

Adriano Amaricci

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Research Interests

*Electronic properties of strongly correlated materials.
Metal-insulator Mott transitions. Correlated Topological Insulators. Non-equilibrium quantum physics.
Computational methods.*

Professional experience

- **Researcher** . 1 July 2019- now C.N.R.-Istituto Officina dei Materiali, Ts-SISSA. Trieste, Italy.
- **Researcher TD** . 28 March 2018 - 30 June 2019 Condensed Matter group, International School Advanced Studies. Trieste, Italy.
- **Grant holder researcher**. 1 April, 2016 - 15 January, 2018. Condensed Matter group, International School Advanced Studies. Trieste, Italy.
- **Grant holder researcher**. January, 2011 - March, 2016. 16 January, 2011 - 31 March, 2016. C.N.R.-Istituto Officina dei Materiali, u.os. SISSA/Democritos. Trieste, Italy.
- **Post-doctoral researcher**. 15 December, 2010 - 15 December, 2011. C.N.R.-Istituto Officina dei Materiali, u.os. SISSA/Democritos. Trieste, Italy.
- **Visiting researcher**. 14 October - 13 December, 2010. Condensed Matter group, International School Advanced Studies. Trieste, Italy.
- **Post-doctoral research associate**. April, 2009 - June, 2010. Physics department, Rutgers University, USA. Group of prof. G. Kotliar.
- April 2018. Short-list for an Assistant Professor position at the Ecole Polytechnique, Palaiseau (FR).
- May 2015. Short-list for an Assistant Professor position at the Laboratoire de Physique des Solides, Université Paris-Sud, Orsay (FR).
- April 2014. Short-list for a Researcher position at the Department of Theoretical Physics of the Jozef Stefan Institute. Ljubljana (SLO).

Education

- **Ph.D. in physics**. 16 March, 2009. Université Paris XI and University of Rome "Tor Vergata". Thesis: "*Mottness scenario for the non-Fermi liquid phase in heavy fermions*". Subjects: Condensed Matter Theory. Non-Fermi liquids and metal-insulator transitions. Supervisor: M.J. Rozenberg. Final Mark: "Trés honorable".
- **Degree in physics**. 27 May, 2004. University of Rome "La Sapienza". Thesis: "*Statistical properties of the chaotic flow for an out-of-equilibrium mechanical system*". Subjects: Mathematical-Physics. Non-equilibrium Statistical Mechanics. Multi-scale analysis. Non-commutative Fourier transform. Supervisor: prof. G. Gallavotti. Final Mark: 110/110.

Grants & Fellowships

- **Young Research Grant**, Scuola Internazionale Studi Superiori Avanzati/International School Advanced

Studies. October, 2012.

- **Marie-Curie Early Research Training Fellowship.** December, 2005. Laboratoire de Physique des Solides, Université Paris XI, France.
- **Undergraduate Fellowship** September, 2003. Physics Department, University of Rome “La Sapienza”.

Presentations

- *Correlated Electron Physics beyond the Hubbard Model*, **Invited Talk.** Bremen (Germany). 5-8 February, 2019.
- *Lectiones Clitumnaliae*, **Invited Talk.** Campello sul Clitunno (It). 31 August, 2018.
- Laboratoire de Physique des Solides, Université Paris-Sud. **Seminar.** Orsay (Fr). 2 February, 2018.
- Laboratoire de Physique d’Étude des Matériaux, ESPCI. **Seminar.** Paris (Fr). 1 February, 2018.
- “*Frontiers’ in 2D quantum systems*”. **Invited Talk.** Trieste (Italy), 13-17 November 2017.
- “*Cutting-edge topics in quantum materials*”. **Invited Talk.** Paris (France), 16-19 October 2017.
- “*Fis-Mat 2017*”. **Contributed Talk & Poster.** Trieste (Italy), 5 October 2017.
- “*Computational methods towards engineering novel correlated materials*”. **Invited Talk.** Losanne (Switzerland). 24-26 October, 2016.
- “*What about U? - Effects of Hubbard Interactions and Hund’s Coupling in Solids*”. **Contributed Talk.** Trieste (Italy). 17-21 October, 2016.
- “*SuperFOx 2016*”. **Contributed Talk.** Turin (Italy). 19-21 September, 2016.
- “*New Generations in Strongly Correlated Electrons Systems*”. **Invited Talk.** Trogir (HR). 14 September, 2015.
- “*NATO conference, electron correlation in nanostructures*”. **Invited Talk.** Odessa (Ukraine). 03 September, 2015.
- “*Condensed Matter Physics in the City*”. **Invited Talk.** London (UK). 22 June, 2015.
- “*Deutsche Physikalische Gesellschaft*”. *German Physics Society 79th Spring meeting of condensed matter section.* **Seminar.** Berlin (DE). 20 October, 2015.
- *The 2nd-International Conference of Young Researches on Advanced Materials.* **Invited Talk.** Haikou (CHINA), 24-29 October, 2014.
- “*New Generations in Strongly Correlated Electrons Systems*”. **Seminar.** Nice (FR). 19 June, 2014.
- Laboratoire de Physique des Solides. **Seminar.** Orsay (Fr). 20 March, 2014.
- *Non-equilibrium dynamics of Correlated electrons systems.* **Invited Talk.** Krvavec (Slo). 18-20 December, 2013.
- *Wigner meets Mott: charge ordering and related phenomena in Mott system.* **Invited Talk.** Grenoble (Fr) 16-17 December, 2013.
- *XCIX Italian Physical Society Conference.* **Seminar.** Trieste (It). 23-27 September, 2013.
- Institut Néel, Institut Laue-Langevin. **Seminar.** Grenoble (Fr). 03 December, 2012.
- Laboratoire de Physique des Solides. **Seminar.** Orsay (Fr). 29 November, 2012.
- Laboratoire de Physique Théorique. **Seminar.** Toulouse (Fr). 28 November, 2012.
- “*New Generations in Strongly Correlated Electrons Systems*”. **Seminar.** Portoroz (SLO). 27 June, 2012.
- Stephan Institute, Dept. of theoretical physics. **Invited talk.** Ljubljana. 20 March, 2012.
- APS March Meeting. **Seminar.** Boston (MA), 27 February - 2 March, 2012.
- *Emerging Trends in Advanced Correlated Materials.* **Seminar.** Anacapri (Italy), 6-8 October, 2010.
- *22nd Condensed Matter Division of European Physical Society Conference,* **Seminar.** Rome (Italy). 25-29 August, 2008

- *Gordon Research Conference “Correlated electron systems”*. **Poster**. University of New England, Biddeford (ME), USA. 8-13 June, 2008.
- *Les Houches Summer School “Electronic structure calculations and correlated materials”*, Les Houches (France). 27 Aug-08 Sep, 2006.
- *XI Claude Itzykson meeting*, CEA, Saclay (France). 27 May - 02 June, 2006.
- *“Dynamics and Fluctuation in extended systems” conference*, Institute Henri Poincaré, Paris (France). 18-22 April, 2005.

Conferences organization

- *New Generation in Strongly Correlated Electrons Systems*, 25-30 September 2016. Trieste (Italy).

Research visiting periods

- Laboratoire de Physique d’Étude des Matériaux, ESPCI. January-February 2018.
- Theoretical Physics and Astronomy Department, Würzburg University. November 2012, July 2014, May 2016.
- Laboratoire de Physique des Solides, Université Paris-Sud XI. February 2011.
- Physics department, Rutgers University. July-August, 2008.
- Physics department, Universidade Estadual de Campinas. May-June, 2007
- “Institute Haut Etudes Scientifiques”. April, 2005
- Mathematics department, Rutgers University. December, 2003
- School of Mathematics, Georgia Institute of Technology. September-December, 2003

Skills

Systems: Unix/Linux and HPC-Beowulf clusters administrator.

Languages: Fortran (advanced), C/C++ (basic), Java (basic), MPI/OpenMP parallel computing.

Other: Bash (advanced), Python (intermediate), Perl (advanced), \LaTeX , Markdown, GIT, Mathematica (basic).

Open Source: <http://github.com/aamaricci>.

Spoken languages

Italian: native.

English: fluent.

French: good.

Bibliometric index

H-index: 15. Number of citations: 642 (source: Google Scholar)

Students supervision

N.Ronceray, Internship, Ecole Polytechnique (FR) SISSA/ISAS, 2018. Awarded: (*Prix du stage de recherche 2018*)

L.Crippa, Ph.D., SISSA/ISAS, 2016-2020.

M.Fava, M.S., SISSA/ISAS, 2017.

F.Grandi, Ph.D., SISSA/ISAS, 2015-2018. with Prof.M.Fabrizio

S. Körber, M.S., Würzburg University, 2015-2016, with prof.G.Sangiovanni.

F.Petocchi, Ph.D., SISSA/ISAS, 2013-2016, with Prof.M.Capone (at Univ. Fribourg).

F.Peronaci, Ph.D., SISSA/ISAS, 2013-2016, with Prof.M.Capone. (at IPhT, Saclay)

G.Mazza, Ph.D., SISSA/ISAS, 2012-Sep. 2015, with Prof.M.Fabrizio. (at Ecole Polytechnique Paris/ College de France).

Referee activity

- *International Journals*: Physical Review Letter, Physical Review B, Nature Communication.
- *International Editorial group*: Manning Publications.
- *International Grants*: Netherlands Organisation for Scientific Research (NWO), National Science Center Poland.

Teaching activity

Methods in correlated electrons, International School for Advanced Studies, 40h. Ph.D level. 2018-2019.

Methods in strongly correlated electrons systems, International School for Advanced Studies, 15h. Ph.D level. February 2014-2015.

Mathematics introductory course. Department of Architecture, University of Rome La Sapienza. 45h. Undergraduate level (L1). September 2005.

Outreach

- *SISSA for Schools* outreach activity for primary and secondary Schools. International Schools for Advanced Studies. Trieste (Italy), 2017-now.
- *Creative Science Communication* course, SISSA Medialab. Trieste (Italy), November-December 2017.
- *Trieste NEXT*. Trieste (Italy), October 2017.

Other activities

Board: Delegate to the Institute Board of the CNR-IOM, 2020-.

Academic Senate: Delegate to the Academic Senate of the ISAS/SISSA, 2016-2018.

HPC Administration: Administration of the multi-users high-performance calculation cluster at the Laboratoire de Solides, Université Paris-Sud XI. 2006-2015

Software engineering:

SciFor. **Scientific Fortran**: a fortran based open source library of scientific tools to support software production for mathematics, physics and engineer.

DMFT Tools **DMFT Tools**: a fortran based open source library of numerical tools to support quantum many body and DMFT calculations.