

Curriculum vitæ

Olivier CÉPAS

Chargé de recherche CNRS (CR2 since Jan. 2006)

Institut Néel

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Date of Birth : 16 May 1974

Nationality : French

Professional employment

- 10/2008- Institut Néel, Grenoble.
- 01/2006-09/2008 CNRS permanent position at the Laboratoire de Physique Théorique de la matière condensée, Université Pierre-et-Marie-Curie, Paris 6.
- 01/2004-12/2005 Post-doc at the Institut Laue Langevin, Grenoble, France.
- 09/2002-12/2003 Post-doc at the Indian Institute of Science, Bangalore, India.
- 01/2001-08/2002 Research associate, University of Queensland, Australia.

Education

- 1997-2000 : Ph.D. University Joseph Fourier, Grenoble.
“Effects of the Magnetic Anisotropic Interactions on the Low-Dimensional Oxides”
Adviser : T. Ziman, Institut Laue Langevin, defended in Oct. 2000.
- 1996-1997 : DEA (beginning graduate school) in theoretical physics at the Ecole normale supérieure de Lyon. Thesis : *“Canonically invariant formulation of Langevin and Fokker-Planck equations”*. Adviser : J. Kurchan.
- 1994-1996 : Undergraduate at the University of Paris 6 (*Magistère*).
- 1992-1994 : Undergraduate at the Classes préparatoires aux grandes écoles, Paris.

Miscellaneous

- Member of the “Commission des spécialistes” section 28, Université Paris XI, Orsay (2007-2008).
- Teaching : 230 hours for undergraduate students at the University of Grenoble (1997-2000).
- Languages : french (native), english, and russian (notions).

Conferences and Workshops

1. June 1998 : Summer School at Aussois on Strongly Correlated Systems, France.
2. Sept. 1998 : Workshop at the Institut Laue Langevin, *Polarized Neutrons for Condensed Matter Investigations*, France. Poster presentation : “Inelastic neutron cross-section for spin waves in the non-chiral spiral”.
3. Oct. 1998 : Workshop at the Max-Planck-Institut of Dresden (Germany), *Electronic and Magnetic Properties of Novel Transition Metal Compounds*. Poster presentation : “Inelastic neutron cross-section for spin waves in the non-chiral spiral”.
4. 20-21 Sept. 2000 : Colloquium on Strongly Correlated Systems, Toulouse (France). **Invited Talk** : “Dzyaloshinski-Moriya Interaction in the Two-Dimensional System $\text{SrCu}_2(\text{BO}_3)_2$ ”.
5. Sept. 2000 : Summer School at Aussois on Strongly Correlated Systems, France. Poster presentation : “Selection rules for optical transitions in spin-gapped systems”.
6. 21 Nov. 2000 : Talk at the Laboratory Léon Brillouin, CEA Saclay (France) : “Effects of the Magnetic Anisotropic Interactions on the Low-Dimensional Oxydes.”
7. 10-14 Sept. 2001 : The fourth international symposium on crystalline organic metals, superconductors and ferromagnets, Hokkaido (Japan), Poster presentation : “Magnetic field induced superconductivity in organic materials with local magnetic moments”.
8. 3-8 Nov. 2001 : 25th international conference on condensed matter theories, Gordon Godfrey Conference, Canberra (Australia). **Invited Talk** : “Magnetic field induced superconductivity in organic materials with local magnetic moments”.
9. 13 Nov. 2001 : Departmental Seminar, “Quantum magnetism in low dimensions”.
10. 20-22 Nov. 2001 : **Invited** for the french-japanese colloquium on “Quantum properties of low dimensional antiferromagnets”, Fukuoka (Japan).
11. 26 Nov. 2001 : Talk at JAERI, Tokai (Japan) : “Dzyaloshinski-Moriya interactions in the 2d spin gap system $\text{SrCu}_2(\text{BO}_3)_2$ ”.
12. Sept. 2002 : Two introductory talks on low-dimensional quantum magnetism and anisotropies, Bangalore.
13. 2-4 Jan. 2003 : Invited talk at the conference, “India and abroad” : “Phase Transitions in the pyrochlore system”, Kolkata.
14. 2 May 2002 : Talk at the Laboratoire de Physique Théorique et Modèles Statistiques, Orsay (Paris) : “The magnetism of $\text{SrCu}_2(\text{BO}_3)_2$: beyond the Shastry-Sutherland model.”
15. 2003. Talks *Phase Transitions in the frustrated pyrochlore system*.
 - Centre de Physique Moléculaire Optique et Hertzienne (Bordeaux, 19/03)
 - Institut Non Linéaire de Nice (Nice, 21/03)
 - Institut Laue Langevin (Grenoble, 04/04)

- Laboratoire de Physique des Solides (Orsay, 16/04)
- Laboratoire de Physique Théorique (Toulouse, 17/04).
- 16. 3 March 2004. Talk CORMAT, Laboratoire Louis Néel (Grenoble) :
Magnetic order in the dipolar pyrochlores.
- 17. 10 May 2004. Talk at the ILL : *Half-Filled Manganites : the effect of the magnetic-field.*
- 18. 21-24 July 2004. **Invited talk**, French-Japanese Colloquium, “Complex Quantum Systems” (Grenoble). *Phase Transitions in the dipolar pyrochlore antiferromagnets : the examples of $Gd_2Ti_2O_7$ and $Gd_2Sn_2O_7$.*
- 19. 30 Nov. - 3 Dec. 2004 : **Invited talk**. International Symposium on Quantum Spin Systems (QSS04) (Hayama, Japon).
Modified Spin-Wave Theory for Nano-magnets.
- 20. 31 Jan. 2005 : Talk at the Physics Department, Indian Institute of Science (Bangalore) : *Modified Spin-Wave Theory for Nano-magnets : Application to the Keplerate Giant Molecule $Mo_{72}Fe_{30}$.*
- 21. 4 Feb. 2005 : Talk at the Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur (Bangalore) : *Competing Interactions and Phases in Half-Doped Manganites.*
- 22. 3 March 2005 : Talk at the Laboratoire de Physique Théorique (ENS Paris) : *Modified spin-wave theory for nanomagnets : Application to the giant Keplerate molecule $Mo_{72}Fe_{30}$.*
- 23. 3 March 2005 : Talk at the Laboratoire de Physique Théorique des Liquides (Jussieu) :
Two examples of frustrated magnetic states.
- 24. 4 March 2005 : Talk at the Laboratoire CRISMAT (Caen) : *Competing interactions in half-doped manganites.*
- 25. 21-25 March 2005 : March Meeting of the APS (Los Angeles). Contributed talk :
Magnetic Orders and Fluctuations in the Dipolar Pyrochlore Antiferromagnet.
- 26. 1 April 2005 : Talk at the University of California (Santa-Cruz) : *Spin Correlations, Degeneracies, and Dynamics of the Giant Keplerate Molecule $Mo_{72}Fe_{30}$.*
- 27. 27 November 2005 : Talk at the Hong-Kong University of Science and Technology :
Degeneracy, fluctuations and magnetic order in the Dipolar Pyrochlore Antiferromagnet.
- 28. 26-27 January 2006 : Journées de la physique statistique, ESPCI, Paris. *Corrélations, dé générescences et dynamique des supramolécules magnétiques.*
- 29. 16 May 2006 : ILL-Belgian Theory Groups Meeting (Grenoble), *Frustrated supramolecular magnets.*
- 30. 05 June - 24 June 2006 : Les Houches summer school on “Quantum magnetism”.
- 31. 11 - 13 January 2007 : International workshop on “Mobile fermions and bosons on frustrated lattices”. Poster presentation : “Magnon dispersion and anisotropies in $SrCu_2(BO_3)_2$ ”, Dresden.

32. 21 - 23 May 2007 : **Invited talk** for the workshop "New developments in ESR of strongly correlated systems", Institute for Solid State Physics, Tokyo. Title : "Do we need dynamical spin anisotropies?"
33. 7 - 12 September 2008 : Talk at the international conference on Highly Frustrated Magnetism (HFM). Title : "Quantum phases in the Kagome antiferromagnet".

List of publications

1. O. Cépas and J. Kurchan,
Canonically invariant formulation of Langevin and Fokker-Planck equations
Eur. Phys. J. B **2**, 221 (1998).
2. T. Sakai, O. Cépas, and T. Ziman,
An Electron Spin Resonance Selection Rule for Spin-Gapped Systems
J. Phys. Soc. of Jpn., **69**, 3521 (2000).
3. B. Grenier, O. Cépas, L. P. Regnault, J. E. Lorenzo, T. Ziman, J. P. Boucher, A. Hiess, T. Chatterji, J. Jegoudez and A. Revcholevski,
Charge Ordering and Spin Dynamics in NaV_2O_5
Phys. Rev. Lett. **86**, 5966 (2001).
4. O. Cépas, K. Kakurai, L. P. Regnault, J. P. Boucher, T. Ziman, N. Aso, M. Nishi, H. Kageyama, and Y. Ueda,
Dzyaloshinski-Moriya Interaction in the 2d Spin Gap System $\text{SrCu}_2(\text{BO}_3)_2$
Phys. Rev. Lett. **87**, 167205 (2001).
5. O. Cépas, R. H. McKenzie, J. Merino,
Magnetic-field-induced superconductivity in layered organic molecular crystals with localized magnetic moments
Phys. Rev. B **65**, 100502R (2002).
6. O. Cépas and T. Ziman,
Static and Dynamical Dzyaloshinski-Moriya Interactions in gapped spin systems in Quantum Properties of Low-Dimensional Antiferromagnets, p. 175-182, Edited by Y. Ajiro and J.-P. Boucher (Kyushu University Press, Fukuoka, 2002).
7. K. Kakurai, N. Aso, K. Nukui, M. Nishi, H. Kageyama, Y. Ueda, H. Kadowaki, and O. Cépas,
Inelastic Neutron Scattering Experiment on Dzyaloshinski-Moriya Interaction in $\text{SrCu}_2(\text{BO}_3)_2$
in *ibid.*, p. 102-108 (2002).

8. O. Cépas, T. Sakai and T. Ziman,
Dynamics, Selection Rules and Dzyaloshinski-Moriya interactions in Strongly Frustrated Magnets
Prog. Theor. Phys. Suppl. **145**, 43 (2002).
9. O. Cépas and R. H. McKenzie,
Electric-field-induced Mott Insulating states in organic field-effect transistors,
Phys. Rev. B **66**, 214528 (2002).
10. O. Cépas and B. S. Shastry,
Field-Driven Transitions in the Dipolar Pyrochlore Antiferromagnet $Gd_2Ti_2O_7$
Phys. Rev. B **69**, 184402 (2004).
11. O. Cépas and T. Ziman,
Theory of phonon-assisted “forbidden” optical transitions in spin-gapped systems,
Phys. Rev. B **70**, 024404 (2004).
12. O. Cépas and T. Ziman,
Modified Spin-Wave Theory for Nanomagnets : Application to the Keplerate Molecule Mo_7Fe_{30}
Prog. Theor. Phys. Suppl. **159**, 280 (2005).
13. O. Cépas, H.R. Krishnamurthy, and T.V. Ramakrishnan,
Doping and Field-Induced Metal-Insulator Transitions in Half-Filled Manganites
Phys. Rev. Lett. **94**, 247207 (2005).
14. O. Cépas, A. P. Young, B. S. Shastry,
Degeneracy and Strong Fluctuation-Induced First-Order Transition in the Dipolar Pyrochlore
Phys. Rev. B **72**, 184408 (2005).
15. O. Cépas, H.R. Krishnamurthy, and T.V. Ramakrishnan,
Instabilities in Half-Filled Manganites, Effect of the Magnetic-Field and Doping
Phys. Rev. B **73**, 035218 (2006).
16. Y. F. Cheng, O. Cépas, P. W. Leung and T. Ziman,
Magnon dispersion and anisotropies in $SrCu_2(BO_3)_2$,
Phys. Rev. B **75**, 144422 (2007).
17. G. Bouzerar and O. Cépas
Effect of correlated disorder on the magnetism of double-exchange systems,
Phys. Rev. B **76**, 020401(R) (2007).
18. G. Bouzerar, R. Bouzerar, and O. Cépas
Superexchange induced canted ferromagnetism in dilute magnets,
Phys. Rev. B **76**, 144419 (2007).

19. O. Cépas, J. O. Haerter, and C. Lhuillier
Detection of weak emergent broken-symmetries of the kagome antiferromagnet by Raman spectroscopy,
Phys. Rev. B **77**, 172406 (2008).
20. O. Cépas, C. M. Fong, P. W. Leung, and C. Lhuillier
Quantum phase transition induced by Dzyaloshinskii-Moriya in the kagome antiferromagnet,
accepted for publication as a rapid communication, Physical Review B (oct. 2008).