

CURRICULUM VITAE

Arnau Riera

- **Personal data**

Family name: RIERA

First name: Arnau

Date of birth: December 18, 1982

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- **Education**

– PhD program in Advanced Physics (February 2006 – December 2009)

Dept. of Estructura i Constituents de la Matèria (ECM), Universitat de Barcelona.

PhD advisor: Prof. José Ignacio Latorre.

– Llicenciat en Física (B.S.) (2000–2005)

Facultat de Física, Universitat de Barcelona

(subjects on advanced quantum mechanics and quantum field theory were taken).

- **Research interests**

– Interplay between Condensed Matter and Quantum Information.

– Entanglement in many body systems.

– Cold gases of few atoms and optical lattices.

– Quantum circuits for strongly correlated systems.

– Spin chains.

– Disordered quantum systems.

– Topological order and topological quantum computation.

- **Languages**

– Spoken and written Catalan (mother tongue).

– Spoken and written Spanish (advanced level).

– Spoken and written English (advanced level).

– Spoken and written French (medium level).

- **Fellowships**

– Research fellowship (BRD, Universitat de Barcelona, March–May 2006).

– Research fellowship (FI, Generalitat de Catalunya, June 2006 – December 2009).

– Research fellowship for a short term visit (BE, Generalitat de Catalunya, October – December 2007).

- **Short term research visits**

- Department of Physics, Harvard University (Cambridge, MA, USA). Contact person: Eugene Demler. November 2008.
- Ultracold quantum gases in optical lattices group, Johannes Gutenberg Universität (Mainz, Germany). Contact person: Belén Paredes. October-December 2007.

- **Participation in workshops, seminars and summer schools**

- “*ICREA Workshop on Quantum Gauge Theories and Ultracold Atoms*”; 1 – 4 September 2009, Sant Benet, Barcelona (Spain).
- “*IMA Conference on Quantum Computing and Complexity of Quantum Simulation*”; 31 March – 2 April 2009, Imperial College London (United Kingdom).
- “*Workshop Mon St Benet Juan Ignacio Cirac*”; 3 – 6 December 2008, Sant Benet, Barcelona (Spain).
- Summer School “*INSTANS Summer School 2007*”; 26 August – 2 September 2007, Worcester College Oxford (United Kingdom).
- Workshop “*Quantum computation and topological orders*”; 16 – 20 July 2007, El Escorial, Madrid (Spain).
- Workshop “*Informal Quantum Information Gathering*”; 11 – 14 April 2007, Institute for Theoretical Physics, Institute for Quantum Optics and Quantum Information, Innsbruck (Austria).
- Workshop “*Quantum Information and Many-Body Quantum Systems*”; 26 – 31 March 2007, Centro De Giorgi - Pisa (Italy).
- Workshop “*Disorder in cold atoms*”; 24 – 26 January 2007, Universitat Autònoma de Barcelona (Spain).
- Workshop “*Quantum - Classical Transition and Quantum Information*”; 18 – 3 June 2006, Benasque Center for Science (Spain).
- Summer School “*Scalable Quantum Information Processing and Computing*”; 11 – 24 June 2006, Benasque Center for Science (Spain).

- **Talks**

- Dept. Estructura i Constituents de la matèria - Internal seminar
Barcelona (Spain), 16 May 2009
“*Introduction to topological matter and topological quantum computation*”
- UAB-UB-ICFO Meeting
Dept. ECM, Universitat de Barcelona, Barcelona (Spain), 23 April 2009
“*Quantum algorithm for the Laughlin wave function*”
- IMA Conference on Quantum Computing and Complexity of Quantum Simulation
Imperial College London (United Kingdom), 1 April 2009
“*Quantum algorithm for the Laughlin wave function*”
- UAB-UB-ICFO Meeting
ICFO, Castelldefels, Barcelona (Spain), 11 June 2008
“*Anderson and entanglement localizations*”
- Johannes Gutenberg Universität - Physics colloquium
Mainz (Germany), 12 December 2007
“*Introduction to Anderson localization*”

– Dept. Estructura i Constituents de la matèria - Internal seminar
Barcelona (Spain), 9 March 2006
“Introduction to ultra-cold atoms and the exact diagonalization technique”

- **Popular science talks selection**

- Universitat de Barcelona, Barcelona (Spain), October-December 2009
“Introducció, nus i desenllaç: la història de l’univers.”
- IES Manuel Blancafort, La Garriga (Spain), 23 Març 2009
“Camí de realitat”
- Universitat de Barcelona, Barcelona (Spain), October-December 2008
“Viatge al món subatòmic”
- Llinars town hall (Spain), 16 May 2008
“El món subatòmic, atzar i determinisme”
- Universitat de Barcelona, Barcelona (Spain), March 2007
“Parlem d’Internet”
- IES Miquel Biada, Mataró (Spain), 15 November 2006
“La mecànica quàntica, una nova concepció de la realitat”

- **Teaching**

- Problems of mathematical analysis, 30 h, (February-May 2008).
- Problems of mathematical analysis, 30 h, (February-May 2007).

- **Programming**

- Programming languages: C, C++, FORTRAN and Mathematica.
- Other languages: Latex, html and css.

- **Publications**

- Fractional Quantum Hall States in optical lattices,
A. Riera and B. Paredes,
(in preparation).
- A short review on entanglement in quantum spin systems,
J. I. Latorre and A. Riera,
arXiv:0906.1499 (to appear in J. Phys. A), (2009).
- Quantum circuits for the Laughlin wave function,
J. I. Latorre, V. Picó and A. Riera
arXiv:0902.4797 (sent to PRL), (2009).
- Symmetry breaking in small rotating cloud of trapped ultracold Bose atoms,
D. Dagnino, N. Barberán, M. Lewenstein, K. Osterloh and A. Riera,
Phys. Rev. A 76, 013625 (2007).
- Area law and vacuum reordering in harmonic networks,
A. Riera and J. I. Latorre,
Phys. Rev. A 74 052326 (2006).

- **Other interests**

- Coordinator of the child-youth section in *“Centre Excursionista de Llinars del Vallès”*
(mountain club), January 2009 – .

- Volunteer as instructor of children and youths in “*Centre Excursionista de Llinars del Vallès*”, June 2000 – September 2007.
- Coordinator of the children’s summer school of Llinars del Vallès, June-July 2005.