

# Mario Berta

## Publications

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### OVERVIEW

- Journal articles (peer-reviewed): 30
- Conference proceedings (peer-reviewed): 10
- Preprints: 5
- Citations: 1506
- H-Index: 21  
(according to Google Scholar as of February 7<sup>th</sup> 2017)
  
- **Physics:** Nature Physics, Nature Communications, Physical Review Letters (3x), New Journal of Physics, Reviews of Modern Physics.
- **Mathematical Physics:** Communications in Mathematical Physics (3x) and Annales Henri Poincaré (premier journals in the field).
- **Information Theory:** 8 papers in IEEE Transactions on Information Theory (premier journal in the field).
- **Cryptography:** Advances in Cryptology - CRYPTO (premier publication venue in the field).
- **Optimization Theory:** SIAM Journal on Optimization (premier journal in the field).
  
- The 5 most important publications are marked with a \*.

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### PEER-REVIEWED JOURNAL ARTICLES

- 1 **Mario Berta**, Volkher B. Scholz, Marco Tomamichel, *Rényi divergences as weighted non-commutative vector valued  $L_p$ -spaces*, Annales Henri Poincaré, accepted (2018).
- 2 Mark M. Wilde, Marco Tomamichel, Seth Lloyd, **Mario Berta**, *Gaussian hypothesis testing and quantum illumination*, Physical Review Letters 119, 120501 (2017).
- 3 **Mario Berta**, Omar Fawzi, Marco Tomamichel, *On variational expressions for quantum relative entropies*, Letters in Mathematical Physics 107, 2239 (2017).
- 4 **Mario Berta**, Hrant Gharibyan, Michael Walter, *Entanglement-assisted capacities of compound quantum channels*, IEEE Transactions on Information Theory 63, 3306 (2017).
- 5 Christian Majenz, **Mario Berta**, Frédéric Dupuis, Renato Renner, Matthias Christandl, *Catalytic decoupling of quantum information*, Physical Review Letters 118, 080503 (2017).

- 6 **Mario Berta**, Omar Fawzi, Volkher B. Scholz, *Quantum-proof randomness extractors via operator space theory*, IEEE Transactions on Information Theory 63, 2480 (2017).
- 7 Mark M. Wilde, Marco Tomamichel, **Mario Berta**, *Converse bounds for private communication over quantum channels*, IEEE Transactions on Information Theory 63, 1792 (2017).
- \*8 David Sutter, **Mario Berta**, Marco Tomamichel, *Multivariate trace inequalities*, Communications in Mathematical Physics 352, 37 (2017).
- \*9 **Mario Berta**, Omar Fawzi, Volkher B. Scholz, *Quantum bilinear optimization*, SIAM Journal on Optimization 26, 1529 (2016).
- 10 **Mario Berta**, Stephanie Wehner, Mark M. Wilde, *Entropic uncertainty and measurement reversibility*, New Journal of Physics 18, 073004 (2016).
- 11 Marco Tomamichel, **Mario Berta**, Joseph M. Renes, *Quantum coding with finite resources*, Nature Communications 7, 11419 (2016).
- 12 **Mario Berta**, Marco Tomamichel, *The fidelity of recovery is multiplicative*, IEEE Transactions on Information Theory 62, 1758 (2016).
- 13 **Mario Berta**, Matthias Christandl, Dave Touchette, *Smooth entropy bounds on one-shot quantum state redistribution*, IEEE Transactions on Information Theory 62, 1425 (2016).
- 14 **Mario Berta**, Fabian Furrer, Volkher B. Scholz, *The smooth entropy formalism for von Neumann algebras*, Journal of Mathematical Physics 57, 015213 (2016), Special Issue: Operator Algebras and Quantum Information Theory.
- 15 **Mario Berta**, Marius Lemm, Mark M. Wilde, *Monotonicity of quantum relative entropy and recoverability*, Quantum Information and Computation 15, 1333 (2015).
- 16 Kaushik P. Seshadreesan, **Mario Berta**, Mark M. Wilde, *Rényi squashed entanglement, discord, and relative entropy differences*, Journal of Physics A 48, 395303 (2015).
- 17 **Mario Berta**, Kaushik P. Seshadreesan, Mark M. Wilde, *Rényi generalizations of the conditional quantum mutual information*, Journal of Mathematical Physics 56, 022205 (2015).
- 18 **Mario Berta**, Kaushik P. Seshadreesan, Mark M. Wilde, *Rényi generalizations of quantum information measures*, Physical Review A 91, 022333 (2015).
- 19 Marco Tomamichel, **Mario Berta**, Masahito Hayashi, *Relating different quantum generalizations of the conditional Rényi entropy*, Journal of Mathematical Physics 55, 082206 (2014).
- 20 Fabian Furrer, **Mario Berta**, Marco Tomamichel, Volkher B. Scholz, Matthias Christandl, *Position-momentum uncertainty relations in the presence of quantum memory*, Journal of Mathematical Physics 55, 122205 (2014).
- 21 **Mario Berta**, Patrick J. Coles, Stephanie Wehner, *Entanglement-assisted guessing of complementary measurement outcomes*, Physical Review A 90, 062127 (2014).
- 22 **Mario Berta**, Joseph M. Renes, Mark M. Wilde, *Identifying the information gain of a quantum measurement*, IEEE Transactions on Information Theory 60, 7987 (2014).
- 23 **Mario Berta**, Omar Fawzi, Stephanie Wehner, *Quantum to classical randomness extractors*, IEEE Transactions on Information Theory 60, 1168 (2014).

- 24 Frédéric Dupuis, **Mario Berta**, Jürg Wullschleger, Renato Renner, *One-shot decoupling*, Communications in Mathematical Physics 328, 251 (2014).
- 25 **Mario Berta**, Fernando Brandão, Matthias Christandl, Stephanie Wehner, *Entanglement cost of quantum channels*, IEEE Transactions on Information Theory 59, 6779 (2013).
- 26 Fabian Furrer, Torsten Franz, **Mario Berta**, Anthony Leverrier, Volkher B. Scholz, Marco Tomamichel, Reinhard F. Werner, *Continuous variable quantum key distribution: finite-key analysis of composable security against coherent attacks*, Physical Review Letters 109, 100502 (2012).
- 27 Nelly Huei Ying Ng, **Mario Berta**, Stephanie Wehner, *A min-entropy uncertainty relation for finite size cryptography*, Physical Review A 86, 042315 (2012).
- \*28 **Mario Berta**, Matthias Christandl, Renato Renner, *The quantum reverse Shannon theorem based on one-shot information theory*, Communications in Mathematical Physics 306, 579 (2011).
- \*29 **Mario Berta**, Matthias Christandl, Rorger Colbeck, Joseph M. Renes, Renato Renner, *The uncertainty principle in the presence of quantum memory*, Nature Physics 6, 659 (2010).

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## PEER-REVIEWED REVIEW ARTICLES

- 30 Patrick J. Coles, **Mario Berta**, Marco Tomamichel, Stephanie Wehner, *Entropic uncertainty relations and their applications*, Reviews of Modern Physics 89, 015002 (2017).

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## PEER-REVIEWED CONFERENCE PROCEEDINGS

- 31 David Sutter, **Mario Berta**, Marco Tomamichel, *Quantum Markov chains and logarithmic trace inequalities*, IEEE International Symposium on Information Theory, pages 1988-1992 (2017).
- 32 Mark M. Wilde, Marco Tomamichel, **Mario Berta**, *A meta-converse for private communication over quantum channels*, IEEE International Symposium on Information Theory, pages 291-295 (2017).
- 33 **Mario Berta**, Omar Fawzi, Marco Tomamichel, *Exploiting variational formulas for quantum relative entropy*, IEEE International Symposium on Information Theory, pages 2844-2848 (2016).
- 34 **Mario Berta**, Omar Fawzi, Volkher B. Scholz, *Semidefinite programs for randomness extractors*, Conference on Theory of Quantum Computation, Communication, and Cryptography, Leibniz International Proceedings in Informatics 44, pages 73-91 (2015).
- 35 **Mario Berta**, Joseph M. Renes, Mark M. Wilde, *Identifying the information gain of a quantum measurement*, IEEE International Symposium on Information Theory, pages 331-335 (2014).
- 36 Marco Tomamichel, **Mario Berta**, Masahito Hayashi, *A duality relation connecting different quantum generalizations of the conditional Rényi entropy*, IEEE International Symposium on Information Theory, pages 731-735 (2014).
- 37 **Mario Berta**, Omar Fawzi, Volkher B. Scholz, Oleg Szehr, *Variations on classical and quantum extractors*, IEEE International Symposium on Information Theory, pages 1474-1478 (2014).

- \*38 **Mario Berta**, Omar Fawzi, Stephanie Wehner, *Quantum to classical randomness extractors*, Advances in Cryptology - CRYPTO, pages 776-793 (2012).
- 39 **Mario Berta**, Fernando Brandão, Matthias Christandl, Stephanie Wehner, *Entanglement cost of quantum channels*, IEEE International Symposium on Information Theory, pages 900-904 (2012).
- 40 **Mario Berta**, Matthias Christandl, Renato Renner, *A Conceptually simple proof of the quantum reverse Shannon theorem*, Conference on Theory of Quantum Computation, Communication, and Cryptography, pages 131-140 (2010).

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## PREPRINTS UNDER REVIEW

- 41 **Mario Berta**, Christian Majenz, *Disentanglement Cost of Quantum States*, arXiv:1708.00360 (2017), submitted to Physical Review Letters.
- 42 **Mario Berta**, Fernando Brandão, Jutho Haegeman, Volkher B. Scholz, Frank Verstraete, *Thermal States as Convex Combinations of Matrix Product States*, arXiv:1709.07423 (2017), submitted to Physical Review Letters.
- 43 **Mario Berta**, Fernando Brandão, Christoph Hirche, *On Composite Quantum Hypothesis Testing*, arXiv:1709.07268 (2017), submitted to Communication in Mathematical Physics.
- 44 **Mario Berta**, Mark M. Wilde, *Amortization does not enhance the max-Rains information of a quantum channel*, arXiv:1709.04907 (2017), submitted to New Journal of Physics.
- 45 **Mario Berta**, Fernando Brandão, Christian Majenz, Mark M. Wilde, *Deconstruction and conditional erasure of quantum correlations*, arXiv:1609.06994 (2016), submitted to Physical Review Letters.

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## THESIS

- 46 PhD Thesis **Mario Berta**, *Quantum side information: uncertainty relations, extractors, channel simulations*, ETH Zurich, Diss. ETH No. 21180 (2013), arXiv:1310.4581.
- 47 Diploma Thesis **Mario Berta**, *Single-shot quantum state merging*, ETH Zurich (2008). arXiv:0912.4495.