Marco Túlio Quintino

Curriculum Vitae

Associate Professor
Sorbonne Université – LIP6
Paris, France
✉ Marco.Quintino@lip6.fr
🌐 mtcq.github.io

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Research Interests

Quantum information and quantum computation, quantum correlations, causality in quantum theory, higher-order quantum operations, Bell nonlocality, EPR steering, entanglement, measurement incompatibility, quantum discrimination tasks, and Semidefinite Programming.

Employment

Sep 2022 – now	**Associate Professor (Maître de Conférences)**, *Sorbonne Université*, Paris, France Member of the Quantum Information team at LIP6
Mar 2021 – Aug 2022	**Postdoctoral researcher**, *IQOQI Vienna*, Vienna, Austria Postdoctoral Researcher at the group of Prof. Časlav Brukner Funding: ESQ postdoc fellowship
Jun 2020 – Mar 2021	**Postdoctoral researcher**, *University of Vienna*, Vienna, Austria Postdoctoral Researcher at the group of Prof. Časlav Brukner Funding: Austrian Science Fund (FWF) through the SFB project BeyondC
Mar 2019 – May 2020	**Postdoctoral researcher**, *The University of Tokyo*, Tokyo, Japan Postdoctoral Researcher at the group of Prof. Mio Murao Funding: Q-LEAP project of the MEXT Japan
Nov 2016 – Nov 2018	**Postdoctoral researcher**, *The University of Tokyo*, Tokyo, Japan Postdoctoral Researcher at the group of Prof. Mio Murao Funding: JSPS postdoc fellowship

Education

Oct 2012 – Sep 2016	**PhD in Physics**, *Université de Genève*, Geneva, Switzerland Thesis: Quantum entanglement and measurement incompatibility as resources for nonlocality Defence date: 09 Sep 2016 Supervisor: Nicolas Brunner Funding: SNF, Switzerland
Aug 2010 – Sep 2012	**MSc in Physics**, *UFMG*, Belo Horizonte, Brazil Thesis: Black box correlations: locality, noncontextuality, and convex polytopes Defence date: 12 Sep 2012 Supervisor: Marcelo Terra Cunha co-supervisor: Daniel Cavalcanti Funding: CAPES, Brazil

Feb 2007– Aug 2010	**BSc in Physics**, *UFMG*, Belo Horizonte, Brazil Monograph: Não-localidade como recurso para comunicação Supervisor: Marcelo Terra Cunha Funding: CNPq, Brazil

Grants and awards

2020	**Postdoc research fellowship**, *ESQ Postdoc Fellowship Program*, Austria/EU
2016	**Grant-In-Aid for Scientific Research**, *KAKENHI*, Japan
2016	**Postdoc research fellowship**, *JSPS Postdoc Fellowship*, Japan
2012	**Master's research stipend**, *CAPES Master's Stipend*, Brazil

Languages

Portuguese (native), English (fluent), French (fluent), Spanish (advanced), Japanese (intermediate)

Matlab (fluent), Mathematica (fluent), Python (elementary), Bash (elementary)

I use GitHub (https://github.com/mtcq) to share relevant computational code I develop.

Publications

Summary: 38 peer-reviewed journal publications, which include 12 Phys. Rev. Lett., 1 Nat Commun, 1 J. Math. Phys., 1 IEEE Trans. Inf. Theory, and 8 Quantum. 7 preprints in peer-reviewing process and more than 7- different co-authors.

Google Scholar counts over 2000 citations, 7 papers with more than 100 citations, an h-index of 23, and an i10-index of 30 (as of September 2023).

All my scientific papers are available at arXiv and at my personal website.

A list with all my publications can be found in the end of this CV.

Research supervision

I have co-supervised 2 PhD students, 3 master students, and I have supervised 3 master internship projects. Also, I have worked in close relation with several students (undergrad, master, and PhD) with different backgrounds at various institutions.

Apr 2023 – Jun 2023	**Master internship supervisor**, *Sorbonne Université*, Paris, France Shijun Zhang Project name: Perfect discrimination of unitary operations when k calls are available
Apr 2023 – Jun 2023	**Master internship supervisor**, *Sorbonne Université*, Paris, France Charbel Eid Project name: Optimal discrimination between quantum measurements and instruments
Apr 2023 – Jun 2023	**Master internship supervisor**, *Sorbonne Université*, Paris, France Ethan Obadia Project name: Quantum channel discrimination with partially entangled states
Jun 2017 – Jan 2022	**PhD co-supervisor**, *UFMG*, Belo Horizonte, Brazil Marcello Nery Article: Simple and maximally robust processes with no classical common-cause or direct-cause explanation – Quantum (2021) PhD Thesis: Non-classical common-cause and direct-cause

Jan 2018 – Dec 2020	**PhD co-supervisor**, *The University of Tokyo*, Tokyo, Japan Qingxiuxiong Dong Article: Success-or-Draw: A Strategy Allowing Repeat-Until-Success in Quantum Computation – Phys. Rev. Lett. (2021) MSc Thesis: Quantum algorithms for higher-order quantum transformations of universal unitary operations
Jul 2018 – Jul 2020	**MSc co-supervisor**, *The University of Tokyo*, Tokyo, Japan Wataru Yokojima Article: Consequences of preserving reversibility in quantum superchannels – Quantum (2021)
Jun 2017 – Jan 2018	**MSc co-supervisor**, *The University of Tokyo*, Tokyo, Japan Qingxiuxiong Dong Article: Implementing positive maps with multiple copies of an input state – Phys. Rev. A (2019) MSc Thesis: Quantum implementability of maps and supermaps
Aug 2015 – Aug 2016	**MSc co-supervisor**, *UFMG*, Belo Horizonte, Brazil Jessica Bavaresco Article: Most incompatible measurements for robust steering tests – Phys. Rev. A (2017) MSc Thesis: When Bob Cannot Trust Alice. A Semi-Device-Independent Tale of Quantum Steering

Teaching

current	**Course (10h)**, *Sorbonne Université, Master d'Informatique - Information Quantique (IQ), M1*, Paris, France MU4INQ05 - Quantum circuits and logic gates
current	**Tutorial (36.5h)**, *Sorbonne Université, Lincese d'Informatique, L2*, Paris, France LU2IN005 - Mathématiques Discrètes
2023/1	**Course (15h), Tutorial (15h)**, *Sorbonne Université, Master Sciences, Technologies, Santé, M1.*, Paris, France MU4PY223 - Théorie de Shannon classique et quantique
2023/1	**Tutorial (36.5h)**, *Sorbonne Université, Lincese d'Informatique, L3*, Paris, France LU3IN030 - Introduction à la calculabilité et à la décidabilité
2022/2	**Tutorial (36.5h)**, *Sorbonne Université, Lincese d'Informatique, L2*, Paris, France LU2IN005 - Mathématiques Discrètes
2022/2	**Course (2h), Tutorial (16h)**, *Sorbonne Université, Master d'Informatique - Information Quantique (IQ), M1.*, Paris, France MU4INQ01 - Quantum kinematics for computer scientists
2022/2	**Tutorial (14h)**, *Sorbonne Université, Master d'Informatique - Parcours Science et Technologie du Logiciel (STL), M2*, Paris, France MU5IN550 - Analyse d'algorithmes et génération aléatoire:
2022/2	**Course (6h), Tutorial (4h)**, *Sorbonne Université, Master d'Informatique - Information Quantique (IQ), M2*, Paris, France MU5PYQ03 - QIT: Quantum Information Theory
2021	**One lecture**, *Semana da Física 2021 – UNESP*, Caratinguetá (online), Brazil Não-localidade de Bell: como o indeterminismo quântico permite correlações supra-clássicas

2019	**One lecture**, *The University of Tokyo*, Tokyo, Japan
	What do you mean by random? Randomness, Quantum Mechanics, and Bell Non-locality – Undergraduate course in quantum technology
2016/1	**Teaching Assistant**, *Université de Genève*, Geneva, Switzerland
	Quantum Information Theory – Master Course
2015/2	**Teaching Assistant**, *Université de Genève*, Geneva, Switzerland
	Méthodes mathématiques pour physiciens I – Undergraduate Course
2015/1	**Teaching Assistant**, *Université de Genève*, Geneva, Switzerland
	Quantum Information Theory – Master Course
2014/1	**Teaching Assistant**, *Université de Genève*, Geneva, Switzerland
	Quantum Information Theory – Master Course
2013/1	**Teaching Assistant**, *Université de Genève*, Geneva, Switzerland
	Quantum Information Theory – Master Course
2011/1	**Teaching Assistant**, *IMPA*, Rio de Janeiro, Brazil
	Mecanica quântica para matemáticos em formação – 28o Colóquio Brasileiro de Matemática
2011	**One lecture**, *UFMG*, Belo Horizonte, Brazil
	Comunicação via qubits – XXII Escola de Inverno
2010	**One lecture**, *UFMG*, Belo Horizonte, Brazil
	Desigualdades de Bell, uma introdução a não-localdiade quântica – Quantum Mechanics Graduate Course
2010	**One lecture**, *UFMG*, Belo Horizonte, Brazil
	Desigualdades de Bell, uma introdução a não-localdiade quântica – Quantum Mechanics Graduate Course

Participation in examination board

12 Jun 2023	**PhD Thesis defence**, *Université libre de Bruxelles*, Brussels, Belgium
	Jef Pauwels – Entanglement and quantum communication between partially characterized devices
10 Mar 2023	**PhD Thesis defence**, *UNICAMP*, Campinas, Brazil
	Carlos Humberto de Souza Vieira – Exploring the role of entanglement in sets of behaviors from prepare-and-measure scenarios
03 Feb 2022	**PhD Thesis defence**, *UNICAMP*, Campinas, Brazil
	Roberto Dobal Baldijão – Quantum Darwinism And Contextuality
09 Apr 2021	**MSc Thesis defence**, *UNICAMP*, Campinas, Brazil
	Lucas da S. Pollyceno – Novos critérios para o princípio da causalidade de informação

Outreach and dissemination

During my JSPS postdoc in Japan, I have joined the JSPS Science Dialogue Program, a project where I presented my research in an accessible way to Japanese high-school students. I am also interested in popular science events.

21 Sep 2018	**JSPS Science Dialogue**, Nagano prefecture Suwa-Seiryo High School, Japan
	What do you mean by random? Randomness, Quantum Mechanics, and Bell Non-locality

05 Dec 2017   **JSPS Science Dialogue**, Ibaraki prefecture Takezono High School, Japan
What do you mean by random? Randomness, Quantum Mechanics, and Bell Non-locality

07 Jan 2013   **Science Slam Berlin**, SO36, Berlin, Germany
Does God play dice? Genuine randomness in nature

Reviewing activities

Referee for the journals: Quantum, PRL, PRX, PRX Quantum, PRA, PRResearch, J. Math. Phys, NJP, J. Phys. A, npj Quantum Information, Optica.
  I have also refereed submissions for conferences such as QIP, TQC, and AQIS.

Scientific Conferences

Invited Talk

Apr 2022   **Tsirelson Memorial Workshop**, Vienna, Austria
Talk: Measurement incompatibility and Bell nonlocality: from 1985 to 2022

Mar 2020   **The Order of Things (TOOT)**, Obergurgl, Austria
Conference cancelled due to COVID19 pandemic

Jan 2020   **Quantum Information Structure of Spacetime (QISS) 2020**, Hong Kong
Talk: Reversing unknown quantum transformations: A universal quantum circuit for inverting general unitary operations

Nov 2018   **Quantum Maiwar**, Brisbane, Australia
Talk: Semi-device-independent certification of indefinite causal order

Oct 2017   **FQXi Workshop: Quantum Incompatibility** , Laach Lake, Germany
Talk: Genuine n-wise Measurement Incompatibility and Device Independent Certificates of Incompatibility

Contributed Talk

Aug 2023   **Asian Quantum Information Science 2023 (AQIS2023)**, Seoul, South Korea
Talk: Simulating qubit correlations with classical communication

Fev 2023   **Quantum Information Processing 2023 (QIP2023)**, Ghent, Belgium
Talk: Simulating qubit correlations with classical communication
(presented by Martin J. Renner)

Sep 2021   **SFB BeyondC Autumn Workshop 2021**, Innsbruck, Austria
Talk: Universal protocols for transforming unitary quantum operations

Jun 2021   **Quantum Physics and Logic 2021 (QPL2021)**, Gdańsk (Online), Poland
Talk: Success-or-draw: A strategy allowing repeat-until-success in quantum computation

Jan 2020   **Quantum Information Processing 2020 (QIP2020)**, Shenzhen, China
Talk: Adaptive circuits exponentially outperforms parallel ones for universal unitary inversion

Aug 2019   **Asian Quantum Information Science 2019 (AQIS2019)**, Seoul, South Korea
Talk: Semi-device-independent certification of indefinite causal order

Jun 2019   **Quantum Information (Benasque)**, Benasque, Spain
Workshop without formal talks

Sep 2018   **post AQIS18**, Nagoya, Japan
Talk: Reversing unknown quantum transformations

Sep 2018	**Asian Quantum Information Science 2018 (AQIS2018)**, Nagoya, Japan
	Talk: Reversing unknown quantum transformations
Jul 2018	**Modern Topics in Quantum Information**, Natal, Brazil
	Talk: Reversing unknown quantum transformations
Jun 2017	**Quantum Information (Benasque)**, Benasque, Spain
	Workshop without formal talks
May 2017	**36th Quantum Information Technology Symposium (QIT36)** , Kyoto, Japan
	Talk: Super-activation of quantum steering
Mar 2016	**Quantum Networks (FQXi)**, Barcelona, Spain
	Talk: Entangled States With Local Hidden Variable Model For Sequential Measurements
Dec 2015	**Quantum Correlations, Contextuality and All That... Again**, Natal, Brazil
	Talk: Algorithmic construction of local hidden variable models for entangled quantum states
Aug 2015	**V Quantum Information School and Workshop**, Paraty, Brazil
	Talk: Joint measurability, EPR steering, and Bell nonlocality
Jun 2015	**Quantum Information (Benasque)**, Benasque, Spain
	Workshop without formal talks
Aug 2014	**Asian Quantum Information Science 2014 (AQIS2014)**, Kyoto, Japan
	Talk: Joint measurability, EPR steering, and Bell nonlocality
Dec 2013	**Quantum Correlations, Contextuality and All That**, Natal, Brazil
	Talk: Measurement Incompatibility in Quantum Mechanics
Aug 2013	**IV Quantum Information School and Workshop**, Paraty, Brazil
	Talk: Genuine Hidden Quantum Nonlocality
Jun 2013	**Quantum Information (Benasque)**, Benasque, Spain
	Workshop without formal talks
Jun 2012	**Workshop on Quantum Correlations**, Natal, Brazil
	Talk: All noncontextuality inequalities for the n-cycle scenario
Dez 2011	**III Encontro temático do INCT-IQ**, Natal, Brazil
	Talk: From the detection loophole to the transmission loophole
Aug 2011	**III Quantum Information School and Workshop**, Paraty, Brazil
	Talk: Maximal CHSH violations with low efficiency photodetection and homodyne measurements

Poster presentation

Sep 2021	**Time in quantum theory, ETH workshop**, Zurich (online), Switzerland
	Poster: Universal quantum circuits for transforming unitary operations: exponential advantages with causality adaptive strategies and the power of indefinite causality
Sep 2021	**Vienna Quantum Foundations Conference (VQF-CON 2021)**, Vienna , Austria
	Poster: Universal quantum circuits for transforming unitary operations: exponential advantages with causality adaptive strategies and the power of indefinite causality
Jun 2020	**Theory of Quantum Computation, Communication and Cryptography 2020 (TQC2020)**, Riga (online), Latvia
	Poster: Adaptive circuits exponentially outperforms parallel ones for universal unitary inversion

Dec 2019	**Topical Conference on Quantum Communication and Security 2019 (TCQC2019)**, Kyoto, Japan Poster: Reversing unknown quantum transformations: A universal quantum circuit for inverting general unitary operations
Aug 2019	**Asian Quantum Information Science 2019 (AQIS2019)**, Seoul, South Korea Poster: Distributed sampling, quantum communication witnesses, and measurement incompatibility
Apr 2018	**International Conference on challenges in Quantum Information Science (CQIS18)**, Tokyo, Japan Poster: The Cost of Implementing Non-Completely Positive Linear Maps
Jan 2014	**Quantum Information Processing 2014 (QIP2014)**, Barcelona, Spain Poster: Genuine Hidden Quantum Nonlocality
Aug 2013	**IV Quantum Information School and Workshop**, Paraty, Brazil Poster: Realistic loophole-free Bell test with atom-photon entanglement
Jan 2013	**Quantum Information Processing 2013 (QIP2013)**, Beijing, China Poster: Towards a loophole-free Bell test with continuous variables systems
May 2012	**TQC2012**, Tokyo, Japan Poster: Perfect homodyne measurements implies CHSH violation with arbitrarily low photodetection efficiency
Nov 2010	**XIX Semana da Iniciação Científica**, *UFMG*, Belo Horizonte, Brazil Poster: Jogo do Quadrado Mágico; Pseudotelepatia Quântica
Nov 2010	**V Simpósio Nacional / Jornadas de Iniciação Científica**, *IMPA*, RJ, Brazil Poster: Não-localidade como recurso para comunicação
Oct 2010	**WECIQ2010**, Petrópolis, Brazil Poster: Jogo do Quadrado Mágico; Pseudotelepatia Quântica
Oct 2009	**XVIII Semana da Iniciação Científica**, *UFMG*, Belo Horizonte, Brazil Poster: Algoritmo de Grover – Selected to the top 8%
Oct 2008	**XVII Semana da Iniciação Científica**, *UFMG*, Belo Horizonte, Brazil Poster: Números Inteiros e Criptografia RSA

Participation

Sep 2015	**Gisin's 60th birthday workshop**, Riederalp, Switzerland
Jul 2012	**62nd Lindau Nobel Laureate Meeting dedicated to Physics**, Lindau, Germany
Jul 2011	**28o Colóquio Brasileiro de Matemática**, *IMPA*, Rio de Janeiro, Brazil
Aug 2010	**XIV Escola Brasileira de Probabilidade**, Búzios, Brazil
Jul 2010	**Clay Mathematics Institute 2010 Summer School**, *Probability and Statistical Physics in Two and more Dimensions*, Búzios, Brazil

Academic visit seminars

16 Mar 2023	**Les Atelier du LKB, Laboratoire Kastler Brossel**, Paris, France Talk: Parallel, sequential, and non-causal strategies for transforming unitary operations and discriminating quantum channel via a higher-order approach. Host: Nancy Paul

10 Dec 2021 **University of Gdańsk**, Gdańsk, Poland
Talk: Transforming unitary operations via quantum circuits:Universal unitary inversion, transposition, and complex conjugation
Host: Michał Studziński

18 Mar 2021 **Quantin research group**, Warsaw (online), Poland
Talk: Universal protocols for transforming unitaryquantum operations
Host: Michał Oszmaniec

05 Feb 2021 **Technical University of Denmark**, Copenhagen (online), Denmark
Talk: Reversing unknown quantum transformations: A universal protocol for inverting general unitary operations
Host: Jonatan Bohr Brask

10 Jul 2019 **Universitat Autònoma de Barcelona**, Barcelona, Spain
Talk: Reversing unknown quantum transformations: A universal protocol for inverting general unitary operations
Host: Andreas Winter

14 Feb 2019 **ICFO**, Barcelona, Spain
Talk: Reversing unknown quantum transformations: A universal protocol for inverting general unitary operations
Host: Antonio Ácin

12 Feb 2019 **GAP**, Geneva, Switzerland
Talk: Reversing unknown quantum transformations: A universal protocol for inverting general unitary operations
Host: Nicolas Brunner

24 Jan 2019 **IQOQI Vienna**, Vienna, Austria
Talk: Reversing unknown quantum transformations: A universal protocol for inverting general unitary operations
Host: Marcus Huber

16 Dec 2016 **The University of Tokyo**, Tokyo, Japan
Talk: Super-Activation of Quantum Steering
Host: Mio Murao

18 Nov 2016 **UFMG**, Belo Horizonte, Brazil
Talk: Super-Activation of Quantum Steering
Host: Marcelo Terra Cunha

18 Nov 2015 **University of Siegen**, Siegen, Germany
Talk: Inequivalence of Entanglement, Steering, and Bell Nonlocality For General Measurements
Host: Otfried Gühne

18 Aug 2015 **UFMG**, Belo Horizonte, Brazil
Talk: Inequivalence of Entanglement, Steering, and Bell Nonlocality For General Measurements
Host: Marcelo Terra Cunha

31 Jul 2015 **UFMG**, BH, Brazil
Talk: Joint Measurability, EPR Steering, and Bell Nonlocality
Host: Marcelo Terra Cunha

15 Jun 2015	**Waseda University**, Tokyo, Japan Talk: Joint Measurability, EPR Steering, and Bell Nonlocality Host: Kazuya Yuasa
26 May 2015	**PI**, Waterloo, Canada Talk: Joint Measurability, EPR Steering, and Bell Nonlocality Host: Matthew Pusey
09 Oct 2014	**ICFO**, Barcelona, Spain Talk: Joint Measurability, EPR Steering, and Bell Nonlocality Host: Antonio Ácin
05 Sep 2014	**KCIK**, Gdansk, Poland Talk: Joint Measurability, EPR Steering, and Bell Nonlocality Host: Michał Horodecki
25 Aug 2014	**The University of Tokyo**, Tokyo, Japan Talk: Joint Measurability, EPR Steering, and Bell Nonlocality Host: Mio Murao
03 Dec 2013	**UFMG**, Belo Horizonte, Brazil Genuine Hidden Quantum Nonlocality Host: Marcelo Terra Cunha
19 Jul 2012	**KCIK**, Gdansk, Poland Talk: Characterization of the n-Cycle Noncontextual Polytope Host: Michał Horodecki
11 Jul 2012	**ICFO**, Barcelona, Spain Talk: Characterization of the n-Cycle Noncontextual Polytope Host: Antonio Ácin

List of publications

Peer-reviewed publications

[1] T. Strömberg, P. Schiansky, R.W. Peterson, M.T. Quintino, and P. Walther. "Demonstration of a quantum SWITCH in a Sagnac configuration". *Phys. Rev. Lett.* **131** 060803 (2023).

[2] M.J. Renner, A. Tavakoli, and M.T. Quintino. "The classical cost of transmitting a qubit". *Phys. Rev. Lett.* **130** 120801 (2023).

[3] D. Ebler, M. Horodecki, M. Marciniak, T. Młynik, M.T. Quintino, and M. Studziński. "Optimal universal quantum circuits for unitary complex conjugation". *IEEE Transactions on Information Theory* **69** 5069–5082 (2023).

[4] E.-C. Boghiu, F. Hirsch, P.-S. Lin, M.T. Quintino, and J. Bowles. "Device-independent and semi-device-independent entanglement certification in broadcast Bell scenarios". *SciPost Phys. Core* **6** 028 (2023).

[5] M.T. Quintino and D. Ebler. "Deterministic transformations between unitary operations: Exponential advantage with adaptive quantum circuits and the power of indefinite causality". *Quantum* **6** 679 (2022).

[6] H.-Y. Ku, J. Kadlec, A. Cernoch, M.T. Quintino, W. Zhou, K. Lemr, N. Lambert, A. Miranowicz, S.-L. Chen, F. Nori, and Y-N. Chen. "Detecting quantum non-breaking channels without entanglement". *PRX Quantum* **3** 020338 (2022).

[7] J. Bavaresco, M. Murao, and M.T. Quintino. "Unitary channel discrimination beyond group structures: Advantages of sequential and indefinite-causal-order strategies". *J. Math. Phys.* **63** 042203 (2022).

[8] A. Sohbi, D. Markham, J. Kim, and M.T. Quintino. "Certifying dimension of quantum systems by sequential projective measurements". *Quantum* **5** 472 (2021).

[9] M. Nery, M.T. Quintino, P. A. Guérin, T. O. Maciel, and R. O. Vianna. "Simple and maximally robust processes with no classical common-cause or direct-cause explanation". *Quantum* **5** 538 (2021).

[10] J. Bavaresco, M. Murao, and M.T. Quintino. "Strict Hierarchy between Parallel, Sequential, and Indefinite-Causal-Order Strategies for Channel Discrimination". *Phys. Rev. Lett.* **127** 200504 (2021).

[11] Q. Dong, M.T. Quintino, A. Soeda, and M. Murao. "Success-or-Draw: A Strategy Allowing Repeat-Until-Success in Quantum Computation". *Phys. Rev. Lett.* **126** 150504 (2021).

[12] M. Araújo, F. Hirsch, and M.T. Quintino. "Bell nonlocality with a single shot". *Quantum* **4** 353 (2020).

[13] W. Yokojima, M.T. Quintino, A. Soeda, and M. Murao. "Consequences of preserving reversibility in quantum superchannels". *Quantum* **5** 441 (2021).

[14] M.T. Quintino, Q. Dong, A. Shimbo, A. Soeda, and M. Murao. "Probabilistic exact universal quantum circuits for transforming unitary operations". *Phys. Rev. A* **100** 062339 (2019).

[15] M.T. Quintino, Q. Dong, A. Shimbo, A. Soeda, and M. Murao. "Reversing Unknown Quantum Transformations: Universal Quantum Circuit for Inverting General Unitary Operations". *Phys. Rev. Lett.* **123** 210502 (2019).

[16] M.T. Quintino, C. Budroni, E. Woodhead, A. Cabello, and D. Cavalcanti. "Device-Independent Tests of Structures of Measurement Incompatibility". *Phys. Rev. Lett.* **123** 180401 (2019).

[17] L. Guerini, M.T. Quintino, and L. Aolita. "Distributed sampling, quantum communication witnesses, and measurement incompatibility". *Phys. Rev. A* **100** 042308 (2019).

[18] J. Bavaresco, M. Araújo, Č. Brukner, and M.T. Quintino. "Semi-device-independent certification of indefinite causal order". *Quantum* **3** 176 (2019).

[19] Q. Dong, M.T. Quintino, A. Soeda, and M. Murao. "Implementing positive maps with multiple copies of an input state". *Phys. Rev. A* **99** 052352 (2019).

[20] F. Hirsch, M.T. Quintino, and N. Brunner. "Quantum measurement incompatibility does not imply Bell nonlocality". *Phys. Rev. A* **97** 012129 (2018).

[21] J. Bavaresco, M.T. Quintino, L. Guerini, T. O. Maciel, D. Cavalcanti, and M.T. Cunha. "Most incompatible measurements for robust steering tests". *Phys. Rev. A* **96** 022110 (2017).

[22] M.T. Quintino, M. Huber, and N. Brunner. "Super-Activation of Quantum Steering". *Phys. Rev. A* **94** 062123 (2016).

[23] F. Hirsch, M.T Quintino, T. Vértesi, M. Navascués, and N. Brunner. "Better local hidden variable models for two-qubit Werner states and an upper bound on the Grothendieck constant $K_G(3)$". *Quantum* **1** 3 (2017).

[24] R. Ramanathan, M.T. Quintino, A.B. Sainz, G. Murta, and R. Augusiak. "Tightness of correlation inequalities with no quantum violation". *Phys. Rev. A* **95** 012139 (2017).

[25] F. Hirsch, M.T. Quintino, J. Bowles, T. Vértesi, and N. Brunner. "Entanglement without hidden nonlocality". *New J. Phys.* **18** 113019 (2016).

[26] F. Hirsch, M.T. Quintino, T. Vértesi, M.F. Pusey, and N. Brunner. "Algorithmic Construction of Local Hidden Variable Models for Entangled Quantum States". *Phys. Rev. Lett.* **117** 190402 (2016).

[27] M.T. Quintino, J. Bowles, F. Hirsch, and N. Brunner. "Incompatible quantum measurements admitting a local hidden variable model". *Phys. Rev. A* **93** 052115 (2016).

[28] J. Bowles, F. Hirsch, M.T. Quintino, and N. Brunner. "Sufficient criterion for guaranteeing that a two-qubit state is unsteerable". *Phys. Rev. A* **93** 022121 (2016).

[29] M.T. Quintino, T. Vértesi, D. Cavalcanti, R. Augusiak, M. Demianowicz, A. Acín, and N. Brunner. "Inequivalence of entanglement, steering, and Bell nonlocality for general measurements". *Phys. Rev. A* **92** 032107 (2015).

[30] J. Bowles, F. Hirsch, M.T. Quintino, and N. Brunner. "Local Hidden Variable Models for Entangled Quantum States Using Finite Shared Randomness". *Phys. Rev. Lett.* **114** 120401 (2015).

[31] M.T. Quintino, T. Vértesi, and N. Brunner. "Joint Measurability, Einstein-Podolsky-Rosen Steering, and Bell Nonlocality". *Phys. Rev. Lett.* **113** 160402 (2014).

[32] J. Bowles, T. Vértesi, M.T. Quintino, and N. Brunner. "One-way Einstein-Podolsky-Rosen Steering". *Phys. Rev. Lett.* **112** 200402 (2014).

[33] J. Bowles, M.T. Quintino, and N. Brunner. "Certifying the Dimension of Classical and Quantum Systems in a Prepare-and-Measure Scenario with Independent Devices". *Phys. Rev. Lett.* **112** 140407 (2014).

[34] F. Hirsch, M.T. Quintino, J. Bowles, and N. Brunner. "Genuine Hidden Quantum Nonlocality". *Phys. Rev. Lett.* **111** 160402 (2013).

[35] M. Araújo, M.T. Quintino, C. Budroni, M.T. Cunha, and A. Cabello. "All noncontextuality inequalities for the n-cycle scenario". *Phys. Rev. A* **88** 022118 (2013).

[36] C. Teo, M. Araújo, M.T. Quintino, J. Minář, D. Cavalcanti, V. Scarani, M. Terra Cunha, and M. França Santos. "Realistic loophole-free Bell test with atom-photon entanglement". *Nature Communications* **4** 2104 (2013).

[37] M. Araújo, M.T. Quintino, D. Cavalcanti, M.F. Santos, A. Cabello, and M.T. Cunha. "Tests of Bell inequality with arbitrarily low photodetection efficiency and homodyne measurements". *Phys. Rev. A* **86** 030101 (2012).

[38] M.T. Quintino, M. Araújo, D. Cavalcanti, M. F. Santos, and M. T. Cunha. "Maximal violations and efficiency requirements for Bell tests with photodetection and homodyne measurements". *J. Phys. A* **45** 215308 (2012).

Under review

[39] M. Antesberger, M.T. Quintino, P. Walther, and L. Rozema. *Higher-order Process Matrix Tomography of a passively-stable Quantum SWITCH*. May 2023. arXiv:2305.19386 [quant-ph].

[40] S. Milz and M.T. Quintino. *Transformations between arbitrary (quantum) objects and the emergence of indefinite causality*. May 2023. arXiv:2305.01247 [quant-ph].

[41] T. Strömberg, P. Schiansky, M.T. Quintino, M. Antesberger, L. Rozema, I. Agresti, C. Brukner, and P. Walther. *Experimental superposition of time directions*. 2022. eprint: 2211.01283.

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