



# Rui Soares Barbosa

## Education

- 09/10/2010 **DPhil Computer Science**, University of Oxford, UK.  
19/10/2015 Thesis title: *Contextuality in quantum mechanics and beyond*  
Supervisors: Prof Samson Abramsky and Dr Andreas Döring  
Examiners: Prof Prakash Panangaden (McGill) and Dr Jamie Vicary (Oxford)  
Secondments at: Université Paris Diderot (Paris 7) and Perimeter Institute for Theoretical Physics
- 09/10/2009 **MSc Mathematics and Foundations of Computer Science**, University of Oxford, UK.  
27/09/2010 (Mathematical Institute and Department of Computer Science)  
Final Grade: 87 / 100 (distinction)  
Dissertation title: *Interval domain(s) and Physics*  
Dissertation supervisor: Dr Andreas Döring
- 01/09/2006 **BSc Computer Science**, Universidade do Minho, Portugal.  
27/07/2009 (Department of Mathematics and Department of Informatics)  
Final Grade: 19.2 / 20  
Erasmus Semester (Spring 2009) at Center of Software Technology, Universiteit Utrecht, The Netherlands

## Positions

- 03/02/2020 **Staff Researcher**, INL – International Iberian Nanotechnology Laboratory.  
Quantum and Linear-Optical Computation group.
- 01/08/2019 **Research Associate**, Lab for Foundations of CS, School of Informatics, University of Edinburgh.  
31/01/2020 Postdoc with Chris Heunen. Funded by the research project:  
◦ EP/R044759/1, *Combining Viewpoints in Quantum Theory*.
- 01/01/2015 **Research Assistant**, Quantum Group, Department of Computer Science, University of Oxford.  
31/07/2019 Postdoc with Samson Abramsky. Funded by the research projects:  
◦ 01/04/2016–31/07/2019: EPSRC EP/N018745/1, *Contextuality as a Resource in Quantum Computation*.  
(named Researcher in grant application)  
◦ 01/07/2015–31/03/2016: Oxford Martin School, *Program on Bio-inspired Quantum Technologies*.  
◦ 01/01/2015–30/06/2015: John Templeton Foundation, *Categorical Unification*.
- 2017/2018 **Invited Assistant Professor**, Department of Informatics, Universidade do Minho.  
& 2018/2019 To lecture courses at graduate level.

## Fellowships and Scholarships

- 17/08/2016 **Simons–Berkeley Research Fellow**, Simons Institute for the Theory of Computing, UC Berkeley.  
17/12/2017 To participate in the *Logical Structures in Computation* programme.
- 01/01/2016 **Junior Research Fellow**, Wolfson College, Oxford, UK.  
31/12/2021 Early-career fellowships awarded by Oxford and Cambridge colleges on the basis of research excellence.
- 2014 **PhD grant**, FCT – Portuguese Foundation for Science and Technology, SFRH/BD/94945/2013.
- 2010–2013 **Marie Curie Fellowship for Early Stage Researcher (PhD)**.  
Initial Training Network MALOA – *From MATHematical Logic to Applications*, PITN-GA-2009-238381.
- 2009/2010 **Santander Abbey Scholarship**.  
Partial funding for one year of study (MSc).
- 2009 **Integration into Research Grant**, FCT – Portuguese Foundation for Science and Technology.  
◦ *An algebraic approach to convolutional codes* supervised by Dr Pedro Patrício.

- 2007/2008 **2 New Talents in Mathematics Fellowships**, Gulbenkian Foundation.
- & 2008/2009 Introduction to research fellowships for undergraduates in Mathematics in Portuguese universities.
- 2008/2009: *Combinatorial algebraic topology and applications to graph decision problems and to concurrent computing*, supervised by Dr Thomas Kahl.
  - 2007/2008: *Mahler's measure*, supervised by Prof Assis Azevedo.

## Awards

- 2016 **Commendation as Runner-up, BCS/CPHC Distinguished Dissertation award.**  
distinguishing PhD/DPhil dissertations in computer science in British universities.
- 2010 **Civil Government of Braga Prize.**  
for having the best final grade (19.2) for any undergraduate degree at Universidade do Minho.
- 2009 & 2008 **Prize for Academic Merit, Universidade do Minho.**  
for being top of the class in Computer Science, 1st and 2nd years.
- 2009 **Prize for Academic Merit, Ministry of Science, Tech. and Higher Ed., Portuguese Government.**
- 2007 **University of Minho Academic Council Prize.**  
for having the best entry grade (19.4) to U Minho's BSc Computer Science.
- 2017 **1st place in CeNPLf 2007** (National Contest of Logic and Functional Programming).
- 2006 & 2007 **1st place in MIUP 2006 & 2nd place in MIUP 2007** (Portuguese ACM Programming Contest).
- 2006 **Bronze medal at International Physics Olympiad (IPhO 2006), Singapore.**
- 2006 **Silver medal at Ibero-American Olympiad in Informatics (CIIC).**
- 2006 **2nd place at Portuguese Olympiad in Informatics (ONI 2006).**

## Paedagogical Activities

### Supervision

- current **PhD supervisor, Angelos Bampounis**, PhD in Applied Mathematics (MAP-PDMA), U Minho, Aveiro, Porto.  
with Pedro Patrício (CMAT, U Minho)
- current **PhD supervisor, Raman Choudhary**, PhD in Informatics (MAPi), U Minho, Aveiro, Porto.  
with Luís Paulo Santos (INESC TEC / U Minho)
- current **PhD supervisor, Rafael Wagner**, PhD in Physics (MAPfis), U Minho, Aveiro, Porto.  
with Ernesto Galvão (INL) and Mikhail Vasilevskiy (U Minho)
- current **Dissertation supervisor, José Guimarães**, MSc in Physics Engineering, U Minho.
- current **Dissertation supervisor, António Pereira**, MSc in Physics Engineering, U Minho.
- current **Dissertation cosupervisor, Daniel Carvalho**, MSc in Informatics Engineering, U Minho.  
Title: *On conditional quantum control*      Other supervisor: Prof José Nuno Oliveira (U Minho)
- 2017/2018 **Dissertation cosupervisor, Ana Neri**, MSc in Physics Engineering, U Minho.  
Title: *Towards quantum program calculation*      Other supervisor: Prof José Nuno Oliveira (U Minho)

### Lecturing

- 2018/2019 **Invited Lecturer**, 8h module as part of course: *Quantum Computing*, Universidade de Aveiro.  
Doctoral Program in Computer Science of the Universities of Minho, Aveiro, and Porto (MAP-i).
- 2017/2018 **Invited Lecturer**, 25h module as part of course: *Quantum Logic*, Universidade do Minho.
- & 2018/2019 5th year Integrated MSc in Physics Engineering.
- 2017/2018 **Guest Lecturer** (2 lectures each year), *Categories, Proofs and Processes*, University of Oxford.
- & 2018/2019 4th year undergraduate, MSc, and PhD students, Department of Computer Science.

### Teaching

- 2013/2014 **Teaching Assistant & Demonstrator, Principles of Programming Languages**, U Oxford.  
2nd or 3rd year undergraduates, Department of Computer Science.
- 2012/2013 **Teaching Assistant, Categories, Proofs and Processes**, University of Oxford.  
4th year undergraduate, MSc, and PhD students, Department of Computer Science.

## Examining

- 24/01/2022 **Examiner for MSc Dissertation**, Ana Catarina Sousa, Dept. of Mathematics, U Minho.  
Title: *Deductive systems for minimal quantum logic* Supervisor: Dr José Carlos Espírito Santo
- 18/09/2019 **Examiner for MSc Dissertation**, Elena di Lavore, MSc Maths & Found. Comp. Sci., U Oxford.  
Title: *Morphisms of open games for iterated games* Supervisor: Dr Jamie Vicary
- 23/07/2019 **Assessor for Confirmation of DPhil status**, Maaïke Zwart, Dept. Comp. Sci., U Oxford.  
(Internal viva examination for doctoral students at the end of 3rd year.)  
Title: *On the non-compositionality of distributive laws for monads*
- 21/12/2018 **Examiner for MSc Dissertation**, Carlos Fitas, Dept. of Mathematics, U Minho.  
Title: *Categorical semantics of linear logic* Supervisor: Dr José Carlos Espírito Santo
- 06/10/2017 **Assessor for Confirmation of DPhil status**, Linde Wester, Dept. Comp. Sci., U Oxford.  
Title: *Classical and quantum structures of computation*
- 05/10/2017 **Assessor for Confirmation of DPhil status**, Benjamin Musto, Dept. Comp. Sci., U Oxford.  
Title: *Diagrammatic semantics for quantum Latin squares, algebraic structures and quantum functions*
- 2013/2014 **Exam Marker**, *Principles of Programming Languages*, University of Oxford.

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## Scientific Refereeing

- PC co-chair 26th International Workshop on Algebraic Development Techniques (WADT 2022).  
Chair of track on: Algebraic Approaches to Quantum Computation
- PC member 9th Conference on Algebra and Coalgebra in Computer Science (CALCO 2021).
- PC member 18th International Conference in Quantum Physics and Logic (QPL 2021).
- PC member 2nd DaLí – Dynamic Logic: New Trends and Applications, Workshop at FM 2019.
- PC member 1st Q-turn Workshop: Changing Paradigms in Quantum Science (Q-turn 2018).
- PC member 12th International Tbilisi Symposium on Language, Logic and Computation (TbiLLC 2017).
- Journals *Annales Henri Poincaré*, *Information and Computation*, *Journal of Logical and Algebraic Methods in Programming*, *Studia Logica*, *Quantum*, *New Journal of Physics*, *Entropy*, *Philosophical Transactions of the Royal Society A*, *Journal of Mathematical Psychology* (special issue on Foundations of Probability)
- Conferences Int'l Conference on Quantum Information Processing (QIP 2018), Int'l Conference on Quantum Physics and Logic (QPL 2013, 2016, 2017, 2018, 2019), Symposium on Logic in Computer Science (LiCS 2016), Int'l Colloquium on Automata, Languages, and Programming (ICALP 2015), Symposium on Compositional Structures (SYCO 7)

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## Organisation of scientific meetings and seminars series

- 17 July 2021 **Organiser**, *Parallel Session on Mathematical Structures in Quantum Foundations*, National Meeting of Portuguese Mathematical Society (ENSPM 2021), with Cihan Okay.
- 4–6 Jul 2019 **Organiser**, *Contextuality as a Resource in Quantum Computation II*, University of Oxford.  
Workshop organised in the context of EPSRC project.
- 20–22 Jun 2016 **Organiser**, *Contextuality as a Resource in Quantum Computation*, University College London.
- 7 Mar 2015 **Organiser**, *Quantum Group Workshop*, University of Oxford.  
Research workshop of the Quantum Group, Department of Computer Science.
- since **Coordinator**, *QLOC seminar*.
- 06/2020 Meetings of the *Quantum and Linear-Optical Computation* group at INL.
- 11/2013 **Convenor**, *Foundations Discussions of Wolfson College Quantum Foundations Research Cluster*.
- 07/2019 Discussions on foundational topics in quantum theory and related areas open to the general public, including researchers and students from across different departments in the university.
- 01/2018 **Coordinator**, *OASIS: Oxford Advanced Seminar in Informatic Structures*.
- 07/2019 Interdisciplinary seminar series of the *Foundations, Structures, and Quantum* research theme.

01/2017 **Coordinator**, *Quantum Lunch*.  
12/2017 Internal seminar of the Quantum Group.

## Outreach Activities

03/01/2019 Industry outreach talk on quantum information, Checkmarx.  
26/04/2017 Talk about career as researcher in quantum informatics, CS day, Universidade do Minho.  
02/05/2012 Talk about PhD experience in quantum informatics, CS day, Universidade do Minho.  
2007/2008 Biweekly contributor on science topics to student newspaper *ComUM*.

## Publications

**Note:** All authors have contributed equally to the research in every publication, being typically listed in alphabetical order by last name (mine has sometimes been listed under 'S' and sometimes under 'B'). This is in line with common practice in mathematics and computer science – see e.g. the culture statement from the American Mathematical Society: <http://www.ams.org/profession/leaders/culture/CultureStatement04.pdf>

### Refereed journal papers (6)

1. Rui Soares Barbosa, Tom Douce, Pierre-Emmanuel Emeriau, Elham Kashefi, and Shane Mansfield, **Continuous-variable nonlocality and contextuality**, Accepted to appear in *Communications in Mathematical Physics*, 2021.
  - Pre-print at arXiv:1905.08267 [quant-ph]
  - Presented at *16th International Conference on Quantum Physics and Logic (QPL 2019)*
2. Ana Neri, Rui Soares Barbosa, and José Nuno Oliveira, **Compiling quantamorphisms for the IBM-Q Experience**, Accepted to appear in *IEEE Transactions on Software Engineering*, 2021.
  - Pre-print at arXiv:2010.10510 [quant-ph]
  - Early online access at doi:10.1109/TSE.2021.3117515
3. Nadish de Silva and Rui Soares Barbosa, **Contextuality and noncommutative geometry in quantum mechanics**, *Communications in Mathematical Physics*, 365(2): 375–429, 2019.
  - Pre-print at arXiv:1806.02840 [math.OA]
  - Earlier partial version “Partial and total ideals of von Neumann algebras” at arXiv:1408.1172 [math.OA]
4. Samson Abramsky, Rui Soares Barbosa, Giovanni Carù, and Simon Perdrix, **A complete characterisation of All-versus-Nothing arguments for stabilizer states**, in special issue on *Second quantum revolution: foundational questions*, G. Jaeger, A. Khrennikov, and P. Perinotti, eds, *Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences*, 375 (2106): 20160385, 2017.
  - Pre-print at arXiv:1705.08459 [quant-ph]
  - Presented at *14th International Conference on Quantum Physics and Logic (QPL 2017)*
5. Samson Abramsky, Rui Soares Barbosa, and Shane Mansfield, **Contextual fraction as a measure of contextuality**, in *Physical Review Letters*, 119: 050504, 2017.
  - Pre-print at arXiv:1705.07918 [quant-ph]
  - Earlier version “Quantifying contextuality via linear programming” presented at *13th International Conference on Quantum Physics and Logic (QPL 2016)* – publication withdrawn.
  - Poster presented at 21st Annual Conference on Quantum Information Processing (QIP 2018).
6. Samson Abramsky, Rui Soares Barbosa, Kohei Kishida, Raymond Lal, and Shane Mansfield, **Possibilities determine the combinatorial structure of probability polytopes**, in special issue on *Foundations of Probability Theory in Psychology and Beyond*, E. N. Dzhafarov, J. V. Kujala, and R. Suck, eds, *Journal of Mathematical Psychology*, 74: 58–65, 2016.
  - Pre-print at arXiv:1603.07735 [quant-ph]

## Refereed book chapters (2)

7. Rui Soares Barbosa, Shane Mansfield, and Martti Karvonen, **Closing Bell: Boxing black box simulations in the resource theory of contextuality**, to appear in volume dedicated to Samson Abramsky in Springer's *Outstanding Contributions to Logic* series, 2021.
  - Pre-print at arXiv:2104.11241 [quant-ph]
  - Presented at *18th International Conference on Quantum Physics and Logic (QPL 2021)*
8. Andreas Döring and Rui Soares Barbosa, **Unsharp values, domains and topoi**, in *Quantum Field Theory and Gravity*, 65–96, F. Finster, O. Müller, M. Nardmann, J. Tolksdorf, and E. Zeidler, eds (Springer Basel), 2011.
  - Pre-print at arXiv:1107.1083 [quant-ph]

## Refereed conference papers (8)

9. Samson Abramsky and Rui Soares Barbosa, **The logic of contextuality**, in *29th EACSL Annual Conference on Computer Science Logic (CSL 2021)*, C. Baier and J. Goubault-Larrecq, eds, *Leibniz International Proceedings in Informatics (LIPIcs)*, 183: 5:1–5:18, 2021.
  - Pre-print at arXiv:2011.03064 [quant-ph]
  - Earlier version presented at *17th International Conference on Quantum Physics and Logic (QPL 2020)* under the title *Partial Boolean algebras and the logical exclusivity principle*
10. Samson Abramsky, Rui Soares Barbosa, Martti Karvonen, and Shane Mansfield, **A comonadic view of simulation and quantum resources**, in *34th Annual ACM/IEEE Symposium on Logic in Computer Science (LiCS 2019)*: 1–12, 2019.
  - Pre-print at arXiv:1904.10035 [quant-ph]
  - Presented at *3rd Symposium on Compositional Structures (SYCO 3)*
  - Presented at *16th International Conference on Quantum Physics and Logic (QPL 2019)*
  - Presented at *2nd Applied Category Theory Conference (ACT 2019)*
  - Related submission presented at *8th Conf. on Algebra and Coalgebra in Computer Science (CALCO 2019)*
11. Samson Abramsky, Rui Soares Barbosa, Nadish de Silva, and Octavio Zapata, **The quantum monad on relational structures**, in *42nd International Symposium on Mathematical Foundations of Computer Science (MFCS 2017)*, K. G. Larsen, H. L. Bodlaender, and J.-F. Raskin, eds, *Leibniz International Proceedings in Informatics (LIPIcs)*, 83: 35:1–35:19, 2017.
  - Pre-print at arXiv:1705.07310 [cs.LO]
  - Presented at *17th Asian Quantum Information Science Conference (AQIS 2017)*
  - Presented at *15th International Conference on Quantum Physics and Logic (QPL 2018)*
12. Samson Abramsky, Rui Soares Barbosa, Giovanni Carù, Nadish de Silva, Kohei Kishida, and Shane Mansfield, **Minimum quantum resources for strong non-locality**, in *12th Conference on Theory of Quantum Computation, Communication and Cryptography (TQC 2017)*, M. M. Wilde, ed, *Leibniz International Proceedings in Informatics (LIPIcs)*, 73: 9:1–9:20, 2018.
  - Pre-print at arXiv:1705.09312 [quant-ph]
  - Presented at *14th International Conference on Quantum Physics and Logic (QPL 2017)*
13. Samson Abramsky, Rui Soares Barbosa, Kohei Kishida, Raymond Lal, and Shane Mansfield, **Contextuality, cohomology and paradox**, in *24th EACSL Annual Conference on Computer Science Logic (CSL 2015)*, S. Kreutzer, ed, *Leibniz International Proceedings in Informatics (LIPIcs)*, 41: 211–228, 2015.
  - Pre-print at arXiv:1502.03097 [quant-ph]
14. Rui Soares Barbosa, **On monogamy of non-locality and macroscopic averages: examples and preliminary results**, in *11th International Workshop on Quantum Physics and Logic (QPL 2014)*, B. Coecke, I. Hasuo, and P. Panangaden, eds, *Electronic Proceedings in Theoretical Computer Science*, 172: 36–55, 2014.
  - Pre-print at arXiv:1412.8541 [quant-ph]



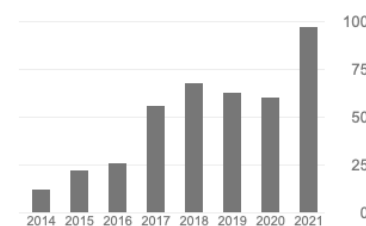
15. Shane Mansfield and Rui Soares Barbosa, **Extendability in the sheaf-theoretic approach: construction of Bell models from Kochen–Specker models**, in Informal Proceedings of Quantum Physics and Logic (QPL 2013).

○ Pre-print at arxiv:1402.4827 [quant-ph]. Submitted to a journal.

16. Samson Abramsky, Shane Mansfield, and Rui Soares Barbosa, **The cohomology of non-locality and contextuality**, in *8th International Workshop on Quantum Physics and Logic (QPL 2011)*, B. Jacobs, P. Selinger, and B. Spitters, eds, *Electronic Proceedings in Theoretical Computer Science*, 95: 1–15, 2012.

○ Pre-print at arXiv:1111.3620 [quant-ph]

|           | All | Since 2017 |
|-----------|-----|------------|
| Citations | 423 | 372        |
| h-index   | 9   | 9          |
| i10-index | 9   | 8          |



Source: Google Scholar, 02/01/2022

## Pre-prints

17. Rui Soares Barbosa and Chris Heunen **Sheaf representation of monoidal categories**, arXiv:2106.08896 [math.CT], 2021.

## Talks

### Invited research seminars (13 + 4 junior seminars)

1. **Free transformations in the resource theory of contextuality.**  
Online QCQMB colloquium (Quantum Contextuality in Quantum Mechanics and Beyond), , 27 May 2021.
2. **Contextuality in logical form: Lindenbaum–Tarski duality for transitive partial CABA.**  
CMAT Seminar, Centre of Mathematics, Universidade do Minho (online), 27 May 2021.
3. **Partial Boolean algebras: The logic of contextuality.**  
3rd World Logic Day in Aveiro, Dept of Mathematics, Universidade de Aveiro (online), January 2021.
4. **The quantum monad on relational structures: towards quantum finite model theory?.**  
Oxford–Cambridge Resources and Co-resources Meet-up, Dept of Computer Science, U. Oxford (online), July 2020.
5. **Acyclicity and Vorob'ev's theorem: deriving monogamy of non-locality and local macroscopic averages.**  
LFCS Lunch, School of Informatics, University of Edinburgh, October 2019.
6. **Contextuality as a resource yielding quantum advantage.**  
Seminar CAPP (Calculi, Algorithms, Programs, & Proofs), Lab. d'Informatique de Grenoble, Jun 2018.
7. **Monogamy of nonlocality and macroscopic averages.**  
Logic Lounge Seminar, Simons Institute for the Theory of Computing, UC Berkeley, Dec 2016.
8. **Monogamy of nonlocality and macroscopic averages.**  
Quantum Dynamics Seminar, Department of Mathematics, Royal Holloway University of London, Feb 2015.
9. **Sheaf-theoretic framework for non-locality and contextuality.**  
Lunch Seminar of the Quantum Information Team, Télécom ParisTech, May 2013.
10. **Structural reason for monogamy relations (and local realism of some macroscopic correlations).**  
Groupe de travail Sémantique, Laboratoire PPS, Université Paris Diderot (Paris 7), Apr 2013.
11. **The logic of non-locality and quantum informatics.**  
Physics Seminar, Department of Physics, Universidade do Minho, Mar 2013.
12. **Structural analysis of monogamy and macroscopic correlations.**  
Seminar on Analytic Topology in Maths and Comp. Science, Mathematical Institute, U. Oxford, Feb 2013.
13. **The interval domain, values of physical quantities in a topos and space-time.**  
Seminar on Aspects of Mathematical Foundations of Physics, Mathematical Institute, U. Oxford, Dec 2010.

14. **The topology of a decision problem.**  
Junior Seminar, Department of Pure Mathematics, Universidade do Porto, Sep 2009.
15. **Mahler's measure.**  
IV Brazilian Research Initiation Symp., IMPA – Inst. for Pure & Applied Maths, Rio de Janeiro, Nov 2008.
16. **Mahler's measure.**  
National Meeting of 'Young Talents in Mathematics' programme, Universidade de Coimbra, Sep 2008.
17. **Lehmer's conjecture.**  
Junior Seminar, Department of Pure Mathematics, Universidade do Porto, Mar 2008.
- [Invited talks at workshops \(19\)](#)
18. **From Vorob'ev's theorem to monogamy of non-locality and local macroscopic averages.**  
4th Workshop on Quantum Contextuality in Quantum Mechanics and Beyond (QCQMB 2021), Prague (virtual), 17 May 2021.
19. **Logic and quantum advantage.**  
Logic and Structure in Computer Science and Beyond, Lorentz Center, Leiden, December 2019.
20. **Resource theory of contextual behaviours.**  
Workshop on Contextuality as a Resource in Quantum Computation II, University of Oxford, July 2019.
21. **Acyclicity and Vorob'ev's theorem.**  
3rd Workshop on Quantum Contextuality in Quantum Mechanics and Beyond (QCQMB 2019), Prague, May 2019.
22. **Quantum vs classical: non-locality, contextuality, and informatic advantage.**  
Q DAYS 2019 – QuantaLab Workshop in Quantum Computation, Universidade do Minho, April 2019.
23. **Contextuality and advantage in informatic tasks.**  
2nd Workshop on Quantum Contextuality in Quantum Mechanics and Beyond, Prague, May 2018.
24. **Contextuality as a resource.**  
Workshop on Combining Viewpoints in Quantum Theory, University of Edinburgh, Mar 2018.
25. **The quantum monad on relational structures.**  
Logical Structures in Computation Reunion Workshop, Simons Institute, UC Berkeley, Dec 2017.
26. **Resource theory of contextuality.**  
Workshop on Quantum Correlations, Contextuality and All That, Int'l Inst. of Physics, Natal, Nov 2017.
27. **Monads, comonads, and quantum model theory without quantum logic.**  
Dusko@60 – a conference in honour of 60th birthday of Dusko Pavlovic, University of Oxford, Oct 2017.
28. **The contextual fraction and contextuality as a resource.**  
Workshop on Quantum Contextuality in Quantum Mechanics and Beyond, Prague, Jun 17.
29. **Towards a resource theory of contextuality.**  
Workshop on Compositionality, Simons Institute for the Theory of Computing, UC Berkeley, Dec 2016.
30. **The contextual fraction as a measure of contextuality.**  
Workshop on Contextuality as a Resource in Quantum Computation, University College London, Jun 2016.
31. **Possibilities determine the structure of the no-signalling polytope.**  
Workshop on Information and Processes (WIP 2016), Université Paris Diderot (Paris 7), Apr 2016.
32. **The sheaf-theoretic approach to non-locality and contextuality II.**  
Workshop on Quantum Correlations, Contextuality and All That, Int'l Inst. of Physics, Natal, Nov 2015.
33. **A structural reason for monogamy and locality of average macroscopic behaviour.**  
Workshop on Information and Processes (WIP 2013), CIAPA, Costa Rica (Tulane University), Dec 2013.
34. **Information dependence and independence: from quantum mechanics to databases and back.**  
Quantitative Analysis of Algebraic Systems (QAIS) Project Workshop, Universidade do Minho, Sep 2013.
35. **Topologies on the spectral presheaf and co/contra-variant duality.**  
First Workshop on Quantum Toposophy, Radboud Universiteit, Nijmegen, Dec 2012.
36. **Unsharp values in the topos approach.**  
Workshop Quantum and Classical Information Flow, Bellairs Research Inst., Barbados (McGill U), Apr 2011.

## Contributed talks (14)

37. **Closing Bell: Boxing black box correlations in the resource theory of contextuality.**  
18th International Conference on Quantum Physics and Logic (QPL 2021), Gdańsk (online), 7–11 Jun 2021.
38. **Partial Boolean algebras and the logical exclusivity principle.**  
17th International Conference on Quantum Physics and Logic (QPL 2020), Paris (online), Jun 2020.
39. **A comonadic view of simulation and quantum resources.**  
34th Annual ACM/IEEE Symposium on Logic in Computer Science (LiCS 2019), Simon Fraser University, Vancouver, Jun 2019.
40. **Simulations of quantum resources and the degrees of contextuality (Early Idea).**  
8th Conference on Algebra and Coalgebra in Computer Science (CALCO 2019), University College London & Imperial College London, Jun 2019.
41. **The quantum monad: Towards quantum finite model theory.**  
15th International Conference on Quantum Physics and Logic (QPL 2018), Dalhousie University, Jun 2018.
42. **The quantum monad on relational structures.**  
17th Asian Quantum Information Science Conference (AQIS 2017), National U Singapore, Sep 2017.
43. **The quantum monad on relational structures.**  
42nd Int'l Symp. on Mathematical Foundations of Computer Science (MFCS 2017), Aalborg U, Aug 2017.
44. **Minimum resources for quantum contextuality.**  
14th International Conference on Quantum Physics and Logic (QPL 2017), Radboud Universiteit, Jul 2017.
45. **The contextual fraction and contextuality as a resource.**  
18th Växjö Conference on Quantum Foundations, Linnaeus University, Jun 2017.
46. **Quantifying contextuality via linear programming.**  
13th Int'l Conference on Quantum Physics and Logic (QPL 2016), Strathclyde University, Jun 2016.
47. **The support lattice and the structure of the no-signalling polytope.**  
Workshop 10 years of Categorical Quantum Mechanics, University of Oxford, Oct 2014.
48. **On monogamy of non-locality and macroscopic averages: examples and preliminary results.**  
11th Workshop on Quantum Physics and Logic (QPL 2014), Kyoto University, Jun 2014.
49. **Structural reason for monogamy.**  
Workshop on Quantum Information and Foundations of Quantum Mechanics, U British Columbia, Jul 2013.
50. **Structural reason for monogamy and local macroscopic correlations.**  
Postgraduate Conference on Quantum Fields, Gravity & Information, University of Nottingham, Apr 2013.

## Language Skills \*

Portuguese Native speaker

|         | Understanding  |               | Speaking       |                | Writing        |
|---------|----------------|---------------|----------------|----------------|----------------|
|         | Listening      | Reading       | Interaction    | Production     | Writing        |
| English | C2 Proficient  | C2 Proficient | C2 Proficient  | C2 Proficient  | C2 Proficient  |
| French  | B1 Independent | C1 Proficient | A2 Basic       | A2 Basic       | A2 Basic       |
| Spanish | C1 Proficient  | C2 Proficient | B2 Independent | B1 Independent | B1 Independent |

\* Common European Framework of Reference for Languages (CEFR) self-assessment level