

Curriculum Vitae

Personal information

Name: Costantino Budroni
Date of Birth: 25/05/1984
Place of Birth: Sassari, Italy
Citizenship: Italian
Gender: Male

Professional experience

POSTDOC (OCT. 2014–NOW) Naturwissenschaftlich-Technische Fakultät, Universität Siegen, Siegen, Germany.
Prof. Otfried Gühne's group.

Education

PH.D. (APR. 2012–SEPT. 2014) Ph.D. title from Naturwissenschaftlich-Technische Fakultät, Universität Siegen, Siegen, Germany.
Final degree mark: Summa cum laude.
Supervisor: Prof. Otfried Gühne.

PH.D. (JAN. 2011–MAR. 2012) Ph.D. position at Departamento de Física Aplicada II, Universidad de Sevilla, Sevilla, Spain.
Supervisor: Prof. Adán Cabello.

MASTER'S DEGREE (2010–2011) Master's degree in Physics and Mathematics
Faculty of science, Universidad de Granada, Spain.

Average mark for credit: 8.46/10.

Thesis supervisor: Adán Cabello.

MASTER'S DEGREE (2007–2009) Laurea Specialistica in Physics

Specific field of the degree course: Theoretical Physics

Faculty of Mathematical, Physical and Natural Sciences, Università di Pisa, Italy.

Final degree mark: 110 (out of 110) cum laude.

Thesis supervisor: Giovanni Morchio.

BACHELOR'S DEGREE (2003–2007) Laurea Triennale in Physics

Faculty of Mathematical, Physical and Natural Sciences, Università di Pisa, Italy.

Final degree mark: 110 (out of 110) cum laude.

Thesis supervisor: Luciano Bracci.

Awards

Preis der Universität Siegen für den internationalen Nachwuchs, 2014

(Ph.D. thesis prize for international students of the university of Siegen).

Teaching

Summer term 2014: Exercises for “*Quantum Information Theory*” (Prof. O. Gühne, Universität Siegen).

Winter term 2013/14: Exercises for “*Foundations of Quantum Mechanics*” (Prof. O. Gühne, Universität Siegen).

Winter term 2012/13: Exercises for “*Quantum Information Theory*” (Prof. O. Gühne, Universität Siegen).

Talks, Conferences, and Workshops

586. WE-Heraeus-Seminar: Quantum correlations beyond entanglement, Talk, Apr. 13–15, 2015, Bad Honnef, Germany.

DPG-Frühjahrstagung 2014, Talk and Invited talk at the *Symposium SAMOP Dissertation-Prize 2015*, Mar. 23–27, 2015, Heidelberg, Germany.

Quantum Information Live Seminars at Imperial College, Talk, Feb. 4, 2015, London UK.

FQXi Workshop on Quantum Sequential Measurements and Complexity, Talk, Sept. 22–25, 2014, Siegen, Germany.

DPG-Frühjahrstagung 2014, Talk, Mar. 17–21, 2014, Berlin, Germany.

Invited talk at the University of Bonn (Prof. D. Meschede's group), Mar. 14, 2014, Bonn, Germany.

Entanglement Detection and Quantification Bilbao 2014, Talk, Mar. 10–13, 2014, Bilbao, Spain.

554. WE-Heraeus-Seminar: Quantum Contextuality, Non-Locality, and the Foundations of Quantum Mechanics, Poster, Feb. 14–19, 2014, Bad Honnef, Germany.

XVII Conference on Quantum Information Processing 2014, Poster, Feb. 3–7, 2014, Barcelona, Spain.

Workshop on Quantum Correlations, Contextuality and All That, Talk, Dec. 9–13, 2013, Natal, Brazil.

Invited talk at the Federal University of Minas Gerais (Prof. M. Terra Cunha's group), Dec. 5, 2013, Belo Horizonte, Brazil.

FQXi Workshop on Quantum Contextuality and Sequential Measurements, Talk, Nov. 4–6, 2013, Sevilla, Spain.

4th International Workshop on Quantum Entanglement and its Detection (QED4), Talk, Sep. 23–27, 2013, Siegen, Germany.

Quantum Information Workshop, Jun 27–Jul 13, 2013, Centro de Ciencias Pedro Pascual, Benasque, Spain.

DPG-Frühjahrstagung 2013, Talk, Mar. 18–22, 2013, Hannover, Germany.

3rd International Workshop on Quantum Entanglement and its Detection (QED3), Talk, Sep. 3–7, 2012, Bilbao, Spain.

11th International conference on quantum communication, measurement, and computation (QCMC), Poster, 30 Jul–3 Aug, 2013, Vienna, Austria.

Quantum Information Workshop, Jun 12–Jul 01, 2011, Centro de Ciencias Pedro Pascual, Benasque, Spain.

Publications

A. Asadian, C. Budroni, F. Steinhoff, and O. Gühne, *Contextuality in phase space*, Phys. Rev. Lett. **114**, 250403 (2015).

A. Cabello, M. Kleinmann, and C. Budroni, *Necessary and sufficient condition for state-independent contextuality*, Phys. Rev. Lett. **114**, 250402 (2015).

C. Budroni and C. Emary, *Temporal quantum correlations and Leggett-Garg inequalities in multi-level systems*, Phys. Rev. Lett. **113**, 050401 (2014).

O. Gühne, C. Budroni, A. Cabello, M. Kleinmann, and J.-Å. Larsson, *Bounding the quantum dimension with contextuality*, Phys. Rev. A **89**, 062107 (2014).

- M. Araújo, M.T. Quintino, C. Budroni, M. Terra Cunha, and A. Cabello, *All noncontextuality inequalities for the n -cycle scenario*, Phys. Rev. A **88**, 022118 (2013).
- C. Budroni, T. Moroder, M. Kleinmann, and O. Gühne, *Bounding temporal quantum correlations*, Phys. Rev. Lett. **111**, 020403 (2013).
- E. Amselem, M. Bourennane, C. Budroni, A. Cabello, O. Gühne, M. Kleinmann, J.-Å. Larsson, and M. Wieśniak, *Comment on “State-Independent Experimental Test of Quantum Contextuality in an Indivisible System”*, Phys. Rev. Lett. **110**, 078901 (2013).
- J.-Å. Larsson, M. Kleinmann, C. Budroni, O. Gühne, and A. Cabello, *Maximal violation of state-independent contextuality inequalities*, AIP Conf. Proc. **1508**, 265 (2012).
- M. Kleinmann, C. Budroni, J.-Å. Larsson, O. Gühne, and A. Cabello, *Optimal inequalities for state-independent contextuality*, Phys. Rev. Lett. **109**, 250402 (2012).
- C. Budroni and A. Cabello, *Bell inequalities from variable elimination methods*, J. Phys. A: Math. Theor. **45**, 385304 (2012).
- C. Budroni and G. Morchio, *Bell inequalities as constraints on unmeasurable correlations*, Found. Phys. **42**, 544 (2012).
- C. Budroni and G. Morchio, *The extension problem for partial Boolean structures in quantum mechanics*, J. Math. Phys. **51**, 122205 (2010).

Preprints

- M. Gachechiladze, C. Budroni, O. Gühne *Extreme violation of local realism in quantum hypergraph states*, [arXiv:1507.03570](https://arxiv.org/abs/1507.03570)
- C. Budroni, G. Vitagliano, G. Colangelo, R. J. Sewell, O. Gühne, G. Toth, M. Mitchell *Quantum non-demolition measurement enables macroscopic Leggett-Garg tests*, [arXiv:1503.08433](https://arxiv.org/abs/1503.08433)

Languages

- Italian **Native Speaker**
 English **Advanced level**
 Spanish **Advanced level**
 German **Intermediate level**
 French **Intermediate level**