

TOMMASO ROSCILDE

Laboratoire de Physique
Ecole Normale Supérieure de Lyon
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Personal Data

Date of Birth June 4th, 1975
Place of Birth Firenze, Italy
Citizenship Italian

Degrees

December 2011 **Habilitation** (*Habilitation à diriger des recherches*), Ecole Normale Supérieure de Lyon, France.
Research Area: Condensed Matter Theory.
Thesis: *Strong correlations and disorder in bosonic systems.*

January 2003 **Ph.D., Physics**, University of Pavia, Italy.
Research Area: Condensed Matter Theory.
Thesis: *Phase transitions and crossovers in two-dimensional anisotropic quantum anti-ferromagnets.*
Advisor: Prof. Pietro Carretta.

December 1999 **Diploma, Physics**, University of Florence, Italy.
Research Area: Condensed Matter Theory.
Thesis: *Thermodynamic properties of two-dimensional quantum antiferromagnets (in italian).*
Advisor: Dr. Paola Verrucchi.
Co-Advisor: Prof. Valerio Tognetti.
Grade: Full marks (110/110) *cum laude*.

Academic Positions

January 2009- **Associate Professor (Maître de Conférences – titulaire)**, Laboratoire de Physique, Ecole Normale Supérieure de Lyon, Lyon, France.

Jan. 2008- Dec. 2008 **Assistant Professor (Maître de Conférences – stagiaire)**, Laboratoire de Physique, Ecole Normale Supérieure de Lyon, Lyon, France.

Sept. 2005 - Dec. 2007 **Post-Doctoral Research Associate**, Max-Planck-Institut für Quantenoptik, Garching, Germany.

March 2003 - August 2005 **Post-Doctoral Research Associate**, Department of Physics and Astronomy, University of Southern California, Los Angeles, CA.

January 2003 - February 2003 **Research Assistant**, National Institute for the Physics of Matter (INFM), Research Unit of Florence. Project title: *Quantum Monte Carlo simulations of two-dimensional anti-ferromagnets*; supervisor: Prof. A. Cuccoli (Univ. of Florence).

November 2002 - January 2003 **Research Assistant**, Department of Physics, University of Florence. Project title: *Quantum Monte Carlo simulations of two-dimensional antiferromagnets*; supervisor: Prof. A. Cuccoli (Univ. of Florence).

Academic qualifications

Qualification aux fonctions de Professeur des Universités, issued by the french *Conseil National des Universités*. Division 28: *Milieux denses et matériaux*.

Qualification aux fonctions de maître de conférences, issued by the french *Conseil National des Universités* (published on the *Journal Officiel 119*, May 24th 2005). Division 28: *Milieux denses et matériaux*.

Honors, awards

2007-2009 INCITE (Innovative and Novel Computational Impact on Theory and Experiment) Award of the U.S. DOE Office of Science.
2005 Individual Marie-Curie Fellowship for intra-european mobility (declined).
1999-2003 PhD Fellowship at the University of Pavia, Italy.

Invited talks at conferences, workshops, schools

1/6-4/6/2010 *Nice BEC 2010 - Theory of Quantum Gases and Quantum Coherence*, Nice, France.
13/7-17/7/2009 *LasPhys09 Conference - Workshop on Cold Atoms*, Barcelona, Spain.
6/7-18/7/2009 *ICAM Cargèse Summer Workshop: Emergent Quantum Phenomena from the Nano to the Macro World*, Cargèse, France.
12/5-15/5/2009 *Joint European Japanese Conference: Frustration in Condensed Matter*, Lyon, France.
30/6-4/7/2008 *LasPhys08 Conference - Workshop on Cold Atoms*, Trondheim, Norway.
20-24/08/2007 *LasPhys07 Conference - Workshop on Cold Atoms*, León, Mexico.
24-27/12/2007 *ICREA Workshop "Disorder in Cold Atoms"*, Barcelona, Spain.

Oral contributions to conferences, workshops, schools

12-16/12/2011 *Frustrated magnetism: from spin ice to Kagomé planes*, Natal, Brazil.
26-28/10/2011 *Topological materials*, Grenoble, France.
21-25/3/2011 *APS March Meeting*, Dallas, TX.
7/8/2010 *Workshop on Cold gases meet Many-Body Theory*, Grenoble, France.
8/4-9/4/2010 *Workshop on New Trends in the Theory of Strongly Correlated Electron Systems*, Grenoble, France.
8/4-9/4/2009 *APS March Meeting*, Pittsburgh, PA.
10-14/3/2008 *APS March Meeting*, New Orleans, LA.
16-20/7/2007 *Recent Progress in Many-Body Theories 14*, Barcelona, Spain.
9-13/7/2007 *StatPhys23*, Genova, Italy.
29/3/2007 *DPG Meeting - Condensed Matter Division*, Regensburg, Germany.
5-9/3/2007 *APS March Meeting*, Denver, CO.
27-31/7/2006 *Conference of the Condensed-Matter Division of the German Physical Society and of the European Physical Society*, Dresden, Germany.
13-17/7/2006 *APS March Meeting*, Baltimore, MD.
10-17/8/2005 *24th International Conference on Low Temperature Physics*, Orlando, FL.
21-25/3/2005 *APS March Meeting*, Los Angeles, CA.
7-10/6/2004 *Macroscopic Quantum Coherence and Computing (MQC2)*, Naples, Italy.
03/2004 *APS March Meeting 2004*, Montreal, Canada.
23-25 /7/2003 *Theoretical Trends in Low-Dimensional Magnetism*, Florence (Italy), satellite meeting of the International Conference on Magnetism 2003.
1-5/7/2002 *Euroconference: Physics of Magnetism 2002*, Poznań, Poland.
22-26/10/ 2001 *CECAM Tutorial on Quantum Monte Carlo* CECAM, Lyon, France.

Poster contributions to conferences, workshops, schools

10/09-16/09-2011	<i>BEC 2011 Conference</i> , Sant Feliu de Guixols, Espagne.
13-15/4/2011	<i>IFRAF-Fermi Meeting</i> , Paris, France.
1-7/8/2010	<i>Quantum Fluids and Solids 2010</i> , Grenoble, France.
5/09-11/09-2009	<i>BEC 2009 Conference</i> , Sant Feliu de Guixols, Espagne.
6-13/8/2008	<i>25th International Conference on Low Temperature Physics</i> , Amsterdam, Pays-Bas.
September 15 - 20, 2007	<i>BEC 2007 Conference</i> , Sant Feliu de Guixols (Spain).
July 16-21, 2006	<i>International Conference on Atomic Physics</i> , Innsbruck (Austria).
December 8-9, 2005	<i>GDEST E.U.-U.S. Workshop on Quantum Information and Coherence</i> , Munich, Germany.
October 29 - Nov. 2, 2005	<i>Theory of Quantum Gases and Quantum Coherence - Third International Workshop</i> , Cortona, Italy.
January 13 - 16, 2005	<i>Advances in Computational Quantum Many-Body Physics</i> , Banff (Canada).
July 27 - August 1, 2003	<i>International Conference on Magnetism</i> , Rome (Italy).
July 15-19, 2002	<i>International School of Physics "Enrico Fermi"</i> , Course CLI: "Quantum Phenomena of Mesoscopic Systems", Varenna (Italy).
July 10-13, 2002	<i>International Conference on Strongly Correlated Electron System (SCES 2002)</i> , Kraków (Poland).
March 21-24, 2002	<i>Fisica teorica e struttura della materia, XXI Convegno</i> , Fai della Paganella (Italy).
July 16-27, 2001	<i>Summer School on "Low-dimensional quantum systems: Theory and Experiment"</i> , International Center for Theoretical Physics, Miramare, Trieste (Italy).
April 2-7, 2001	<i>DPG-School on Computational Physics</i> , Bad Honnef (Germany).
September 11-15, 2000	<i>INFM National School on the Physics of Matter</i> , Torino, Villa Gualino (Italy).
September 4-9, 2000	<i>Granada Seminar on Computational Physics</i> , Granada (Spain).
June 18-22, 2001	<i>Italian National Conference on the Physics of Matter (INFM Meeting)</i> , Roma (Italy).
June 19-23, 2000	<i>Italian National Conference on the Physics of Matter (INFM Meeting)</i> , Genova (Italy).

Invited Seminars

14/7/2011	<i>Classical and quantum XY models on frustrated lattices</i> . Institut for Laser Physics, Hamburg, Germany.
25/5/2011	<i>Mass-imbalanced atomic mixtures in one-dimensional optical lattices</i> . Ludwig-Maximilians-Universität, Munich, Germany.
1/11/2010	<i>Bose glass phases in spin-gap antiferromagnets with site dilution</i> . National High-Magnetic Field Labs, Los Alamos, NM.
22/10/2010	<i>Bose glass phases in spin-gap antiferromagnets with site dilution</i> . University of Florida, Gainesville, FL.
16/2/2010	<i>Dynamical emergence of supersolidity in asymmetric boson mixtures in an optical lattice</i> . Laboratoire de Physique Statistique, Ecole Normale Supérieure, Paris, France.
16/6/2009	<i>Dynamical emergence of supersolidity in asymmetric boson mixtures in an optical lattice</i> . Laboratoire de Physique Théorique et Modèles Statistiques, Orsay, France.
20/6/2008	<i>Escaping from the trap: Learning about homogeneous quantum models from trapped cold atoms</i> . Institut non Linéaire de Nice, Nice, France.
June 26th, 2007	Colloquium, Max-Planck Institute for Quantum Optics, Garching (Germany). Title: <i>The fine art of disordering an optical lattice</i> .
June 8th, 2007	Theory Seminar, <i>Universitat Autònoma de Barcelona</i> , Spain. Title: <i>Localization of ultra-cold bosons in optical lattices</i> .
April 18th, 2007	Theory Seminar, Physics Department, University of Florence (Italy). Title: <i>Localization of ultra-cold bosons in optical lattices</i> .
January 18th, 2007	Theory Seminar, <i>Laboratoire de Physique, École Normale Supérieure de Lyon</i> , Lyon (France). Title: <i>Bosonic localization in quantum magnets and optical lattices</i> .
April 26th, 2006	Theory Seminar, <i>Institut für theoretische Physik</i> , Leipzig University (Germany). Title: <i>Exploring new quantum phases of correlated matter via lattice disorder: the route of quantum spin systems</i> .

April 7th, 2006	Theory Seminar, <i>Polygone Scientifique</i> , Grenoble (France). Title: <i>Exploring new quantum phases of correlated matter via lattice disorder: the route of quantum spin systems.</i>
February 27th, 2006	Physics Colloquium, Department of Physics and Astronomy, University of Alberta, Edmonton (Canada). Title: <i>Exploring new quantum phases of correlated matter via lattice disorder: the route of quantum spin systems.</i>
February 6th, 2006	Institut für Theorie der kondensierten Materie, University of Karlsruhe, Germany. Title: <i>Novel quantum phases in diluted spin-gap antiferromagnets.</i>
January 11th, 2006	Laboratoire de Physique Théorique de la Matière Condensée, Université Pierre et Marie Curie, Paris. Title: <i>BEC vs. localization in spin-gap antiferromagnets with lattice disorder.</i>
December 6th, 2005	Laboratoire de Physique Théorique - Université Paul Sabatier, Toulouse. Title: <i>Novel quantum phases of antiferromagnets on random lattices.</i>
August 29, 2005	Department Colloquium at the Department of Physics and Astronomy, University of Southern California. Title: <i>Novel quantum phases of antiferromagnets on random lattices.</i>
June 9, 2005	Institut für Theoretische Physik III, University of Stuttgart. Title: <i>Quantum spin systems: the lesson from entanglement.</i>
June 8, 2005	Max-Planck-Institut für Quantenoptik, Garching. Title: <i>Quantum spin systems: the lesson from entanglement.</i>
April 18, 2005	Department of Physics and Astronomy, University of British Columbia, Vancouver. Title: <i>Quantum spin systems: the lesson from entanglement.</i>
April 5, 2005	Theoretical Division, Los Alamos National Labs. Title: <i>Quantum Percolation in Two-Dimensional Antiferromagnets.</i>
June 3, 2004	Laboratoires 'Louis Néel', CNRS Grenoble (France). Title: <i>Frustration-induced transitions in the square-lattice $J_1 - J_2$ antiferromagnet.</i>
June 2, 2004	Department of Physics, University of Geneva (Switzerland). Title: <i>Quantum percolation in two-dimensional antiferromagnets.</i>
June 1, 2004	Department of Physics, Ecole Polytechnique Federale Lausanne (Switzerland). Title: <i>Frustration-induced transitions in the square-lattice $J_1 - J_2$ antiferromagnet.</i>
May 28, 2004	Department of Physics, ETH Zürich (Switzerland). Title: <i>Quantum percolation in two-dimensional antiferromagnets.</i>
May 27, 2004	Department of Physics, University of Basel (Switzerland). Title: <i>Studying quantum spin systems through entanglement.</i>
May 25, 2004	Laboratoire de Physique Théorique - Université Paul Sabatier, Toulouse. Title: <i>Frustration-induced transitions in the square-lattice $J_1 - J_2$ antiferromagnet.</i>
April 30, 2004	Department of Physics and Astronomy, University of California at Santa Barbara. Title: <i>Quantum percolation in two-dimensional antiferromagnets.</i>
December 18, 2003	Department of Physics and Astronomy, University of California at Irvine. Title: <i>Quantum effects on the collinear phase of the frustrated J_1-J_2 antiferromagnet.</i>
November 5, 2003	Department Colloquium at the Physics Department, California State University - Northridge. Title: <i>Quantum effects on the collinear phase of the frustrated J_1-J_2 antiferromagnet.</i>
September 8, 2003	Department Colloquium at the Department of Physics and Astronomy, University of Southern California. Title: <i>Ordering in low-dimensional magnets.</i>
June 9, 2002	Department of Physics and Astronomy, University of Southern California. Title: <i>Phase transitions and crossovers in anisotropic two-dimensional quantum antiferromagnets.</i>
January 22, 2002	Kammerlingh-Onnes Institute of Physics, Leiden (The Netherlands). Title: <i>Detection and Control of XY Behavior in Two-Dimensional Quantum Antiferromagnets.</i>
May 21, 2001	Department of Physics, Jagiellonian University, Krakow (Poland). Title: <i>Phase Transitions in Anisotropic Two-Dimensional Quantum Antiferromagnets.</i>

Service

- Member of the American Physical Society

- Referee for the following journals: *Nature Physics*; *Physical Review Letters*; *Physical Review A, B, E*; *New Journal of Physics*; *Reports on Progress in Physics*; *Europhysics Letters*; *European Journal of Physics B*; *Journal of Physics A, B*; *Journal of Physics: Condensed Matter*.

Known languages

Italian (mother tongue); English (fluent); French (fluent); German (very good); Spanish (very good); Portuguese (fair).

Publication list

- **Statistics**

459 citations (excluding self-citations, as of 31/8/2011, after the ISI-Web of Science), h-index: 13.

- **International peer-reviewed journals**

- (1) T. Roscilde, C. Degli Esposti Boschi, and M. Dalmonte
Pairing, crystallization and string correlations of mass-imbalanced atomic mixtures in one-dimensional optical lattices
Europhys. Lett. **97**, 23002 (2012).
- (2) P. Hauke, **T. Roscilde**, V. Murg, J. I. Cirac, and R. Schmied
Modified spin-wave theory with ordering vector optimization: spatially anisotropic triangular lattice and $J_1J_2J_3$ model with Heisenberg interactions
New J. Phys. **13**, 075017 (2011).
- (3) M. Eckholt and **T. Roscilde**
Comment on "Feshbach-Einstein Condensates"
Phys. Rev. Lett. **105**, 199603 (2010).
- (4) R. Yu, O. Nohadani, S. Haas, and **T. Roscilde**
Magnetic Bose glass phases of coupled antiferromagnetic dimers with site dilution
Phys. Rev. B **82**, 134437 (2010).
- (5) B. Horstmann, S. Dürr, and **T. Roscilde**
Localization of cold atoms in state-dependent optical lattices via a Rabi pulse
Phys. Rev. Lett. **105**, 160402 (2010).
- (6) **T. Roscilde**
Exploring the grand-canonical phase diagram of interacting bosons in optical lattices by trap squeezing
Phys. Rev. A **82**, 023601 (2010).
- (7) P. Hauke, **T. Roscilde**, V. Murg, J. I. Cirac, and R. Schmied
Modified spin-wave theory with ordering vector optimization I: frustrated bosons on the spatially anisotropic triangular lattice
New J. Phys. **12**, 053036 (2010).
- (8) **T. Roscilde** and M. Boninsegni
Off-diagonal correlations in a one-dimensional gas of dipolar bosons
New J. Phys. **12**, 033032 (2010).
- (9) R. Yu, S. Haas, and **T. Roscilde**
Universal phase diagram of disordered bosons from a doped quantum magnet
Europhys. Lett. **89**, 10009 (2010).
- (10) T. Keilmann, I. Cirac, and **T. Roscilde**
Dynamical Creation of a Supersolid in Asymmetric Mixtures of Bosons
Phys. Rev. Lett. **102**, 255304 (2009).
- (11) **T. Roscilde**, M. Rodriguez, K. Eckert, O. Romero-Isart, M. Lewenstein, E. Polzik, A. Sanpera
Quantum polarization spectroscopy of correlations in attractive fermionic gases
New J. Phys. **11**, 055041 (2009).
- (12) **T. Roscilde**
Probing correlated phases of bosons in optical lattices via trap squeezing
New J. Phys. **11**, 023019 (2009).

- (13) **T. Roscilde**
Bosons in one-dimensional incommensurate superlattices
Phys. Rev. A **77**, 063605 (2008).
- (14) R. Schmied, **T. Roscilde**, V. Murg, D. Porras, and J. I. Cirac
Quantum phases of trapped ions in an optical lattice
New J. Phys. **10**, 045017 (2008).
- (15) R. Yu, **T. Roscilde**, and S. Haas
Field induced disordered-local-moment phase in site-diluted spin-gap antiferromagnets
New J. Phys. **10**, 013034 (2008).
- (16) B. Horstmann, J. I. Cirac, and **T. Roscilde**
Dynamics of Localization Phenomena for Hardcore Bosons in Optical Lattices
Phys. Rev. A **76**, 043625 (2007).
- (17) **T. Roscilde** and J. I. Cirac
Quantum emulsion: a glassy phase of bosonic mixtures in optical lattices
Phys. Rev. Lett. **98**, 190402 (2007).
- (18) **T. Roscilde**
Field-induced quantum disordered phases in $S = 1/2$ weakly-coupled dimer systems with site dilution
Phys. Rev. B **74**, 144418 (2006).
- (19) W. Li, L. Ding, R. Yu, **T. Roscilde**, and S. Haas
Scaling Behavior of Entanglement in Two- and Three-Dimensional Free Fermions
Phys. Rev. B **74**, 073103 (2006).
- (20) **T. Roscilde** and S. Haas
Bose-Einstein condensation vs. localization of bosonic quasiparticles in disordered weakly-coupled dimer antiferromagnets
J. Phys. B **39**, S153 (2006).
- (21) A. Fubini, **T. Roscilde**, V. Tognetti, M. Tusa, and P. Verrucchi
Reading entanglement in terms of spin configurations in quantum magnets
Eur. Phys. J. D **38**, 563 (2006).
- (22) Rong Yu, **T. Roscilde**, and S. Haas
Quantum disorder and Griffiths singularities in bond-diluted two-dimensional Heisenberg antiferromagnets
Phys. Rev. B **73**, 064406 (2006).
- (23) **T. Roscilde** and S. Haas
Quantum Localization in Bilayer Heisenberg Antiferromagnets with Site Dilution
Phys. Rev. Lett. **95**, 207206 (2005).
- (24) Rong Yu, **T. Roscilde**, and S. Haas
Quantum percolation two-dimensional antiferromagnets
Phys. Rev. Lett. **94**, 197204 (2005).
- (25) **T. Roscilde**, V. Corato, B. Ruggiero, and P. Silvestrini
A multi-qubit system for a scalable adiabatic quantum evolution
Phys. Lett. A **345**, 224 (2005).
- (26) **T. Roscilde**, A. Fubini, P. Verrucchi, S. Haas, and V. Tognetti
Entanglement and factorized states in two-dimensional antiferromagnets
Phys. Rev. Lett. **94**, 147208 (2005).
- (27) **T. Roscilde**, A. Fubini, P. Verrucchi, S. Haas, and V. Tognetti
Studying quantum spin systems through entanglement estimators.
Phys. Rev. Lett. **93**, 167203 (2004).
- (28) **T. Roscilde**, A. Feiguin, A. Chernyshev, S. Liu, and S. Haas
Anisotropy-induced ordering in the quantum $J_1 - J_2$ antiferromagnet
Phys. Rev. Lett. **93**, 017203 (2004).
- (29) L. Capriotti, A. Fubini, **T. Roscilde**, and V. Tognetti
Ising transition in the two-dimensional quantum $J_1 - J_2$ Heisenberg model
Phys. Rev. Lett. **92**, 157202 (2004).

- (30) A. Cuccoli, **T. Roscilde**, P. Verrucchi, and R. Vaia
Field-induced XY behavior in the $S = 1/2$ antiferromagnet on the square lattice
Phys. Rev. B **68**, 060402(R) (2003).
- (31) A. Cuccoli, **T. Roscilde**, P. Verrucchi, and R. Vaia
Detection of XY Behavior in Weakly Anisotropic Quantum Antiferromagnets on the Square Lattice
Phys. Rev. Lett. **90**, 167205 (2003).
- (32) A. Cuccoli, **T. Roscilde**, V. Tognetti, P. Verrucchi, and R. Vaia
Quantum Monte Carlo Study of $S=1/2$ weakly anisotropic antiferromagnets on the square lattice
Phys. Rev. B. **67**, 104414 (2003).
- (33) A. Cuccoli, **T. Roscilde**, V. Tognetti, P. Verrucchi, and R. Vaia
Phase transitions in two-dimensional anisotropic quantum magnets
Eur. Phys. J. B **20**, 55 (2001).
- (34) A. Cuccoli, **T. Roscilde**, V. Tognetti, P. Verrucchi, and R. Vaia
Finite-temperature ordering in two-dimensional magnets
Phys. Rev. B **62**, 3771 (2000).
- **Publications in volumes or collections:**
 - (1) **T. Roscilde**, A. Fubini, P. Verrucchi, S. Haas, and V. Tognetti
Entanglement in quantum-critical spin systems
In *Quantum computation: Solid State Systems*, curée par P. Delsing, C. Granata, Y. Pashkin, B. Ruggiero, and P. Silvestrini (Kluwer, Dordrecht, 2008).
 - **Peer-reviewed conference proceedings:**
 - (1) **T. Roscilde**, A. Fubini, P. Verrucchi, S. Haas, and V. Tognetti
Quantum Monte Carlo Study of Entanglement in Quantum Spin Systems
J. Low Temp. Phys. **140**, 293 (2005).
 - (2) Rong Yu, **T. Roscilde**, and S. Haas
Quantum Monte Carlo Study of Inhomogeneous Bond Dilution in the Two-Dimensional Heisenberg Antiferromagnet
J. Low Temp. Phys. **140**, 303 (2005).
 - (3) A. Cuccoli, **T. Roscilde**, R. Vaia, and P. Verrucchi
XY behaviour of the 2D $S=1/2$ antiferromagnet in a field
J. Magn. Magn. Mat. **272**, 884 (2004).
 - (4) A. Cuccoli, **T. Roscilde**, V. Tognetti, R. Vaia, and P. Verrucchi
Signatures of XY behaviour in 2D weakly anisotropic antiferromagnets
J. Magn. Magn. Mat. **272**, Supplement 1, E651 (2004).
 - (5) A. Cuccoli, **T. Roscilde**, V. Tognetti, P. Verrucchi, and R. Vaia
Anisotropy and Ising-like Transition of the $S=5/2$ Two-Dimensional Heisenberg Antiferromagnet Mn-Formate di-Urea
J. Appl. Phys. **93**, 7637 (2003).
 - (6) A. Cuccoli, **T. Roscilde**, V. Tognetti, P. Verrucchi, and R. Vaia
Quantum Monte Carlo simulation of two-dimensional $S = 1/2$ antiferromagnets with very weak easy-plane anisotropy
J. Appl. Phys. **93**, 7640 (2003).
 - (7) **T. Roscilde**
Intrinsic and field-induced XY-like behaviour in two-dimensional quantum antiferromagnets
Acta Phys. Pol. B **34**, 1497 (2003).
 - (8) **T. Roscilde**, A. Cuccoli, and P. Verrucchi
Phase transitions in anisotropic two-dimensional quantum antiferromagnets
phys. stat. sol. (b) **236**, 433 (2003).
 - (9) A. Cuccoli, **T. Roscilde**, V. Tognetti, P. Verrucchi, and R. Vaia
Thermodynamics of the two-dimensional easy-axis quantum antiferromagnet
J. Magn. Magn. Mater. **226**, 562 (2001).
 - (10) A. Cuccoli, **T. Roscilde**, V. Tognetti, P. Verrucchi, R. Vaia
The two-dimensional quantum Heisenberg antiferromagnet with Ising-like anisotropy
Braz. J. Phys. **30**, 697 (2000).