

Short Curriculum Vitae (August 2020)

Personal Data

Name: Andrea Trombettoni

Born on January 9, 1973 – Foligno, Italy

Citizenship: Italian

Civil status: married, 2 daughters

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Current Position

Ricercatore a Tempo Determinato B, University of Trieste & Ricercatore presso CNR-IOM [in aspettativa]

Work address

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Education, Degrees & Training

- Degree in Physics at Universita' di Perugia, May 21, 1998, maximum marks cum laude. Thesis Title: “Phase Transitions in Superconducting Arrays” - Advisor: Prof. Pasquale Sodano
- PhD in Condensed Matter at SISSA (Trieste), October 26, 2001, maximum marks cum laude. Thesis Title: “Discrete Nonlinear Dynamics of Bose-Einstein Condensates” - available at <http://www.sissa.it/cm/phd.php> - Advisor: Prof. Augusto Smerzi
- April 2003: Euro Summer School on Quantum Gases in Low Dimensions, Les Houches (France).
- Knowledge of foreign languages: English and French.

Publications: Bibliographical Data

- 124 publications on international journals with referees (see the complete list in the full CV available at <http://people.sissa.it/~andreatr>)
- 5 book chapters and 4 proceedings contributions
- Total number of citations at 29 May 2020: 4962 (*)
- Hirsch index at 29 May 2020: 29 (*)
- 7 papers with more than 100 citations (*)
- Most cited papers at 29 May 2020 (*):
 - A Trombettoni and A. Smerzi, Phys. Rev. Lett. **86**, 2353 (2001) – 1007 citations
 - F. S. Cataliotti et al., Science **293**, 843 (2001) – 1003 citations

(*) from the site <http://scholar.google.com>

Scientific Career

- 2002-2004: INFN Fellowship “Giovani Valenti”, Postdoc, University of Parma
- November 2004-December 2004: Los Alamos National Laboratory, Los Alamos
- 2005-2006: Postdoc, University of Perugia
- 2006-2011: Ricercatore con contratto a tempo determinato at SISSA (Trieste)
- From September 2011: Researcher at CNR-IOM (Trieste)
- From November 2019: Researcher at University of Trieste
- Italian “Abilitazione Scientifica Nazionale Professore Seconda Fascia” 02/B2 & 02/A2 (2012)
- Italian “Abilitazione Scientifica Nazionale Professore Prima Fascia” 02/B2 & 02/A2 (2017)

Visiting Scientist

Longstanding collaborations with several international institutions:

- LANL (Los Alamos National Laboratory), Los Alamos (USA): Jul-Aug 2001, Apr-May 2002, Oct-Nov 2003, Oct-Dec 2004, Aug-Sep 2010, Oct 2017
- University of Heidelberg, Heidelberg (Germany): Nov 2006, May-Jun 2006, Nov

2007, Feb 2019

- University of Nottingham (UK): Nov 2012, Feb 2014
- International Institute of Physics, Natal (Brasil): Jul-Sep 2012, Nov-Dec 2013, Mar 2014, Aug 2015, Jun 2016
- LENS (European Laboratory for Non-Linear Spectroscopy), Florence (Italy): Sep-Oct 2000, Jan-Feb 2001, Apr-May 2015
- CNR-INFM BEC Center, Trento (Italy): Sep-Oct 2002, Dec 2006
- Politecnico di Torino and ISI (Institute for Scientific Interchange), Torino (Italy): Jan 2006; Mar 2006

Teaching Experience

Teacher of 38 Courses in several institutions, including:

- Course of Statistical Physics of Cold Atoms, Ph. D. in Statistical Physics, SISSA: Each year from 2006.
- Course of Quantum Physics, International Master Course in Physics of Complex Systems (Torino-Trieste-Paris): Each year from 2015-2016.
- Course of Properties of long-range interacting systems, Ph. D. in Statistical Physics, SISSA: From 2018.
- Course of Nonlinear Dynamics of Ultracold Atoms, Spring College on Physics of Complex Systems, ICTP (Trieste), May-June 2013.
- Course of Introduction to Superconductivity and Superfluidity, University of Trento: 2011-2013
- Course of Statistical Physics of Cold Atoms at Heidelberg Graduate School of Fundamental Physics, November 2007.
- Quantum Mechanics: Exercises, University of Perugia, 2003-2004.

Advised Theses

2006 – 2020 Supervisor of 14 PhD students and 16 undergraduate students

Currently Supervisor of 4 PhD Students and 3 undergraduate students

Organization of activities

Co-organizer since 2006 of “ICTP-SISSA Statistical Physics Seminars”: see the full list at the web page

<http://www.sissa.it/statistical/seminars/seminars.php>

(a list of recorded ICTPSISSA seminars is at

<http://www.sissa.it/statistical/videos.html>).

Co-organizer since 2009 of the SISSA Journal Club of Statistical Physics:

<http://www.sissa.it/statistical/journalclub.html>

Web master of the page of the Ph.D. in Statical Physics in SISSA:

<http://www.sissa.it/statistical/>

Reviewer for:

Physical Review Letters, Physical Review A, Physical Review B, Physical Review E, Chaos, Journal of Physics B, Physica D

Invited Talks & Seminars (*see the complete list in the full CV available in people.sissa.it/~andreatr*)

Speaker in 76 Invited talks and in 73 Seminars.

Invited talks include:

- "Geometry of Bounded Critical Phenomena", Quantum Science and Technology 2019, Xi'an (China), 12 October, 2019.
- O(N) models with long-range interactions", FRGIM - Functional and Renormalization-Group methods, ECT*, Trento (Italy), 16 September, 2019.
- "Integrable Floquet Hamiltonian for a Periodically Tilted 1D Gas", AtomQT Workshop "Quantum coherent effects with ultra-cold atoms", Belgrade (Serbia), 30 August, 2019.
- "Off-diagonal long-range order and Floquet engineering in 1D quantum systems", Atomtronics 2019, Benasque (Spain), 7 May, 2019.
- "Il mondo delle temperature ultrafredde", Festa di Scienza e Filosofia - Virtute e Canoscenza 2019, Foligno (Italy), 13 April 2019.
- "Off-diagonal long-range order in 1D quantum systems", Mathematical physics of

anyons and topological states of matter, Nordita, Stockholm (Sweden), 15 March, 2019.

- "Junctions of strongly-interacting systems", Entanglement and Dynamical Systems, Stony Brook (USA), 11 December, 2018.
- "Off-Diagonal Long-Range Order in One-Dimensional Quantum Systems", Workshop on Modern Aspects of Quantum Physics, Zagreb (Croatia), 4 October 2018.
- "Junctions of weakly-coupled ultracold systems", Trails in Quantum Mechanics and Surroundings 2018, Torino (Italy), 28 September 2018.
- "Ultracold fermions across the BCS-BEC crossover: optical lattices and Josephson effect", Workshop "Mathematical Challenges of Zero Range Physics", Rome (Italy), 9 July 2018.
- "Junctions of weakly-coupled strongly-interacting ultracold systems", Program "Topological Phases in Cold Atom Systems", Nordita (Stockholm), August 1, 2017.
- MITP Workshop "Quantum Methods for Lattice Gauge Theories Calculations, Mainz (Germany), February 6, 2017.
- Program "Entanglement and Dynamical Systems", Simons Center for Geometry and Physics, Stony Brook (USA), November 7, 2016.
- LPHYS'16, XXV International Laser Physics Workshop, Yerevan (Armenia), July 14, 2016.
- Quantum Non-Equilibrium Phenomena, International Institute of Physics, Natal (Brazil), June 9, 2016.
- Workshop on Topological effects and synthetic gauge/magnetic fields for atoms and photons, Zagreb (Croatia), 1 October 2015.
- "Dirac Fermions and Symmetry-Locked Phases with Ultracold Fermions in Optical Lattice", Cold Atoms Meet High Energy Physics, ECT*, Trento (Italy), 22 June 2015.
- 2014, ERG2014 - 7th International Conference on the Exact Renormalization Group, Lefkada (Greece).
- 2014, Conference on Quantum Engineering of States and Devices, Nordita, Stockholm (Sweden).
- 2014, Integrability in Low Dimensional Quantum Systems, Tihany (Hungary).
- 2014, XIX National Conference on Statistical Physics and Complex Systems, Parma (Italy).
- 2014, BECCosmology - Workshop on non-equilibrium Bose-Einstein condensates and its application to Cosmology, Nottingham (UK).
- 2014, Workshop "Quantum Integrability, Conformal Field Theory and Topological

- Quantum Computation", International Institute of Physics, Natal (Brasil).
- 2013, XCIX Congresso Nazionale della Societa' Nazionale di Fisica, Trieste (Italy).
 - 2013, 22nd International Laser Physics Workshop, Prague (Czech Republic).
 - 2013, Workshop "Conical Intersections in Mathematical Physics", Institut Henri Poincaré, Paris (France).
 - 2012, School & Workshop "Advances in Quantum Technology: From Quantum Information to Quantum Devices", International Institute of Physics, Natal (Brasil).
 - 2012, Programme "Disordered Quantum Systems", Institute Henri Poincaré, Paris (France).
 - 2012, Galileo Galilei Institute Workshop "New quantum states of matter in and out of equilibrium, Galileo Galilei Institute Workshop, Florence (Italy).
 - 2011, XX International Laser Physics Workshop, Sarajevo (Bosnia and Herzegovina),
 - 2011, XVI Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi, Parma (Italy),
 - 2010, Workshop on Emergence of New States of Matter in Magnetic Systems and Beyond, 9 July, 2010, ICTP, Trieste (Italy).
 - 2010, 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Dresden (Germany).
 - 2009, Convegno Informale di Fisica Teorica, Sestri Levante (Italy).
 - 2008, Exact Results in Low-Dimensional Quantum Systems: 2nd INSTANS Summer Conference, Florence (Italy).
 - 2007, Statistical Field Theory of Quantum Devices, StatPhys23 Satellite Meeting, Perugia (Italy).
 - 2005, SOLIBEC, Solitons in Bose-Einstein Condensates, Almagro (Spain), February 9-12, 2005.
 - 2003, 27th Workshop on Intrinsic Localized Modes and Discrete Breathers in Nonlinear Lattices, Erice (Italy).
 - 2002, Workshop on Nonlinear Dynamics in Classical and Quantum Mechanics, Sannomme' (Italy), October 10-11, 2002.
 - 2002, XXI Convegno di Fisica Teorica e Struttura della Materia, Fai della Paganella, Trento (Italy).
 - 2001, X International Laser Physics Workshop, Moscow (Russia).

Recent fundings

2020-2021: Italian PI of the Italy-Armenia Joint Project “Statistical Physics of Classical and Quantum NonLocal Hamiltonians: Phase Diagrams and Renormalization Group” - Armenian PI: Nerses Aninikian.

2020-2021: Italian PI of the Italy-United Kingdom Joint Project “Testing fundamental theories with ultracold atoms” - UK PI: Mauro Paternostro.

2019: Co-Recipient and CNR responsible of the ACRI Project "Functional and Renormalization Group Methods in Quantum and Statistical Physics" sponsored by ACRI (Associazione di Fondazioni e Casse di Risparmio Spa) under the Young Investigator Training Program 2018.

2019-2020: Co-Recipient of MISTI Global Seed Funds MIT-FVG (Friuli Venezia Giulia) Seed Fund Collaboration Grant "NV centers for the test of the Quantum Jarzynski Equality (NVQJE)", with P. Cappellaro (MIT) and S. Ruffo (SISSA).

2018-2021: Italian PI of the Italy-Hungary Joint Project “Strongly interacting systems in confined geometries” (Accordo di Cooperazione Scientifica CNR/MTA Ungheria) - Hungarian PI: Istvan Nandori.

2017-2021: Vice-Chair of the COST Action CA16221 "Quantum Technologies with Ultra-Cold Atoms".

2013-2017: PI of the Italian node of the European STREP "MatterWave".

Organization of Conferences

Co-Organizer of 25 International Conferences, including:

FRGIM - Functional and Renormalization-Group methods, ECT*, 16 - 20 September 2019 (conference part of the FRGIM project). Organizers: A. Bonanno, R. Percacci, A. Trombettoni, G. P. Vacca, and L. Zambelli.

Trieste Junior Quantum Days 2019, 24 -26 July 2019. Scientific Committee: A. Bassi, F. Benatti, R. Fazio, A. Michelangeli, and A. Trombettoni. Local Organizers: M. Carlesso and M. Gallone. <http://tequantum.eu/?q=TriesteJuniorQuantumDays/2019>

Co-Organizer of Summer School and Conference FOMO 2018 (Frontiers of Matter Wave Optics), Crete (Greece), 10 - 21 September 2018. Steering Committee: M. Arndt, P. Bouyer, J. Close, W. Ertmer, J. Hogan, E. Rasel, W. Schleich, A. Trombettoni, W. von Klitzing, and M. Zhan. <http://www.matterwaveoptics.eu/>

13 – 17 November 2017: Conference on Frontiers in Two-Dimensional Quantum Systems. Organizers: E. Gull, M. Koehl, S. Pilati, C. Sa de Melo, and A. Trombettoni. <http://indico.ictp.it/event/8006/>

19 – 23 September 2016: Conference on Exact Renormalization Group - ERG2016 ERG conference, Trieste (Italy). Organizers: R. Percacci, A. Scardicchio and A. Trombettoni. <http://indico.ictp.it/event/7608/>

3 - 17 September 2016: Summer School and Conference FOMO 2014 (Frontiers of Matter Wave Optics), Arcachon (France). Organizing Committee: M. Arndt, P. Bouyer, W. Ertmer, W. von Klitzing, E. Rasel, W. Schleich, and A. Trombettoni. <http://www.matterwaveoptics.eu/index.html>

25 – 29 July 2016: Workshop "Long-range interacting many-body systems: from atomic to astrophysical scales", Satellite of STATPHYS26, July 25 - 29 2016. Organizers: M. Kastner, M. Marsili, D. Mukamel, S. Ruffo and A. Trombettoni. <http://indico.ictp.it/event/7612/>

8 – 10 April 2015: CECAM Workshop "Computational Many-Body physics in the era of artificial gauge fields", Munich (Italy). Organizers: M. Capone, L. Pollet and A. Trombettoni. <http://wwwcecam.org/workshop-1167.html>

13 - 17 May 2013: ICTP Workshop "Ultracold Atoms & Gauge Theories", Trieste, Organizers: J. Dalibard, M. Lewenstein, G. Mussardo, C. Sa De Melo and A. Trombettoni. http://cdsagenda5.ictp.it/full_display.php?email=0&ida=a12184

20 - 31 August 2012: "Advances in Quantum Technology: From Quantum Information to Quantum Devices", International Institute of Physics, Natal (Brasil). Organizers: S. Bose, C. de Morais-Smith, P. Sodano, and A. Trombettoni. <http://www.iip.ufrn.br/pg==oFWaxmYuJleYJjUsR2RGBnYB1TP&lang=en&inf===QTqNWP>

16 - 20 July 2012: ICTP Workshop "Quantum Simulations with Ultracold Atoms", Trieste. Organizers: I. Bloch, M. Inguscio, M. Lewenstein, G. Mussardo, and A. Trombettoni. http://cdsagenda5.ictp.it/full_display.php?email=0&ida=a11174

6 - 10 June 2011: ICTP Workshop "Frontiers in ultracold Fermi gases", Trieste, June 6 - 10, 2011. Organizers: W. Ketterle, M. Kohl, G. Mussardo, S. Stringari, and A. Trombettoni. http://cdsagenda5.ictp.it/full_display.php?email=0&ida=a10146