December 2019. arXiv:1905.11629

123. Siddhartha Das, Mark M. Wilde, "Quantum reading capacity: General definition and bounds," *IEEE Transactions on Information Theory*, vol. 65, no. 11, pages 7566–7583, November 2019. arXiv:1703.03706

122. Xin Wang, Mark M. Wilde, Yuan Su, "Quantifying the magic of quantum channels," *New Journal of Physics*, vol. 21, page 103002, October 2019. arXiv:1903.04483

121. Siddhartha Das, Mark M. Wilde, "Quantum rebound capacity," *Physical Review A*, vol. 100, no. 3, page 030302, September 2019. arXiv:1904.10344

120. Eneet Kaur, Siddhartha Das, Mark M. Wilde, Andreas Winter, "Extendibility limits the performance of quantum processors," *Physical Review Letters*, vol. 123, no. 7, page 070502, August 2019. arXiv:2108.03137

119. Ludovico Lami, Sumeet Khatri, Gerardo Adesso, Mark M. Wilde, "Extendibility of bosonic Gaussian states," *Physical Review Letters*, vol. 123, no. 5, page 050501, July 2019. arXiv:1904.02692

118. Patrick J. Coles, Vishal Katariya, Seth Lloyd, Iman Marvian, Mark M. Wilde, "Entropic energy-time uncertainty relation," *Physical Review Letters*, vol. 122, no. 10, page 100401, March 2019. arXiv:1805.07772

117. Samad Khabbazi Oskouei, Stefano Mancini, Mark M. Wilde, "Union bound for quantum information processing," *Proceedings of the Royal Society A*, vol. 475, no. 2221, id 20180612, January 2019. arXiv:1804.08144

116. Dawei Ding, Dmitri S. Pavlichin, Mark M. Wilde, "Quantum channel capacities per unit cost," *IEEE Transactions on Information Theory*, vol. 65, no. 1, pages 418–435, January 2019. arXiv:1705.08878

115. Stefan Bäuml, Siddhartha Das, Mark M. Wilde, "Fundamental limits on the capacities of bipartite quantum interactions," *Physical Review Letters*, vol. 121, no. 25, page 250504, December 2018. arXiv:1812.08223

114. Mark M. Wilde, Haoyu Qi, "Energy-constrained private and quantum capacities of quantum channels," *IEEE Transactions on Information Theory*, vol. 64, no. 12, pages 7802–7827, December 2018. arXiv:1609.01997

113. Haoyu Qi, Qingle Wang, Mark M. Wilde, "Applications of position-based coding to classical communication over quantum channels," *Journal of Physics A: Mathematical and Theoretical*, vol. 51, no. 44, page 444002, November 2018. arXiv:1704.01361

112. Mark M. Wilde, "Entanglement cost and quantum channel simulation," *Physical Review A*, vol. 98, no. 4, page 042320, October 2018. arXiv:1807.11939

111. Mario Berta, Fernando G. S. L. Brandao, Christian Majenz, Mark M. Wilde, "Deconstruction and conditional erasure of quantum correlations," *Physical Review A*, vol. 98, no. 4, pages 042320, October 2018. arXiv:1609.06994

110. Marius Junge, Renato Renner, David Sutter, Mark M. Wilde, Andreas Winter, "Universal recovery from a decrease of quantum relative entropy," *Annales Henri Poincare*, vol. 19, no. 10, pages 2955–2978, October 2018. arXiv:1509.07127

109. Haoyu Qi, Kunal Sharma, Mark M. Wilde, "Entanglement-assisted private communication over quantum broadcast channels," *Journal of Physics A: Mathematical and Theoretical*, vol. 51, no. 37, page 374001, September 2018. arXiv:1803.03976

108. Mark M. Wilde, "Optimized quantum f-divergences and data processing," *Journal of Physics A: Mathematical and Theoretical*, vol. 51, no. 37, page 374002, September 2018. arXiv:1710.10252

107. Mario Berta, Fernando G. S. L. Brandao, Christian Majenz, Mark M. Wilde, "Conditional decoupling of quantum information," *Physical Review Letters*, vol. 121, no. 4, page 040504, July 2018. arXiv:1808.00135

106. Kaushik P. Seshadreesan, Ludovico Lami, Mark M. Wilde, "Rényi relative entropies of quantum Gaussian states," *Journal of Mathematical Physics*, vol. 59, no. 7, page 072204, July 2018. arXiv:1706.09885

105. Mark M. Wilde, "Strong and uniform convergence in the teleportation simulation of bosonic Gaussian channels," *Physical Review A*, vol. 97, no. 6, page 062305, June 2018. arXiv:1712.00145

104. Stephanie Wehner, Mark M. Wilde, Mischa P. Woods, "Work and reversibility in quantum thermodynamics," *Physical Review A*, vol. 97, no. 6, page 062114, June 2018. arXiv:1506.08145

103. Noah Davis, Maksim E. Shirokov, Mark M. Wilde, "Energy-constrained two-way assisted private and quantum capacities of quantum channels," *Physical Review A*, vol. 97, no. 6, page 062310, June 2018. arXiv:1801.08102

102. Kunal Sharma, Mark M. Wilde, Sushovit Adhikari, Masahiro Takeoka. "Bounding the energy-constrained quantum and private capacities of phase-insensitive Gaussian channels," *New Journal of Physics*, vol. 20, page 063025, June 2018. arXiv:1708.07257

101. Mario Berta, Mark M. Wilde, "Amortization does not enhance the max-Rains information of a quantum channel," *New Journal of Physics*, vol. 20, page 053044, May 2018. arXiv:1709.04907

100. Ludovico Lami, Siddhartha Das, Mark M. Wilde, "Approximate reversal of quantum Gaussian dynamics," *Journal of Physics A: Mathematical and Theoretical*, vol. 51, no. 12, page 125301, March 2018. arXiv:1702.04737

99. Dawei Ding and Mark M. Wilde, "Strong converse exponents for the feedback-assisted classical capacity of entanglement-breaking channels," *Problems of Information Transmission*, vol. 54, no. 1, pages 1-19, January 2018. arXiv:1506.02228

98. Felix Leditzky, Eneet Kaur, Nilanjana Datta, Mark M. Wilde, "Approaches for approximate additivity of the Holevo information of quantum channels," *Physical Review A*, vol. 97, no. 1, page 012332, January 2018. arXiv:1709.01111

97. Eneet Kaur, Mark M. Wilde, "Amortized entanglement of a quantum channel and approximately teleportation-simulable channels," *Journal of Physics A: Mathematical and Theoretical*, vol. 51, no. 3, page 035303, January 2018. arXiv:1707.07721

96. Siddhartha Das, Sumeet Khatri, George Siopsis, Mark M. Wilde, "Fundamental limits on quantum dynamics based on entropy change," *Journal of Mathematical Physics*, vol. 59, no. 1, page 012205, January 2018. arXiv:1707.06584

95. Eneet Kaur, Mark M. Wilde, "Upper bounds on secret key agreement over lossy thermal bosonic channels," *Physical Review A*, vol. 96, no. 6, page 062318, December 2017. arXiv:1706.04590

94. Eneet Kaur, Mark M. Wilde, "Relative entropy of steering: On its definition and properties," *Journal of Physics A: Mathematical and Theoretical*, vol. 50, no. 46, page 465301, November 2017. arXiv:1612.07152

93. Qingle Wang, Siddhartha Das, Mark M. Wilde, "Hadamard quantum broadcast channels," *Quantum Information Processing*, vol. 16, no. 10, article no. 248, October 2017. arXiv:1611.07651

92. Mark M. Wilde, "Position-based coding and convex splitting for private communication over quantum channels," *Quantum Information Processing*, vol. 16, no. 10, article no. 264, October 2017. arXiv:1703.01733

91. Masahiro Takeoka, Kaushik P. Seshadreesan, Mark M. Wilde, "Unconstrained capacities of quantum key distribution and entanglement distillation for pure-loss bosonic broadcast channels," *Physical Review Letters*, vol. 119, no. 15, page 150501, October 2017. arXiv:1706.06746

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4. Mark M. Wilde, Hari Krovi, and Todd A. Brun, "Convolutional entanglement distillation," *Proceedings of the 2010 IEEE International Symposium on Information Theory*, pages 2657–2661, Austin, Texas, USA, June 2010. arXiv:0708.3699

3. Min-Hsiu Hsieh and Mark M. Wilde, "Optimal trading of classical communication, quantum communication, and entanglement," *Proceedings of the 4th Workshop on Theory of Quantum Computation, Communication and Cryptography*, pages 85–93, Waterloo, Ontario, Canada, May 2009.
2. Mark M. Wilde and Todd A. Brun, "Unified quantum convolutional coding," *Proceedings of the 2008 IEEE International Symposium on Information Theory*, pages 359–363, arXiv:0801.0821, Toronto, Ontario, Canada, July 2008. arXiv:0801.0821
1. Mark M. Wilde and Bart Kosko, "Quantum forbidden-interval theorems for stochastic resonance with squeezed light," in *Proceedings of the 8th International Conference on Quantum Communication, Measurement, and Computing*, pages 553–556, December 2006.

Book Chapters

3. Mark M. Wilde, "Introduction to Quantum Convolutional Codes," Chapter in *Quantum Error Correction*, Cambridge University Press, October 2013.
2. Mark M. Wilde, "Error Correction in Quantum Communication," Chapter in *Quantum Error Correction*, Cambridge University Press, October 2013.
1. Bart Kosko, Ian Lee, Sanya Mitaim, Ashok Patel and Mark M. Wilde, "Applications of Forbidden Interval Theorems in Stochastic Resonance," Chapter in *Applications of Nonlinear Dynamics*, Springer Berlin / Heidelberg, February 2009.

Pre-print Articles

20. Zixin Huang, Mark M. Wilde, "Semi-definite optimization of the measured relative entropies of quantum states and channels," arXiv:2406.19060. June 2024.
19. Theshani Nuradha, Mark M. Wilde, "Contraction of Private Quantum Channels and Private Quantum Hypothesis Testing," arXiv:2406.18651. June 2024.
18. Nana Liu, Qisheng Wang, Mark M. Wilde, Zhicheng Zhang, "Quantum algorithms for matrix geometric means," arXiv:2405.00673. May 2024.
17. Theshani Nuradha, Hemant K. Mishra, Felix Leditzky, Mark M. Wilde "Multivariate Fidelities," arXiv:2404.16101. April 2024.
16. Soorya Rethinasamy, Margarite L. LaBorde, Mark M. Wilde, "Logarithmic-Depth Quantum Circuits for Hamming Weight Projections," arXiv:2404.07151. April 2024.
15. Vishal Singh, Mark M. Wilde, "No-go theorem for probabilistic one-way secret-key distillation," arXiv:2404.01392. April 2024.
14. Hao-Chung Cheng, Nilanjana Datta, Nana Liu, Theshani Nuradha, Robert Salzmann, Mark M. Wilde, "An invitation to the sample complexity of quantum hypothesis testing," arXiv:2403.17868. March 2024.
13. Karol Horodecki, Leonard Sikorski, Siddhartha Das, Mark M. Wilde, "Cost of quantum secret key," arXiv:2402.17007. February 2024.
12. Soorya Rethinasamy, Ethan Guo, Alexander Wei, Mark M. Wilde, Kristina D. Launey, "Neutron-nucleus dynamics simulations for quantum computers," arXiv:2402.14680. February 2024.
11. Jingxuan Chen, Hanna Westerheim, Zoë Holmes, Ivy Luo, Theshani Nuradha, Dhrumil Patel, Soorya Rethinasamy, Kathie Wang, Mark M. Wilde, "QSlack: A slack-variable approach for variational quantum semi-definite programming," arXiv:2312.03830. December 2023.
10. Hanna Westerheim, Jingxuan Chen, Zoë Holmes, Ivy Luo, Theshani Nuradha, Dhrumil Patel, Soorya Rethinasamy, Kathie Wang, Mark M. Wilde, "Dual-VQE: A quantum algorithm to lower bound the ground-state energy," arXiv:2312.03083. December 2023.

9. Soorya Rethinasamy, Margarite L. LaBorde, Mark M. Wilde, "Quantum Computational Complexity and Symmetry," arXiv:2309.10081. September 2023.
8. Kaiyuan Ji, Bartosz Regula, Mark M. Wilde, "Postselected communication over quantum channels," arXiv:2308.02583. August 2023.
7. Gilad Gour, Mark M. Wilde, Sarah Brandsen, Isabelle Jianing Geng, "Inevitability of knowing less than nothing," arXiv:2208.14424. August 2022.
6. Sarah Brandsen, Isabelle J. Geng, Mark M. Wilde, Gilad Gour, "Quantum conditional entropy from information-theoretic principles," arXiv:2110.15330, October 2021.
5. Aliza U. Siddiqui and Mark M. Wilde, "Quantifying the performance of bidirectional quantum teleportation," arXiv:2010.07905, October 2020.
4. Mark M. Wilde, Sumeet Khatri, Eneet Kaur, Saikat Guha, "Second-order coding rates for key distillation in quantum key distribution," arXiv:1910.03883, October 2019.
3. Stefan Bäuml, Siddhartha Das, Xin Wang, Mark M. Wilde, "Resource theory of entanglement for bipartite quantum channels," arXiv:1907.04181, July 2019.
2. Masahiro Takeoka, Mark M. Wilde, "Optimal estimation and discrimination of excess noise in thermal and amplifier channels," arXiv:1611.09165, November 2016.
1. Haoyu Qi, Mark M. Wilde, and Saikat Guha, "Thermal states minimize the output entropy of single-mode phase-insensitive Gaussian channels with an input entropy constraint," arXiv:1607.05262, July 2016.

Conference Presentations (Invited Talks)

18. Mark M. Wilde, "Recoverability for optimized f-divergences," Invited talk at *Entropy Inequalities, Quantum Information and Quantum Physics*, University of California, Los Angeles, California, February 2021.
17. Mark M. Wilde, "Resource theory of asymmetric distinguishability," Invited talk at *Algebraic and Statistical Ways into Quantum Resource Theories*, Banff International Research Station, Banff, Canada, July 2019. Invited talk at *SwissMap Workshop Mathematical Physics meets Quantum Information*, Leysin, Switzerland, June 2019. Poster presentation at the *22nd Annual Southwest Quantum Information and Technology Workshop*, Eugene, OR, USA, February 2020. Contributed talk at the *American Physical Society March Meeting*, Denver, CO, March 2020.
16. Mark M. Wilde, "A tale of quantum data processing and recovery," Invited talk at the *Fifth London Symposium on Information Theory (LSIT 2019)*, London, UK, May 2019.
15. Xin Wang, Mark M. Wilde, "α-Logarithmic negativity," Invited talk at *Mathematical Aspects in Current Quantum Information Theory*, Seoul National University, Seoul, Korea, May 2019.
14. Sumeet Khatri, Kunal Sharma, Mark M. Wilde, "Generalized amplitude damping channel: The single greatest qubit mystery in quantum Shannon theory," Invited talk at *New Directions in Quantum Information*, Nordita, Stockholm, Sweden, April 2019.
13. Mark M. Wilde, "Energy-constrained private and quantum capacities of quantum channels," Invited talk, dedicated to Alexander S. Holevo on the occasion of his 75th birthday, *International Conference on Quantum Information, Statistics, Probability*, Steklov Mathematical Institute, Moscow, Russia, September 2018. Invited talk at *Quantum Limits of Optical Communication II*, University of Warsaw, Warsaw, Poland, September 2018.
12. Mark M. Wilde, "Quantum Communication," Invited talk at the *Air Force Global Strike Command Workshop*, Bossier City, Louisiana, USA, May 2018.

11. Mark M. Wilde, "Optimized quantum f-divergences and data processing," Invited talk at the *Analysis in Quantum Information Theory Conference*, Institut Henri Poincaré, Paris, France, December 2017. Invited talk at the *American Mathematical Society Special Session* on "Mathematical Perspectives in Quantum Information Theory," Northeastern University, Boston, MA, USA, April 2018.
10. Mark M. Wilde, "Trading resources in quantum Shannon theory," Invited talk at the *Central European Workshop on Quantum Information Processing (CEQIP)*, Valtice, Czech Republic, June 2016. Invited talk at the *Information Theory Workshop*, Kaohsiung, Taiwan, November 2017.
9. Mark M. Wilde, "Converse bounds for private communication over quantum channels," Invited talk at the *Third Workshop on Scalable Information Processing with Quantum Nano-Photonics (SIPQNP)*, Waltham, MA, USA, March 2016. Poster presentation at the *4th Beyond i.i.d. in Information Theory Conference*, Barcelona, Spain, July 2016. Invited talk at *QCrypt 2016*, Washington DC, USA, September 2016. Contributed talk at the *Twentieth Workshop on Quantum Information Processing*, Seattle, WA, USA, January 2017. Invited talk at *Within and Beyond Quantum Mechanics*, Sopot, Poland, May 2017.
8. Mark M. Wilde, "Universal recoverability in quantum information theory," Invited talk at *Mathematical Results in Quantum Physics (QMath 2016)*, Atlanta, GA, October 2016. Contributed talk at the *18th Annual Southwest Quantum Information and Technology Workshop*, Albuquerque, New Mexico, February 2016. Contributed talk at the *American Physical Society March Meeting*, Baltimore, Maryland, March 2016.
7. Mark M. Wilde, "Quantum information theory: i.i.d. and beyond," Invited talk at the *2nd Beyond i.i.d. in Information Theory Conference*, Singapore, May 2014.
6. Mark M. Wilde, "Theory of QIP: Quantum Optical Communication," Invited talk at the *First Workshop on Scalable Information Processing with Quantum Nano-Photonics (SIPQNP)*, Boston, MA, USA, January 2014.
5. Mark M. Wilde, Nilanjana Datta, Min-Hsiu Hsieh, and Andreas Winter, "Quantum rate distortion coding with auxiliary resources," Invited talk at the *1st Beyond i.i.d. in Information Theory Conference*, Cambridge, UK, January 2013.
4. Mark M. Wilde, Saikat Guha, Si-Hui Tan, Seth Lloyd, "Explicit receivers for optical communication and quantum reading," Invited talk at the *Third Nagoya Winter Workshop on Quantum Information, Measurement, and Foundations*, Nagoya, Japan, February 2012.
3. Mark M. Wilde, Patrick Hayden, Saikat Guha, "Information Trade-offs for Optical Quantum Communication," Invited talk at the *CORNER Workshop*, University of Cambridge, July 2011.
2. Mark M. Wilde, "The Quest for a Quantum Simultaneous Decoder," Invited talk at the *Difficult Problems in Quantum Information Theory Conference*, Massachussetts Institute of Technology, Cambridge, MA, USA, May 2011.
1. Mark M. Wilde, "Additivity in quantum Shannon theory," Invited Tutorial at the *2010 International Workshop on Quantum Information Science*, Tokyo, Japan, March 2010.

Conference Presentations (Contributed Talks)

21. "Bounding the forward classical capacity of bipartite quantum channels," Contributed talk at the *American Physical Society March Meeting*, March 2021.
20. Xin Wang, Mark M. Wilde, "Entanglement cost of quantum state preparation and channel simulation," Contributed talk at *21st Annual Southwest Quantum Information and Technology Workshop*, Albuquerque, New Mexico, February 2019.
19. Mark M. Wilde, Mario Berta, Fernando Brandao, and Christian Majenz, "Deconstruction and Conditional Erasure of Quantum Correlations," Contributed talk at the *American Physical Society March Meeting*, New Orleans, Louisiana, USA, March 2017.

18. Mark M. Wilde, "Fidelity of recovery, geometric squashed entanglement, and measurement recoverability," Contributed talk at the *17th Annual Southwest Quantum Information and Technology Workshop*, Berkeley, California, February 2015.
17. Kevin Milner, Gus Gutoski, Patrick Hayden, and Mark M. Wilde, "Quantum interactive proofs and the complexity of entanglement detection," Contributed talk at the *17th Workshop on Quantum Information Processing*, Barcelona, Spain, February 2014.
16. Mark M. Wilde, Patrick Hayden, and Kevin Milner, "How hard is it to decide if a quantum state is separable or entangled?," Contributed talk at the *American Physical Society March Meeting*, Baltimore, Maryland, USA, March 2013.
15. Mark M. Wilde, Patrick Hayden, Francesco Buscemi, and Min-Hsiu Hsieh, "Information-theoretic costs of simulating quantum measurements," Contributed talk at the *INTRIQ Biannual Meeting*, Lac Brome, Canada, September 2012.
14. Mark M. Wilde, Joseph M. Renes, "Polar codes for private classical communication," Contributed talk at the *6th International Conference on Information-Theoretic Security*, Montreal, Canada, August 2012.
13. Mark M. Wilde, Saikat Guha, "Polar codes for achieving the classical capacity of a quantum channel," Contributed talk at the *American Physical Society March Meeting*, Boston, MA, USA, March 2012.
12. Nilanjana Datta, Min-Hsiu Hsieh, Mark M. Wilde, "Quantum rate distortion, reverse Shannon theorems, and source-channel separation," Contributed talk at the *15th Workshop on Quantum Information Processing*, Montreal, Quebec, December 2011.
11. Omar Fawzi, Patrick Hayden, Ivan Savov, Pranab Sen, Mark M. Wilde, "Advances in classical communication for network quantum information theory," Contributed talk at the *15th Workshop on Quantum Information Processing*, Montreal, Quebec, December 2011.
10. Mark M. Wilde and Saikat Guha, "Polar Codes for Classical, Private, and Quantum Communication," Contributed talk at the *Workshop on Quantum Information: Codes, Geometry and Random Structures*, Centre de Recherches Mathematiques, October 2011.
9. Mark M. Wilde, Patrick Hayden, Saikat Guha, "Information Trade-offs for Optical Quantum Communication," Contributed talk at the *Biannual INTRIQ Workshop*, McGill University, October 2011.
8. Mark M. Wilde and Min-Hsiu Hsieh, "Trading Resources in Quantum Communication," Contributed talk at the *10th Asian Conference on Quantum Information Science* in Tokyo, Japan, August 2010.
7. Mark M. Wilde and Min-Hsiu Hsieh, "Trade-off Capacities for Quantum Channels II: Completing the Analogy between the Classical and Quantum Worlds," Contributed talk at the *INTRIQ Biannual meeting* in Saint-Sauveur, Quebec, Canada, June 2010.
6. Kamil Bradler, Patrick Hayden, Dave Touchette, Mark M. Wilde, "Trade-off capacities of the quantum Hadamard channels," Rump session presentation at *The Thirteenth Workshop on Quantum Information Processing* in Zurich, Switzerland, January 2010.
5. Mark M. Wilde and Todd A. Brun, "Quantum Convolutional Coding with Entanglement Assistance," Contributed talk at the *American Physical Society March Meeting* in New Orleans, Louisiana, March 2008.
4. Mark M. Wilde and Todd A. Brun, "Quantum Convolutional Coding with Entanglement Assistance," Contributed talk at the University of New Mexico for the *10th Annual Southwest Quantum Information and Technology Network Workshop* in Albuquerque, New Mexico, February 2008.
3. Mark M. Wilde, Hari Krovi, and Todd A. Brun, "Convolutional Entanglement Distillation," Contributed talk at the University of Southern California for the *First International Conference on Quantum Error Correction* in Los Angeles, California, December 2007.

2. Mark M. Wilde, Hari Krovi, Jonathan P. Dowling, and Todd A. Brun, "Coherent Communication of Continuous Quantum Variables with Linear Optics," Contributed talk at the University of Rochester for the *International Conference of Quantum Information*, June 2007.
1. Mark M. Wilde, Hari Krovi and Todd A. Brun, "Coherent Communication with Continuous Variables," Contributed talk at Caltech for the *Southwest Quantum Information and Technology Network Workshop*, February 2007.

Seminars

49. "Gaussian Hypothesis Testing and Quantum Illumination," Macquarie University, October 2021.
48. "Closed Timelike Curves and Quantum Information Processing," University of Leipzig, Germany, June 2021.
47. "Applying Quantum Information-Theoretic Techniques to Quantum Complexity Theory," Quantum Computing in Isolation Seminar, May 2021.
46. "Quantum Information Theory Tutorial," University of South Florida, April 2021.
45. "Quantum Entanglement: Applications in Communication, Cryptography, and Complexity," Department of Computer Science Colloquium at University of Texas Austin, April 2021. School of Electrical and Computer Engineering Colloquium, Cornell University, April 2021. Department of Physics Colloquium, University of Georgia, March2021. Raman Research Institute, August 2021.
44. "Bounding the forward classical capacity of bipartite quantum channels," Seminar for Grup d'Informació Quàntica, Universitat Autònoma de Barcelona, Barcelona, Spain, February 2021.
43. "α-Logarithmic negativity," Functional Analysis and Operator Theory Webinar, January 2021.
42. "On the quantum Rényi relative entropies and their use," Information Systems Laboratory Colloquium, Stanford University, CA, USA, September 2020. QuICS Seminar, QuICS, University of Maryland and NIST Maryland, September, 2020.
41. "Generalized amplitude damping channel: The single greatest qubit mystery in quantum Shannon theory," Quantum Seminar at Tulane University, New Orleans, Louisiana, USA, March 2020. QFarm Seminar, Stanford University, Stanford, CA, USA, April 2020.
40. "Resource theory of asymmetric distinguishability," College of Optical Sciences, University of Arizona, Tucson, AZ, USA, December 2019. Quantum Seminar, Stanford University, Stanford, California, January 2020.
39. "Extendibility limits the performance of quantum processors," Imperial College London, London, UK, May 2018.
38. "Strong and uniform convergence in the teleportation simulation of bosonic Gaussian channels," Oxford Advanced Seminar on Informatic Structures, Department of Computer Science, University of Oxford, Oxford, UK, May 2018. Tulane Quantum Seminar, Tulane University, New Orleans, Louisiana, USA, April 2018. University of Nottingham, Nottingham, UK, July 2018.
37. "Converse bounds for private communication over quantum channels," Seminar for the Quantum Information Research Group at the Autonomous University of Barcelona, Barcelona, Spain, July 2016. Seminar at the University of Camerino, Camerino, Italy, June 2016. Seminar at QuTech, Technical University of Delft, Delft, Netherlands, May 2016. Presentation at "Within and Beyond Quantum Mechanics," Sopot, Poland, May 2017. Seminar at ENS Lyon, France, June 2017.
36. "Trading resources in quantum Shannon theory," NICT, Koganei, Tokyo 184-8795, Japan, December 2015. Center for Quantum Information and Control, University of New Mexico, January 2019.
35. "Universal recoverability in quantum information theory," NICT, Koganei, Tokyo 184-8795, Japan, December 2015.
34. "Recoverability in quantum information theory," LSU Department of Physics and Astronomy Colloquium, Baton Rouge, Louisiana, USA, September 2015.

33. "Recoverability in quantum information theory," Seminar for the Quantum Information and Nonlinear Optics Group in the Department of Physics and Engineering Physics at Tulane University, New Orleans, Louisiana, USA, July 2015.

32. "Attempting to reverse the irreversible in quantum physics," Seminar for the Centre for Quantum Information and Foundations in the Centre for Mathematical Sciences at the University of Cambridge, Cambridge, UK, January 2015.

31. "Strong converse exponents for a quantum channel discrimination problem," Seminar for the Center for Extreme Quantum Information Theory at the Massachusetts Institute of Technology, Cambridge, MA, USA, December 2014.

30. "Rényi generalizations of the conditional mutual information," Seminar for the Quantum Information Processing Group at Raytheon BBN Technologies, Cambridge, MA, USA, April 2014. Seminar for the Mathematics Department at Louisiana State University, Baton Rouge, Louisiana, USA, April 2014. Seminar for the Quantum Information Research Group at the Autonomous University of Barcelona, Barcelona, Spain, May 2014.

29. "Strong converse for entanglement-assisted capacity," Seminar for the workshop "Mathematical Challenges in Quantum Information" at the Isaac Newton Institute, University of Cambridge, Cambridge, UK, December 2013.

28. "The squashed entanglement of a quantum channel," Seminar for the quantum group at University College London, London, UK, December 2013.

27. "Strong converse theorems in quantum information theory," Seminar for the Q+ group on Google Plus, November 2013.

26. "Strong converse for the classical capacity of entanglement-breaking and Hadamard channels," Seminar for the Quantum Information Processing Group at Raytheon BBN Technologies, Cambridge, MA, USA, June 2013; Center for Theoretical Physics, Massachusetts Institute of Technology, July 2013.

25. "Two-message quantum interactive proofs and the quantum separability problem," Seminar for the Centre for Quantum Information and Foundations in the Centre for Mathematical Sciences at the University of Cambridge, Cambridge, United Kingdom, January 2013; Quantum Chemistry and Quantum Computation Group at Harvard University, July 2013; Center for Quantum Information Science and Technologies at the University of Southern California, May 2013; Quantum Information Group at the Autonomous University of Barcelona, May 2013.

24. "The Information-Theoretic Costs of Simulating Quantum Measurements," Seminar for the Quantum Information Theory Group at the Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Canada, April 2012.

23. "Quantum Information and Optical Communication," Seminar for the Department of Physics and Astronomy at Louisiana State University, Baton Rouge, Louisiana, USA, April 2012.

22. "Quantum Computation and Quantum Error Correction," Seminar for the Center for Computation and Technology at Louisiana State University, Baton Rouge, Louisiana, USA, April 2012.

21. "Explicit Receivers for Optical Communication and Quantum Reading," Seminar for the Physics of Information group at IBM Research, Yorktown Heights, New York, March 2012.

20. "The Quest for a Quantum Simultaneous Decoder," Seminar for the Centre for Quantum Information and Foundations at the University of Cambridge, Cambridge, United Kingdom, July 2011.

19. "Information Trade-offs for Quantum Optical Communication," Department of Physics Colloquium at the Université de Sherbrooke, Sherbrooke, Québec, Canada, June 2011.

18. "How Alice should balance the photon budget in quantum communication," Seminar for the Disruptive Information Processing Technologies Group at Raytheon BBN, Boston, Massachusetts, USA, May 2011.

17. "Entanglement boosts quantum turbo codes," Institute for Quantum Computing Colloquium, University of Waterloo, Waterloo, Ontario, Canada, November 2010.

16. "Entanglement boosts quantum turbo codes," Center for Quantum Information and Quantum Control, University of Toronto, Toronto, Ontario, Canada, October 2010.
15. "Trading Resources in Quantum Communication," Institute for Quantum Information, California Institute of Technology, Pasadena, California, USA, August 2010.
14. "Trade-off capacities of the quantum Hadamard channels," ERATO-SORST Project of the Japan Science and Technology Agency, Tokyo, Japan, February 2010.
13. "Non-classical Behavior of Biological Systems at Room Temperature," Department of Chemistry and Chemical Biology at Harvard University and Department of Physics and Astronomy at Louisiana State University, October 2009.
12. "Claude Shannon Meets Quantum Mechanics: An Introduction to Quantum Shannon Theory," Department of Electrical Engineering and Department of Mathematics at the George Washington University, August 2009.
11. "Optimal Trading of Classical Communication, Quantum Communication, and Entanglement," School of Computer Science at McGill University and Naval Research Laboratory in Washington, DC, July 2009.
10. "Quantum Shift Register Circuits," Laser Cooled and Trapped Atoms Group of the Atomic Physics Division of the National Institute of Standards and Technology in Gaithersburg, Maryland, June 2009.
9. "The Classically-Enhanced Father Protocol," Northtrop Grumman Space Technology Research Laboratory and Department of Electrical Engineering, University of Southern California, December 2008.
8. "Entanglement-Assisted Quantum Error Correction," Centre for Quantum Technologies at the National University of Singapore, November 2008.
7. "Closed Timelike Curves Enable Perfect State Distinguishability," Centre for Quantum Technologies at the National University of Singapore, October 2008.
6. "Entanglement-Assisted Quantum Convolutional Coding," Quantum Group at NEC Laboratories America, September 2008.
5. "Quantum Coding with Entanglement," Quantum Lunch Seminar for the Quantum Institute at Los Alamos National Laboratory, April 2008.
4. "Quantum Convolutional Coding Techniques," Information Processing Group at the Jet Propulsion Laboratory, December 2007.
3. "Quantum Convolutional Coding with Shared Entanglement for Distillation and Error Correction," Hearne Institute for Theoretical Physics at Louisiana State University, November 2007.
2. "Quantum Communication, Quantum Entanglement, and All That Jazz," Tulane University, November 2007.
1. "Entanglement-Assisted Quantum Error Correction," Hearne Institute for Theoretical Physics at Louisiana State University, July 2007.

Conference Presentations (Posters)

14. Gilad Gour, Mark M. Wilde, "Entropy of a quantum channel," Poster presentation at the *Twenty Second Workshop on Quantum Information Processing*, University of Colorado Boulder, Boulder, CO, USA, January 2019.
13. Samad Khabbazi Oskouei, Stefano Mancini, Mark M. Wilde, "Union bound for quantum information processing," Poster presentation at the *6th Beyond i.i.d. in Information Theory Conference*, Isaac Newton Institute, University of Cambridge, Cambridge, UK, July 2018.

12. "Position-based coding and convex splitting for private communication over quantum channels," Poster presentation at the *5th Beyond i.i.d. in Information Theory Conference*, Institute for Mathematical Sciences, National University of Singapore, Singapore, July 2017.
11. Mark M. Wilde, Ludovico Lami, Siddhartha Das, "Approximate reversal of quantum Gaussian dynamics," Poster presentation at the *Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2017)*, Paris, France, June 2017.
10. Mark M. Wilde, "Recoverability in quantum information theory," Poster presentation at the *3rd Beyond i.i.d. in Information Theory Conference*, Banff, Canada, July 2015.
9. Monireh Houshmand, Saied Hosseini-Khayat, and Mark M. Wilde, "Minimal-Memory, Non-catastrophic Quantum Convolutional Encoders" and Mark M. Wilde and Min-Hsiu Hsieh, "Entanglement boosts quantum turbo codes," Poster presentations at the *14th Workshop on Quantum Information Processing*, Singapore, January 2011.
8. Mark M. Wilde and Min-Hsiu Hsieh, "Entanglement boosts quantum turbo codes," Poster presentation at the *INTRIQ Biannual meeting* in Sherbrooke, Quebec, Canada, September 2010.
7. Mark M. Wilde and Min-Hsiu Hsieh, "Trading Resources in Quantum Communication," Poster presentation at the *QuantumWorks Fifth Annual General Meeting* in Ottawa, Ontario, Canada, June 2010.
6. Mark M. Wilde, "Quantum shift-register circuits," Poster presentation at *The Thirteenth Workshop on Quantum Information Processing* in Zurich, Switzerland, January 2010.
5. Jim Harrington, Mark M. Wilde and Todd A. Brun, "Closed timelike curves enable perfect state distinguishability," Poster presentation at *The Twelfth Workshop on Quantum Information Processing* in Santa Fe, New Mexico, January 2009.
4. Min-Hsiu Hsieh and Mark M. Wilde, "The Classically-Enhanced Father Protocol," Poster presentation at *The Twelfth Workshop on Quantum Information Processing* in Santa Fe, New Mexico, January 2009.
3. Mark M. Wilde and Dmitry B. Uskov, "Linear-Optical Hyperentanglement-Assisted Quantum Code," Poster presentation at the *Quantum Computing Program Review* in Atlanta, Georgia, August 2008.
2. Mark M. Wilde, Todd A. Brun, Hwang Lee, and Jonathan P. Dowling, "Coherent Communication with Linear Optics," Poster presentation at the *Quantum Computing Program Review* in Minneapolis, August 2007.
1. Mark M. Wilde, Federico Spedalieri, Jonathan P. Dowling, and Hwang Lee, "Optical Cluster-State Generation without Number-Resolving Photon Detectors," Poster presentation at *Frontiers in Optics* in Rochester, NY, October 2006.

Other Documents

1. Mark M. Wilde, "Quantum coding with entanglement," Ph.D. Thesis, University of Southern California, August 2008. arXiv:0806.4214

Service

Associate Editor for Quantum Information Theory at *IEEE Transactions on Information Theory* from May 2015 until November 2021

Associate Editor at *New Journal of Physics* from January 2018 until April 2022

Journal Editorial Board Member for *Quantum Information Processing* since March 2012

Co-organizer of QuILT Day (Quantum Information Technologies in Louisiana), March 2020, November 2019,July 2019, March 2019, November 2018, May 2018

Scientific co-organizer for 2018 Southwest Quantum Information and Technology Workshop

Lead local organizer for 2017 Southwest Quantum Information and Technology Workshop (hosted at LSU CCT during February 2017);

Co-organizer of *Beyond i.i.d. in information theory 2020, 2016, 2015*, Steering committee member since 2020

Program Committee Chair for *2018 Quantum Communication, Measurement, and Computing*, *2017 Conference on Theory of Quantum Computation, Communication, and Cryptography*;

Organizer of Focus Sessions on quantum information theory during the 2017 and 2016 APS March Meetings

Program Committee Member for *2020, 2017, 2013 Quantum Information Processing Conference*; *2022, 2021, 2020, 2015, 2014 International Symposium on Information Theory*; *2016, 2014 Conference on Theory of Quantum Computation, Communication, and Cryptography*; *2014 Asian Conference on Quantum Information Science*

Ph.D. thesis examiner for Yihui Quek, Stanford University (2021), Farzin Salek, Universitat Autònoma de Barcelona (2020), Eric Hanson, University of Cambridge (2020)

Reviewer for the U.S. National Science Foundation, the European Research Council, Czech Science Foundation

Journal Reviewer—*Physical Review Letters*, *Physical Review A*, *Nature*, *Nature Photonics*, *Nature Communications*, *Scientific Reports*, *IEEE Transactions on Information Theory*, *Communications in Mathematical Physics*, *Journal of Mathematical Physics*, *IEEE Communication Letters*, *IEEE International Symposium on Information Theory*, *Proceedings of the Royal Society A*, *Journal of Physics A: Mathematical and Theoretical*, *Journal of Physics B: Atomic, Molecular, and Optical Physics*, *Quantum Information Processing*, *Quantum Information and Computation*, *Optics Communications*

Writer for the *Quantum Times* (the newsletter for the Topical Unit on Quantum Information of the American Physical Society)

Honors and Awards

IEEE Fellow (2023)

Outstanding Referee of the American Physical Society (2021)

LSU Rainmaker Mid-Career Scholar Award (Science, Technology, Engineering & Mathematics) (2019)

AHP-Birkhäuser Prize, awarded to "the most remarkable contribution" published in the journal Annales Henri Poincaré (2018)

LSU College of Science Non-Tenured Faculty Research Award (2016)

LSU Alumni Association Rising Faculty Research Award (2015)

National Science Foundation Career Development Award (2014)

APS-IUSSTF Professorship Award in Physics (2014)

Senior Member of the IEEE (2013)

Centre de Recherches Mathématiques Thematic Postdoctoral Fellowship (2011-2013)

Best Teaching Assistant Award, Department of Electrical Engineering,
University of Southern California (2007)

School of Engineering Fellowship, University of Southern California (2004)

Teaching Assistantship, Tulane University (2002)

Thomas Barton Scholarship, Texas A&M University (1998)

Teaching Experience

Invited Lecturer, 2020 Mitteldeutsche Physik Combo,
Tutorial on entanglement theory, University of Leipzig,
Leipzig, Germany, September 2020

Invited Lecturer, 2019 Illinois Quantum Computing Summer School,
Discovery Partners Institute,
Chicago, Illinois, June 2019

Invited Lecturer, Summer School on "Mathematical Aspects of Quantum Information,"
Institut des Etudes Scientiques de Cargese,
Corsica, France, September 2017

Invited Lecturer, Tutorial on quantum information theory,
International Symposium on Information Theory,
Barcelona, Spain, July 2016

Lecturer, Short course on Quantum Information Theory,
Delft University of Technology,
Delft, Netherlands, Summer 2015

Lecturer, Short course on Quantum Information Theory,
Tata Institute of Fundamental Research,
Mumbai, India, Summer 2014

Lecturer, Introduction to Quantum Computation,
Department of Physics and Astronomy,
Center for Computation and Technology,
Louisiana State University, Spring 2014

Lecturer, Introduction to Quantum Information Theory,
Department of Physics and Astronomy,
Center for Computation and Technology,
Louisiana State University, Fall 2013

Invited Lecturer, Summer School on Quantum Integrable Systems and Quantum Information,
Hosted by the Dublin Institute for Advanced Studies,
Dungarvan, County Waterford, Ireland, August 2013

Invited Lecturer, 12th Canadian Summer School on Quantum Information,
University of Waterloo, Waterloo, Ontario, Canada, June 2012

Lecturer, Full semester course entitled "Introduction to Quantum Shannon Theory,"
McGill University, Winter 2011

Guest Lecturer, Quantum Computation,
"Reversible Computation,"
McGill University, Winter 2010

Teaching Assistant, Quantum Computation,
McGill University, Winter 2010

Guest Lecturer, "Mysteries of the Quantum World,"
"Introduction to Quantum Error Correction,"
Tulane University, Fall 2008

Guest Lecturer, Linear Algebra,
"Introduction to Quantum Information Processing,"
University of Southern California, Spring 2007

Teaching Assistant, Linear Signals and Systems,
University of Southern California, Fall 2005–Spring 2007