

Vincent Nesme

CONTACT

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PERSONAL INFORMATION

French, b. Dec 13th, 1981

RESEARCH INTERESTS

models of computation, complexity theory, quantum computing, cellular automata

EDUCATION

École Normale Supérieure de Lyon, Lyon, France **2003–2006**

Ph.D. in computer science, 2007

- Thesis Title: Query Complexity and Symmetries
- Advisors: Pascal Koiran and Natacha Portier
- Keywords: quantum computing, query complexity, hidden subgroup, polynomial method, symmetries, automorphisms, black box, lower bounds, adaptivity

Teaching Assistant

- Decidability, Graphs and Graph Algorithms, Logics, Ordered Structures ENS Lyon, M.D. level
- “Computer driver licence” UCBL, freshman level

École Normale Supérieure, Paris, France **1999–2003**

M.D. in Logic at Paris 7, 2002

- Thesis Title: Consequence of OCA on the embeddings of the measure algebra into $\mathfrak{P}(\omega)/\text{fin}$ (OCA=Open Colour Axiom)
- Advisor: Boban Veličković

Maîtrise in Mathematics, 2001

- Report Title: Coherence of an impredicative Theory
- Advisor: Giuseppe Longo

ACADEMIC POSITIONS

Freie Universität Berlin, Berlin, Allemagne **2011–**

Post-doc

Research

- within the QMIO team
- projets : compressed sensing, many-body systems

Teaching

- Representation theory of finite and compact groups research team

Teaching Assistant

- Mathematics access course for freshmen

- Universität Potsdam**, Potsdam, Germany **2010–**
- Post-doc
- Teaching*
- in the quantum information theory team
 - projects : Lieb-Robinson bounds, compressed sensing, many-body systems
- Leibniz Universität Hannover**, Hannover, Germany **2009–2010**
- Post-doc
- Research*
- in the Institut für theoretische Physik
- Technische Universität Braunschweig**, Braunschweig, Germany **2007–2009**
- Post-doc
- Research*
- within the team of Pr. Werner, of IMaPh
 - projects: quantum cellular automata and quantum walks
- Teaching*
- Introduction to functional programming research team
- Université Paris-Sud 11**, Orsay, France **2006–2007**
- Research*
- within the team Algorithms and Complexity of LRI
 - projects: quantum computing, query complexity, lower bounds
- Teaching*
- Logic access course to M.D. level
- Teaching Assistant*
- Algorithmics freshman level
 - C programming freshman level
 - Formal languages Licence level

PUBLICATIONS

Journals

- Johannes Gütschow, Vincent Nesme and Reinhard Werner. Self-similarity of cellular automata on Abelian groups. Accepted to *IJUC*.
- David Gross, Holger Vogts, Vincent Nesme and Reinhard Werner. Index theory of one dimensional quantum walks and cellular automata. To appear in *Comm. Math. Phys.*.
- Pablo Arrighi, Vincent Nesme and Reinhard Werner. One-dimensional quantum cellular automata : linearizations, axiomatics, structure. Accepted to *IJUC*.
- Pablo Arrighi, Vincent Nesme and Reinhard Werner. Unitarity plus causality implies localizability. *J. Comp. Sys. Sci.*, 77(2):372378, March 2011.
- Pascal Koiran, Vincent Nesme and Natacha Portier. The quantum query complexity of the abelian hidden subgroup problem. *Theor. Comput. Sci.*, 380(1-2):115–126, 2007.

International conferences with reviewing committee

- Guillaume Theyssier and Vincent Nesme. Simulation and spacetime symmetries. Accepted to *Automata* 2011.
- Pablo Arrighi and Vincent Nesme. A simple block representation of reversible cellular automata with time-symmetry. Accepted to *Automata* 2011.
- Pablo Arrighi, Renan Fargetton, Vincent Nesme and Éric Thierry. Applying causality principles to the axiomatization of probabilistic cellular automata. *Proceedings of Computation in Europe* 2011.
- Pablo Arrighi and Vincent Nesme. The block neighborhood. *Journées Automates Cellulaires* 2010:45–43.
- Johannes Gütschow, Vincent Nesme and Reinhard Werner. The fractal structure of cellular automata on Abelian groups, *DMTCS proceedings, Automata'2010*:55–74, soumis au *Journal of Cellular Automata*.
- Pablo Arrighi and Vincent Nesme. Quantization of Cellular Automata. In the proceedings of the *Journées Automates Cellulaires* 2008.
- Pablo Arrighi, Vincent Nesme and Reinhard Werner. Unitarity plus causality implies Locality. Présenté à *QIP* 2010.
- Pablo Arrighi, Vincent Nesme and Reinhard Werner. One-dimensional quantum cellular automata over finite, unbounded configurations. In Carlos Martín-Vide, Friedrich Otto, and Henning Fernau, editors, *LATA*, volume 5196 of *Lecture Notes in Computer Science*, pages 64–75. Springer, 2008.
- Pascal Koiran, Vincent Nesme and Natacha Portier. A Quantum Lower Bound for the Query Complexity of Simon's Problem. In *Proc. ICALP 2005*, volume 3580 of *Lecture Notes in Computer Science*, pages 1287–1298. Springer, 2005.

Others

- David Gross and Vincent Nesme. Note on sampling without replacing from a finite collection of matrices. 2010.
- Pablo Arrighi, Vincent Nesme and Reinhard Werner. Quantized Neighbourhoods. 2009.
- Vincent Nesme. Complexité en requêtes and symétries. Défendue à l'ENS Lyon, mai 2007. Les slides sont disponibles.
- Pascal Koiran, Vincent Nesme and Natacha Portier. On the Probabilistic Query Complexity of Transitively Symmetric Problems. LIP research report.

LANGUAGES

French (mother tongue), English (fluent), German (good level), Japanese, Esperanto (notions)

HOBBIES

piano, go (1 kyu), genealogy, reading, chess, cooking, racquet sports...