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Research interests

Condensed matter theory
Strongly correlated electron systems
Charge order and frustration
Long-range Coulomb interactions, Wigner crystallization
Strong electron-phonon interactions, polarons
Charge and spin transport in organic semiconductors, Organic photovoltaics

Academic positions and Education

since 2016 Directeur de Recherches, Institut Néel - CNRS
2002-2016 Chargé de Recherches (Research Scientist),
Institut Néel - CNRS (formerly LEPES - CNRS)
2015 Habilitation à Diriger des Recherches
2013 Prime d'excellence scientifique
since 2011 Group Coordinator, Condensed Matter Theory group at Institut Néel - CNRS
2007-2009 sabbatical leave, ICMM-CSIC Madrid (Spain)
2000-2001 Post-doc, ICMM-CSIC Madrid (Spain), with F. Guinea
1999-2000 Post-doc, INFN and Università *La Sapienza*, Roma (Italy),
in the group of C. di Castro
1996-1999 PhD Thesis, *Très Honorable avec Félicitations*
University *Joseph Fourier* and LEPES/CNRS, Grenoble (France),
funded by EEC grant "Pierre et Marie Curie", Advisor: P. Quémerais
1995-1996 Post-Laurea fellow, *La Sapienza* University, Rome (Italy), Advisor: S. Ciuchi
1994-1995 Laurea thesis, *110/110 cum laude*
La Sapienza University, Rome (Italy), Advisors: S. Ciuchi and M. Grilli
1990-1994 Undergraduate studies in physics, *La Sapienza* University, Rome (Italy)
Condensed Matter Theory

Spoken Languages

Italian, French (mother tongues), English, Spanish (fluent)

Publication list

Regular articles

1. Inhomogeneous dynamical mean-field theory of the small polaron problem.
K.-D. Richler, S. Fratini, S. Ciuchi and D. Mayou
J. Phys. Condens. Matt. (2018)
2. The origin of Mooij correlations in disordered metals.
S. Ciuchi, D. Di Sante, V. Dobrosavljević and S. Fratini
NPJ Quantum Materials 3, 44 (2018)
3. Low-Energy Excitations in Quantum Spin Liquids Identified by Optical Spectroscopy.
A. Pustogow, Y. Saito, E. Zhukova, B. Gorshunov, R. Kato, T.-H. Lee, S. Fratini, V. Dobrosavljević and M. Dressel
Phys. Rev. Lett. 121, 056402 (2018)
4. Quantum Spin Liquids Unveil the Genuine Mott State.
A. Pustogow, M. Bories, A. Löhle, R. Rösslhuber, E. Zhukova, B. Gorshunov, S. Tomić, J.A. Schlueter, R. Hübner, T. Hiramatsu, Y. Yoshida, G. Saito, R. Kato, T.-H. Lee, V. Dobrosavljević, S. Fratini, M. Dressel.
Nature Materials 17, 773 (2018)
5. A map of high mobility molecular semiconductors.
S. Fratini, S. Ciuchi, D. Mayou, G. Trambly de Laissardière & A. Troisi
Nature Materials 16, 998 (2017)
6. Negative Isotope Effect on Field-Effect Hole Transport in Fully Substituted ¹³C-Rubrene.
X. Ren, M. J. Bruzek, D. A. Hanifi, A. Schulzetenberg, Y. Wu, C.-H. Kim, Z. Zhang, J. E. Johns, A. Salleo, S. Fratini, A. Troisi, C. J. Douglas, and C. D. Frisbie
Advanced Electronic Materials 1700018 (2017)
7. Disorder-driven metal-insulator transitions in deformable lattices.
D. Di Sante, S. Fratini, V. Dobrosavljević and S. Ciuchi
Phys. Rev. Lett. 118, 036602 (2017)
8. The Transient Localization Scenario for Charge Transport in Crystalline Organic Materials.
S. Fratini, D. Mayou, S. Ciuchi
Adv. Funct. Mater. 26, 2292 - 2315, (2016)
9. Glassy dynamics in geometrically frustrated Coulomb liquids without disorder
S. Mahmoudian, L. Rademaker, A. Ralko, S. Fratini, V. Dobrosavljević
Phys. Rev. Lett. 115, 025701 (2015)
10. Multi-orbital kinetic effects on charge ordering of frustrated electrons on the triangular lattice
C. Février, S. Fratini, A. Ralko
Phys. Rev. B 91, 245111 (2015)
11. Pinball liquid phase from Hund's coupling in frustrated transition-metal oxides
A. Ralko, J. Merino, S. Fratini
Phys. Rev. B 91, 165139 (2015)
12. Impact of quantized vibrations on the efficiency of interfacial charge separation in photovoltaic devices
Soumya Bera, Nicolas Gheeraert, Simone Fratini, Sergio Ciuchi, Serge Florens
Phys. Rev. B 91, 041107(R) (2015)
13. Carrier dynamics of rubrene single-crystals revealed by transient broadband terahertz spectroscopy
H. Yada, R. Uchida, H. Sekine, T. Terashige, S. Tao, Y. Matsui, N. Kida, S. Fratini, S. Ciuchi, Y. Okada, T. Uemura, J. Takeya, and H. Okamoto

- Appl. Phys. Lett. 105, 143302 (2014)**
14. Phenomenological model for charge dynamics and optical response of disordered systems: Application to organic semiconductors
S. Fratini, S. Ciuchi, and D. Mayou
Phys. Rev. B 89, 235201 (2014)
 15. Tailoring the molecular structure to suppress extrinsic disorder in organic transistors.
Nikolas A. Minder, Shaofeng Lu, Simone Fratini, Sergio Ciuchi, Antonio Facchetti, Alberto F. Morpurgo
Adv. Mater. 26, 1254 (2014)
 16. Emergent Heavy Fermion Behavior at the Wigner-Mott Transition.
J. Merino, A. Ralko, and S. Fratini
Phys. Rev. Lett. 111, 126403 (2013)
 17. Anisotropic intrinsic spin relaxation in graphene due to flexural distortions.
S. Fratini, D. Gosálbez-Martínez, P. Merodio Cámara, J. Fernández-Rossier
Phys. Rev. B 88, 115426 (2013)
 18. Importance of Spin-Orbit Interaction for the Electron Spin Relaxation in Organic Semiconductors.
L. Nuccio, M. Willis, L. Schulz, S. Fratini, F. Messina, M. D'Amico, F. L. Pratt, J. S. Lord, I. McKenzie, M. Loth, B. Purushothaman, J. Anthony, M. Heeney, R. M. Wilson, I. Hernández, M. Cannas, K. Sedlak, T. Kreouzis, W. P. Gillin, C. Bernhard, and A. J. Drew
Phys. Rev. Lett. 110, 216602 (2013)
 19. Electronic transport and quantum localization effects in organic semiconductors.
S. Ciuchi and S. Fratini
Phys. Rev. B 86, 245201 (2012)
 20. Molecular fingerprints in the electronic properties of crystalline organic semiconductors: From experiment to theory
S. Ciuchi, R. C. Hatch, H. Höchst, C. Faber, X. Blase, S. Fratini
Phys. Rev. Lett. 108, 256401 (2012)
 21. Charge Order at the Frontier between the Molecular and Solid States in $\text{Ba}_3\text{NaRu}_2\text{O}_9$
Simon A. J. Kimber, Mark S. Senn, Simone Fratini, Hua Wu, Adrian H. Hill, Pascal Manuel, J. Paul Attfield, Dimitri N. Argyriou, Paul. F. Henry
Phys. Rev. Lett. 108, 217205 (2012)
 22. Geometrical frustration effects on charge-driven quantum phase transitions
L. Cano-Cortés, A. Ralko, C. Février, J. Merino and S. Fratini
Phys. Rev. B 84, 155115 (2011)
 23. Importance of intra-molecular spin relaxation in small molecule semiconductors.
L. Schulz, M. Willis, L. Nuccio, P. Shusharov, S. Fratini, F. L. Pratt, W. Gillin, T. Kreouzis, M. Heeney, N. Stingelin, C. Stafford, D. Beesley, C. Bernhard, J.E. Anthony, I. Mckenzie, J. S. Lord, A. J. Drew
Phys. Rev. B 84, 085209 (2011)
 24. Band dispersion and electronic lifetimes in crystalline organic semiconductors
S. Ciuchi, S. Fratini
Phys. Rev. Lett. 106, 166403 (2011)
 25. Transient localization in crystalline organic semiconductors
S. Ciuchi, S. Fratini, and D. Mayou
Phys. Rev. B 83, 081202 (R) (2011)
 26. Quantum critical behavior of electrons at the edge of charge order
L. Cano-Cortes, J. Merino, S. Fratini
Phys. Rev. Lett. 105, 036405 (2010)

27. Interface polaron formation in organic field-effect transistors
G. De Filippis, V. Cataudella, S. Fratini, S. Ciuchi
Phys. Rev. B 82, 205306 (2010)
28. Bandlike Motion and Mobility Saturation in Organic Molecular Semiconductors
S. Fratini, S. Ciuchi
Phys. Rev. Lett. 103, 266601 (2009)
29. Unconventional metallic conduction in two-dimensional Hubbard-Wigner lattices
S. Fratini, J. Merino
Phys. Rev. B 80, 165110 (2009)
30. Hopping dynamics of interacting polarons
S. Ciuchi, S. Fratini
Phys. Rev. B 79, 035113 (2009)
31. Polaronic signatures in the optical properties of $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_4$
E. Cappelluti, S. Ciuchi, S. Fratini
Phys. Rev. B 79, 012502 (2009)
32. Signatures of polaronic charge ordering in optical and dc conductivity using dynamical mean field theory
S. Ciuchi, S. Fratini
Phys. Rev. B 77, 205127 (2008)
33. Electrostatic interactions between graphene layers and their environment.
J. Sabio, C. Seoanez, S. Fratini, F. Guinea, A. H. Castro Neto, F. Sols
Phys. Rev. B 77, 195409 (2008)
34. Substrate limited electron dynamics in graphene
S. Fratini, F. Guinea
Phys. Rev. B 77, 195415 (2008)
35. Current saturation and Coulomb interactions in organic single-crystal transistors
S. Fratini, H. Xie, I. N. Hulea, S. Ciuchi, and A. F. Morpurgo
New J. Phys. 10, 033031 (2008)
36. Polaronic features in the optical properties of the Holstein-t-J model
E. Cappelluti, S. Ciuchi, S. Fratini
Phys. Rev. B 76, 125111 (2007)
37. Optical and spectral properties of quantum domain walls in the generalized Wigner lattice
S. Fratini, G. Rastelli
Phys. Rev. B 75 195103 (2007)
38. Tunable Fröhlich Polarons in Organic Single Crystal Transistors
I. N. Hulea, S. Fratini, H. Xie, C.L. Mulder, N.N. Iosad, G. Rastelli, S. Ciuchi, and A. F. Morpurgo
Nature Materials 5, 982 (2006)
39. Optical properties of small polarons from dynamical mean field theory
S. Fratini, S. Ciuchi
Phys. Rev. B 74, 075101 (2006)
40. Enhancement of Wigner crystallization in low-dimensional solids
G. Rastelli, P. Quémerais, S. Fratini
Phys. Rev. B 73, 155103 (2006)
41. Spectral properties and isotope effect in strongly interacting systems: Mott-Hubbard insulator and polaronic semiconductor
S. Fratini, S. Ciuchi
Phys. Rev. B 72, 235107 (2005)
42. On the stability of hole crystals in layered cuprates

- G. Rastelli, S. Fratini, P. Quémerais
Eur. Phys. J. B **42**, 305-308 (2004)
43. Magnetoresistance of itinerant electrons interacting with local spins
 G. Gomez-Santos, S. Fratini, F. Guinea
Phys. Rev. B **70**, 184420 (2004)
44. Incipient quantum melting of the one-dimensional Wigner lattice
 S. Fratini, B. Valenzuela and D. Baeriswyl
Synth. Met. **141/1-2 pp.** 193-196 (2004)
45. Dynamical mean field theory of transport of small polarons
 S. Fratini, S. Ciuchi
Phys. Rev. Lett. **91**, 256403 (2003)
46. Charge and spin order in one-dimensional electron systems with long-range Coulomb interactions
 B. Valenzuela, S. Fratini, D. Baeriswyl
Phys. Rev. B **68**, 045112 (2003)
47. Polarization catastrophe in the polaronic Wigner crystal
 S. Fratini, P. Quémerais
Eur. Phys. J. B **29**, 41 (2002)
48. Electronic susceptibilities in systems with anisotropic Fermi surfaces
 S. Fratini, F. Guinea
Phys. Rev. B **66**, 125104 (2002)
49. Energy radiation of moving cracks
 S. Fratini, O. Pla, P. Gonzalez, F. Guinea, E. Louis
Phys. Rev. B **66**, 104104 (2002)
50. Anomalous optical absorption near a charge-ordering quantum critical point
 S. Caprara, S. Fratini, C. Di Castro, and M. Grilli
Phys. Rev. Lett. **88**, 147001 (2002)
51. Jahn-Teller, Charge and Magnetic Ordering in half-doped Manganese oxides
 S. Fratini, D. Feinberg and M. Grilli
Eur. Phys. J. B **22**, 157 (2001)
52. Optical absorption from a non degenerate polaron gas
 S. Fratini, F. de Pasquale, S. Ciuchi
Phys. Rev. B. **63**, 153101 (2001)
53. Melting of a Wigner crystal in an ionic dielectric
 S. Fratini, P. Quemerai
Eur. Phys. J. B **14**, 99 (2000)
54. Polaron crystallization and melting: effects of the long range Coulomb forces
 S. Fratini, P. Quemerai
Mod. Phys. Lett. B **12**, 1003 (1998)
55. Polaron Dissociation at the Insulator-to-Metal Transition
 P. Quemerai, S. Fratini
Mod. Phys. Lett. B **11**, 1303 (1997)
56. Dynamical mean-field theory of the small polaron
 S. Ciuchi, F. de Pasquale, S. Fratini, D. Feinberg
Phys. Rev. B **56**, 4494 (1997)

Conference proceedings

1. Avoiding Stripe Order: Emergence of the Supercooled Electron Liquid
 Louk Rademaker, Arnaud Ralko, Simone Fratini, Vladimir Dobrosavljević

- Proceedings of "Superstripes 2015", Journal of Superconductivity and Novel Magnetism (2015)
2. Optical properties of spin/lattice polarons in underdoped cuprates
S. Ciuchi, E. Cappelluti, S. Fratini
Proceedings of the CORPES09 conference, Journal of Electron Spectroscopy and Related Phenomena, 181, 28-30 (2010)
 3. Tuning electron-phonon and Coulomb interactions in organic field effect transistors
S. Fratini, A. F. Morpurgo, S. Ciuchi
Proceedings of the TIDS12 conference, phys. stat. sol. (c) 5, No. 3, 718 (2008)
 4. Optical properties of lattice/magnetic small polarons from DMFT
S. Ciuchi, E. Cappelluti, S. Fratini
Proceedings of the SMEC'07 conference, Journal of Physics and Chemistry of Solids 69, 2164 (2008)
 5. Electron-phonon and electron-electron interactions in organic field effect transistors
S. Fratini, A. F. Morpurgo, S. Ciuchi
Proceedings of the SMEC'07 conference, Journal of Physics and Chemistry of Solids 69, 2195 (2008)
 6. Optical properties of the Holstein-t-J model from dynamical mean-field theory
E. Cappelluti, S. Ciuchi, S. Fratini
Proceedings of SCES07 Conference, Physica B 403, 1181 (2008)
 7. Optical properties of lattice/spin polarons in underdoped cuprates
E. Cappelluti, S. Ciuchi, S. Fratini
"International symposium on lattice effects in cuprate high-temperature superconductors" (LEHTSC2007)
Journal of Physics conference series 108, 12021 (2008)
 8. Polarization catastrophe at low densities of polarons: from cuprates to metal-ammonia solutions
P. Quémerais, S. Fratini
Proceedings of the International School of Physics "Enrico Fermi", course CLXI, Varenna 2005, "Polarons in bulk materials and systems with reduced dimensionality", IOS press (2006), G. Iadonisi, J. Ranninger and G. de Filippis eds.
 9. Fate of the Wigner crystal on the square lattice
D. Baeriswyl, S. Fratini
J. Phys. IV France 131, 247 (2005), proceedings of ECRYS-2005
 10. Wigner crystallization in low dimensional materials
G. Rastelli, P. Quémerais, S. Fratini
J. Phys. IV France 131, 277 (2005), proceedings of ECRYS-2005
 11. Variational Wave Function for Generalized Wigner Lattices in One Dimension
S. Fratini, B. Valenzuela, D. Baeriswyl
J. Phys. IV France 12, Pr9-69 (2002), proceedings of ECRYS-2002
 12. Polarization catastrophe in doped cuprates and metal-ammonia solutions: an analogy
P. Quémerais, J.-L. Raimbault, S. Fratini
J. Phys. IV France 12, Pr9-227 (2002), proceedings of ECRYS-2002
 13. Crucial role of Jahn-Teller distortions in stabilizing magnetic ordering in insulating manganite phases
S. Fratini, M. Capone, M. Grilli., D. Feinberg
AIP-Conference-Proceedings. 2001; (554): 371-8
 14. Optical conductivity of the Holstein model at low density
S. Fratini, F. de Pasquale, S. Ciuchi
International-Journal-of-Modern-Physics-B 14(25-27): 3020 (2000)
 15. Is the Quantum Melting of a Polaron Wigner Crystal an Insulator-to-Superconductor transition?

- P. Quémérais, S. Fratini
Int. Conf. M2S-HTSC-VI (Houston 2000), Physica C 341-348, 229 (2000)
16. Spectral properties of a non-degenerate polaron gas
S. Ciuchi, F. de Pasquale, S. Fratini
Physica-A. 280, 193 (2000)
 17. Quantum and/or thermal melting of a polaron Wigner crystal
S. Fratini, P. Quémérais
Journal-de-Physique-IV-Proceedings 9, 259-61 (1999)
 18. Polaron crystallization and the metal-insulator transition
P. Quémérais, S. Fratini
Int. Journ. Mod. Phys. B. 12, 3131 (1998)

— Evaluation of research

Referee for Nature Materials, Nature Communications, Phys. Rev. Lett., Scientific Reports, Adv. Func. Materials, Phys. Rev. B, Europhys. Lett., New J. Phys, Organic Electronics, Crystals, Eur. Phys. Journ. B, J. Phys. D, Physica B, Phys. Stat. Sol

Expert reviewer for the FWF (Austrian Science Fund) and Alexander Von Humbolt Foundation (Germany)

— Teaching

2000-2001 General physics I (mechanics), Universidad Autónoma de Madrid

— Supervision of students and post-docs

- 2018-, PhD, K. Driscoll (co-advisor A. Ralko, I. Néel)
Charge frustration and long-range Coulomb interactions in new functional materials.
- 2018-, PhD, M. Comin (co-advisor, with G. D'Avino and X. Blase, I. Néel)
Doping of molecular semiconductors and the insulator-to-metal transition.
- 2018, Master 2, E. Pillon (co-advisor A. Ralko, I. Néel)
Exotic quantum phases in geometrically frustrated systems.
- 2013-2016, PhD, C. Février (co-advisor A. Ralko, I. Néel)
Etude théorique du comportement critique quantique des supraconducteurs à ordre de charge.
- 2015, Master 1, E. Ravoavy (co-advisor A. Ralko, I. Néel)

Dynamique temporelle des transitions d'ordre de charge Ólectroniques.
2012, Master 2, D. Ben Ali (co-advisor A. Ralko, I. Néel)
Etude des phases exotiques dans les systèmes multi-orbitaux à ordre de charge.
2011, Master 2, C. Février (co-advisor A. Ralko, I. Néel)
Effets de frustration géométrique aux points critiques quantiques d'ordre de charge.
2011, Master 2, P. Merodio-Cámara
Mécanismes de relaxation de spin dans les semiconducteurs organiques moléculaires.
2010, Master 2, P. Shusharov (co-advisor with A. Drew at QMUL London)
Spin Relaxation in Organic Semiconductors.
2006-2007, Post-doc, G. Rastelli
Wigner crystallization and emergent collective excitations in low-dimensional solids.
2003-2006, PhD, G. Rastelli, co-advisor with S. Ciuchi (Univ. L'Aquila, Italy)
Wigner crystallization in anisotropic and polarizable systems.

Member of Doctoral Examination Committees

P. Villar Arribi, November 2018, ILL Grenoble France;
E. Kawasaki, October 2017, LPMMC-CNRS, Grenoble, France;
S. Illig, February 2016, Cavendish Laboratory, Cambridge, UK;
T. Ayrál, September 2015, Ecole Polytechnique/Collège de France;
D. Gosálbez Martínez, December 2013, Universidad de Alicante;
I. Gutierrez Lezama, March 2013, Université de Genève;
A. Jacko, October 2011, University of Queensland;
L. Cano-Cortés, June 2010, Universidad Autónoma de Madrid;
J. Sabio, March 2010, Universidad Autónoma de Madrid;
H. Xie, March 2010, TU Delft

Conferences

1. CPTGA Theory Workshop, April 24th, Grenoble, France
oral presentation: Electrons in disordered deformable lattices: Mooij correlations and metal-insulator transition
2. 2018 International Thin-Film Transistor Conference (ITC), February 28th-March 2nd, 2018, Guangzhou, China
invited oral presentation: A map of high-mobility molecular semiconductors.
3. International conference "Cutting-Edge topics in quantum materials", October 15-19, 2017, Paris, France
oral presentation: The Anderson transition in deformable lattices and the puzzle of Mooij correlations
4. International School and Workshop on Electronic Crystals "ECRYS-2017", August 21 - September 2 2017, Cargese, France
oral presentation: The Anderson transition in the presence of electron-phonon interactions and the puzzle of Mooij correlations
5. DPG Spring Meeting, March 20-24 2017 Dresden, Germany
invited oral presentation: Understanding charge transport in crystalline organic semiconductors.
6. Workshop on Organic semiconductors and Field-Effect control, September 7-11 2016 Minnesota, USA
invited oral presentation: The transient localization scenario for charge transport in organic crystals.
7. Workshop "Theoretical challenges in organic electronics", October 5-7 2015 Heidelberg, Germany
invited oral presentation: The transient localization scenario for charge transport in organic crystals.
8. Workshop "Theory and modeling for photovoltaics", October 1-2 2015 Marseille, France
invited oral presentation: Impact of quantized vibrations on the efficiency of interfacial charge separation in photovoltaic devices.
9. SPICE2015-Workshop on Spin Transport and Spin Pumping in Organics, September 14-15 2015 Mainz, Germany
invited oral presentation (canceled): Charge transport and spin relaxation in organic semiconductors.
10. SPICE2015-Workshop on Bad Metal Behavior in Mott Systems, June 29-July 2 2015 Mainz, Germany
invited oral presentation: Pinball liquid state and bad metallic properties in frustrated transition-metal oxides.
11. EMRS2015 Symposium Q "Organic Semiconducting Single Crystals: from fundamentals to applications", May 2015 Lille, France
invited oral presentation: The transient localization scenario for charge transport in organic crystals.
12. International School and Workshop on Electronic Crystals "ECRYS-2014", August 11-23 2014, Cargese, France
oral presentation: Charge ordering, emergent excitations and frustration
13. International workshop "Charge transport in organic materials", April 1-4 2014, Bremen, Germany
invited oral presentation: Electronic transport and transient localization in crystalline organic semiconductors.
14. Ultrafast Dynamics of Correlated Materials, October 14-18, 2013, Trieste, Italy
15. OFET 2012 Workshop, October 27-31, 2012, Princeton NJ, USA

- invited oral presentation:** Electronic transport and transient localization in organic semiconductors.
16. SPINOS 2012 Workshop, September 9-14, 2012 London, UK
invited oral presentation: Intrinsic spin relaxation in graphene due to flexural distortions
 17. Journées Théorie CTPG (LPSC Grenoble), May 24-25, 2012
invited oral presentation: Molecular fingerprints in the electronic properties of crystalline organic semiconductors: from experiment to theory
 18. Carbon-based Spintronics, international workshop, October 24-28, 2011, Dresden, Germany
poster presentation: Spin relaxation in organic molecules
 19. Emerging Trends in Advanced Correlated Materials, 6th-8th October 2010, Capri, Italy
invited oral presentation: Charge Order and Quantum Critical Behavior in Layered Organic Conductors
 20. SEPNET Spintronics Workshop, 13th-14th September, 2010, Queen Mary University of London, UK
invited oral presentation: Band-like motion and incipient localization in organic molecular semiconductors.
 21. NG-SCES, 1st International Workshop: The New Generation in Strongly Correlated Electron Systems, 20-26 June 2010, Lanzarote, Spain
2 invited oral presentations: 1) *Introduction to the physics of layered organic conductors;* 2) *Electronic correlations and unconventional metallic states in models for quarter-filled organic conductors*
 22. OFET2010 workshop, Les Diablerets, Switzerland, 6-10 May 2010
invited oral presentation: *Bandlike motion and mobility saturation in Organic Molecular Semiconductors*
 23. workshop "New trends in the Theory of Strongly Correlated Electron Systems", Grenoble, 8-9 April 2010
oral presentation: *Unconventional metallic phases in electronic models for quarter-filled organic conductors*
 24. GDR MICO - Matériaux en Interaction et Compétition, Aspet, France 12-15 october 2009
oral presentation: *Unconventional metallic state in the 2D Hubbard-Wigner lattice*
 25. Graphene - Centro de Ciencias Pedro Pascual, Benasque, Spain, 25/7-08/08 2009
 26. EPSRC Symposium Workshop on Quantum Simulations, Warwick, UK, 24-28 August 2009
invited oral presentation: *Band-like motion and incoherent diffusion in organic molecular semiconductors: two sides of the same coin.*
 27. APS March Meeting 08 (New Orleans, USA)
invited oral presentation: *Polarons and Coulomb interactions in organic transistors*
 28. APS March Meeting 08 (New Orleans, USA)
oral presentation: *Optical properties of lattice/spin polarons in underdoped cuprates*
 29. Citecnomik 08, February 14 2008, Miraflores de la Sierra
invited oral presentation: *Interacting Electrons in Organic Transistors*
 30. TIDS12, Transport in Disordered Solids, August 5-10 2007, Marburg (Germany)
oral presentation: *Dynamics of electrons at organic/dielectric interfaces: The physics of organic transistors.*
 31. SMEC 07, Study of Matter at Extreme Conditions, April 15-20 Miami (FL, USA)
invited oral presentation: *Dynamics of electrons at organic/dielectric interfaces: The physics of organic transistors*
 32. ELECMOL 06, December 11-15 2006, Grenoble (France)
oral presentation: *Dynamics of electrons at organic/dielectric interfaces: The physics of organic*

transistors.

33. Workshop: Recent developments in low dimensional charge density wave conductors', 29/6-3/7 Skradin, Croatia
34. ICAM Workshop on Organic Semiconductors, March 17-18/2006, Baltimore, USA
invited oral presentation: *Optical and transport properties of small polarons from Dynamical Mean-Field Theory*
35. APS March Meeting, March 13-17/2006 Baltimore, USA
36. CECAM workshop "Ab-Initio Simulation methods beyond Density Functional Theory", 23-25/9/2005 Lyon (France)
37. Conference ECRYS 2005, 21-27/7/2005 Cargese (France)
oral presentation and poster: *Wigner crystallization in low-dimensional materials*
38. Enrico Fermi Summer course "Polarons in bulk materials and systems with reduced dimensionality", 21/6-1/7 2005 Varenna (Italy)
invited lecture: *Long range Coulomb interactions at low densities of polarons*
39. Colloquium for B.K. Chakraverty's 70'th birthday, 17/6/2005 Grenoble (France)
invited oral presentation: *Stability of hole crystals in the layered cuprates*
40. Conference "Low Energy Electrodynamics of Solids", 18-23/7/2004 Kloster Banz (Germany)
invited oral presentation: *Polaronic transport in solids: some recent results using the Dynamical Mean Field Theory*
41. Conference "Spectroscopies of Novel Superconductors", 11-16/7/2004 Sitges (Spain)
poster: *Charge ordering induced by long-range Coulomb interactions: a minimal model for the underdoped cuprates*
42. Workshop "Imaging Magnetic and Superconducting Materials", 23-25/10/2003 Barcelona (Spain)
43. Conference "Electronic Properties of Organic Semiconductors", 7-11/7/2003, Leiden (Holland)
44. Conference ECRYS 2002, 2-7/9/2002 St-Flour (France)
invited oral presentation: *Charge and spin order in one dimensional electron systems with long range interactions*
45. Ecole "Oxydes à propriétés remarquables: ordre de spin, ordre de charge et phénomènes coopératifs.", 9-15/6/2002 Aussois (France)
46. International conference on manganites, september 2001, Granada (Spain)
poster
47. School "Field theory and its applications to solid state physics", june 2001, S. Feliu de Guixols (Spain)
48. Conference "Transport and Dynamics in Complex Electronic Materials", Porto, 3-7/9/2001 (Portugal)
49. Reunion GEFES, Feb 2001, Madrid
poster: *Optical absorption from a non degenerate polaron gas*
50. GDR Oxydes, 13-15/9/2000 Aussois (France)
invited oral presentation: *Is the Quantum Melting of a Polaron Wigner Crystal an Insulator to Superconducting Transition?*
51. Conference SATT 10, May 2000, Frascati (Italy)
poster
52. Conference "Polaron Effects in Cuprates and Manganites", Capri (Italy), April 2000
invited poster
53. Colloquium "Theoretical Condensed Matter Physics", Fai della Paganella (Italy), March 2000
poster
54. INFM symposium "Stripes and fluctuations in High Tc superconductors", November 3-4, 1999, Rome (Italy)

invited oral presentation

55. EPS general conference, August 1998, Grenoble (France)
56. NATO-ISSSP euroconference on polarons, June 9-17, 1998, Erice (Italy)
poster + short oral presentation
57. STRIPES 99 conference, June 2-6, 1998, Rome (Italy)
poster
58. NATO-ASI school: "The gap symmetry and fluctuations in high-T_c superconductors", September 1-13, 1997, Cargese (France)
poster
59. GDR Superconductors Colloquium, "Thermal and quantum fluctuations in HTSC materials: from underdoped to overdoped", June 23-25, 1997, Gif-sur-Yvette (France)
poster + short oral presentation
60. Colloquium "Theoretical Condensed Matter Physics", Fai della Paganella (Italy), April 1996
poster

Invited Seminars

1. *Electrons in disordered deformable lattices: Mooij correlations and metal-insulator transition*, Physics Department, IST Lisbon, September 2018
2. *Understanding charge transport in crystalline organic semiconductors*, Takeya Lab, University of Tokyo, September 2016
3. *Disorder-driven metal-insulator transitions in deformable lattices*, Rutgers University, New Jersey, September 2016
4. *The transient localization scenario for charge transport in organic crystals*, Cavendish Laboratory, Cambridge, UK, February 2016
5. *Electronic properties of organic molecular semiconductors*, ITF-IFW, Leibniz Institute for Solid State and Materials Research, Dresden, 24/10/2011
6. *Charge order and quantum critical behavior in layered organic conductors*, Séminaire Néel, Institut Néel, 21/9/2010
7. *Charge order and quantum critical behavior in layered organic conductors*, ENS Lyon, 16/9/2010
8. *Unconventional metallic state in the 2D Hubbard-Wigner lattice* Group seminar, Condensed Matter Physics department, QMUL, November 2009
9. *Band-like motion and incoherent diffusion in organic molecular semiconductors: two sides of the same coin*. Group seminar, Condensed Matter Physics department, QMUL, June 2009
10. *Electrodynamic signatures of polaronic charge ordering*, Physikalisches Institut - Universitaet Stuttgart, May 2008
11. *Interacting Electrons in Organic Transistors*, Madrid, ICMM-CSIC, October 2007
12. *Spectral, Transport properties and Ordering of Small Polarons from Dynamical Mean Field Theory*, Physikalisches Institut - Universitaet Stuttgart, July 2004
13. *Stability of hole crystals in layered cuprates*, Madrid, ICMM-CSIC, June 2004
14. *Polaronic transport in solids: Some recent results using the Dynamical Mean Field Theory*, Madrid, ICMM-CSIC, October 2003
15. *Polarization catastrophe in the polaronic Wigner crystal*, L'Aquila, Dipartimento di Fisica, 2002
16. *Polaron crystallization and melting*, Madrid, ICMM-CSIC, January 2001
17. *Crystallization of polarons at low density and insulator-to-metal transition*, Grenoble, friday theory seminar, February 1999