

## EDUCATION

- Ph.D. Physics, 2011  
Boston University (Boston, MA, United States)  
Advisor: Prof. Anatoli Polkovnikov  
Thesis: *Adiabatic quenches of quantum critical systems*
- Joint B.S. & M.S. in Physics (Italian *laurea*), 2005  
Università degli Studi di Milano (Milan, Italy)  
Advisor: Prof. Sergio Caracciolo  
Thesis: *Fermionic field theory for trees and forests on triangular lattice*

## CURRENT POSITION

- University of Utah (Salt Lake City, UT, United States):  
*Assistant Professor (Lecturer) of Educational Practice* since July 2018

## PREVIOUS POSITIONS

- Yale University (New Haven, CT, United States):  
*Helmsley Postdoctoral Scholar in Physics* July 2015-June 2018
- Yale University (New Haven, CT, United States):  
Postdoctoral Associate (October 2011-June 2015)  
Advisor: Prof. Steven Girvin  
Topics: many-body physics with qubits, numerical stochastic approaches to quantum dynamics

## VISITING POSITIONS

- August-December 2010: KITP Graduate Fellow: Kavli Institute for Theoretical Physics at University of California, Santa Barbara (UCSB).
- June-September 2008: Visiting Position in the Atomchip Group of Jörg Schmiedmayer, Atominstitut, Vienna, Austria.
- May-July 2007: Institute Henri Poincaré (Paris, France): Marie-Curie Fellowship (*Quantum Gases* workshop).

## TEACHING EXPERIENCE

- Spring 2021: *Lead-instructor* for course SCI 3900/HONOR 3990 Being Human in STEM at University of Utah, Salt Lake City UT, format: Synchronous Online.
- Spring 2021- *Instructor* for of Physics 2220, Physics for Scientists and Engineers II, at University of Utah, Salt Lake City, UT, format: Synchronous Online.
- Fall 2020- *Instructor* for two sections of Physics 2210, Physics for Scientists and Engineers I, at University of Utah, Salt Lake City, UT, format: Synchronous Online.
- Spring 2020: *Lead-instructor* for the new course SCI 3900 Being Human in STEM at University of Utah, Salt Lake City UT.
- Spring 2020: *Instructor* for Physics 2025, General Physics Lab II at University of Utah, Salt Lake City, UT.
- Fall 2019: *Instructor* for Physics 2015 and 2025, General Physics Lab I and II (newly designed lab course geared to life science majors) at University of Utah, Salt Lake City, UT.
- Fall 2019: *Instructor* for Physics 2210, Physics for Scientists and Engineers I, at University of Utah, Salt Lake City, UT.
- Summer 2019, *Instructor* for ACCESS Program for Women in Science Summer course, University of Utah, Salt Lake City, UT.
- Spring 2019: *Instructor* for Physics 2025, General Physics Lab II (newly designed lab course geared to life science majors) at University of Utah, Salt Lake City, UT.
- Fall 2018: *Instructor* for Physics 2025, General Physics Lab II (newly designed lab course geared to life science majors) at University of Utah, Salt Lake City, UT.
- Fall 2018: *Instructor* for Physics 2210, Physics for Scientists and Engineers I, at University of Utah, Salt Lake City, UT.
- Spring 2018: *Instructor* for Physics E222 Calculus Based Physics II at Housatonic Community College, Bridgeport CT.
- Spring 2018: *Instructor* for seminar course Physics 107: *Being Human in STEM*, at Yale University, New Haven, CT.
- Fall 2017: *Instructor* for Physics E221 Calculus Based Physics I at Housatonic Community College, Bridgeport CT.

- Summer 2017: Organizer and supervisor of the ONEXYS for Physics online program, a summer math refresher for incoming Physics 170 and Physics 180 students at Yale University, New Haven, CT.
- Spring 2017: *Instructor* for Physics 171, *University Physics for the Life Sciences*, Yale University, New Haven, CT.
- Spring 2017: Supervisor of the *Being Human in STEM* students-faculty project, at Yale University, New Haven, CT.
- Fall 2016: *Instructor* for Physics 170, *University Physics for the Life Sciences*, at Yale University, New Haven, CT.
- Fall 2016: *Instructor* for seminar course Physics 107: *Being Human in STEM* (at its first implementation), at Yale University, New Haven, CT.
- Summer 2016: *volunteer physics tutor* at Housatonic Community College tutoring center, in Bridgeport, CT.
- Summer 2016: Organizer and supervisor of the first ONEXYS for Physics online program, a summer math refresher for incoming Physics 170 students. Yale University, New Haven, CT.
- Spring 2016: *Instructor* for Physics 171, *University Physics for the Life Sciences*, Yale University, New Haven, CT.
- Fall 2015: *Instructor* for Physics 170, *University Physics for the Life Sciences*, Yale University, New Haven, CT.
- Summer 2015: *Instructor* for Physics S180, *University Physics*, five-weeks summer section course for science majors, Yale University, New Haven, CT.
- Spring 2015: *Teaching assistant* for Physics 201, *Fundamentals of Physics*, course for physics and engineer majors, first time taught in entirely “flipped” format (students watch online lectures at home, class time only devoted to problem solving in groups). Head TA and collaborating with faculty on developing online quizzes and in-class material. Yale University, New Haven, CT.
- Fall 2014: *Teaching assistant* for Physics 200, *Fundamentals of Physics*, course for physics and engineer majors, first time taught in entirely “flipped” format (students watch online lectures at home, class time only devoted to problem solving in groups). Head-TA, responsible for designing in-class quizzes and assessments of students performance. Yale University, New Haven, CT.

- Spring 2014: *Teaching assistant* for Physics 171, *University Physics for the Life Sciences*, innovative physics course designed for biology and pre-med majors, taught in the TEAL (Technology Enabled Active Learning) classroom at Yale using active learning techniques. Duties: leading discussion sections, designing in-class activities, in-class help (operating the in-class technology tools and tutoring students during the activities), at Yale University, New Haven, CT.
- Fall 2013: *Teaching assistant* for Physics 170, *University Physics for the Life Sciences*, innovative physics course designed for biology and pre-med majors, taught in the TEAL (Technology Enabled Active Learning) classroom at Yale using active learning techniques. Duties: leading discussion sections, designing in-class activities, in-class help (operating the in-class technology tools and tutoring students during the activities), at Yale University, New Haven, CT.
- July 2013: guest teacher for recitations of Yale course Physics 181 (electromagnetism, optics, special relativity, and quantum physics), Yale University, New Haven, CT.
- Spring 2013: *Yale Scientific Teaching Fellows Program For Physical Scientists* (physics, chemistry, engineering), organized by the Yale Center for Scientific Teaching, Yale University, New Haven, CT.
- Fall 2005, Spring 2006, Summer I 2006, Fall 2006: *Teaching assistant* for PY 212, *General Physics II*, undergraduate course for engineers, science major and premedical students (calculus based, covering: electricity, magnetism, geometrical optics), at Boston University, Boston, MA.

## TEACHER TRAINING EXPERIENCE

- Summer 2020: member of College of Science Remote Instruction Workshop Series Planning Committee.
- Spring 2020: Organizer of the upcoming May 2020, *Summer Institute* for faculty at University of Utah, eventually postponed due Covid-19.
- August 2019: Faculty Leader and Organizer of the TA Orientation for incoming graduate students in the Physics and Astronomy Department at University of Utah.
- May 29-31, 2019: Participant to National Teaching Assistant Workshop, Georgia Institute of Technology, Atlanta, Georgia.

- August 2018- present: Faculty Supervisor of Mentor-TA program for Physics Graduate students at University of Utah.
- June 21-23 2017: Director of the first international Mobile Summer Institute at University College London.
- May 15-19 2017: Facilitator for the Mobile Summer Institute on Scientific Teaching at Central State University, part of the Howard Hughes Medical Institute (HHMI) National Academies series.
- August 9-13 2016: Facilitator for the regional Summer Institute on Scientific Teaching at University of Chicago, part of the Howard Hughes Medical Institute (HHMI) National Academies series.
- June 27-29 2015: Facilitator for the Summer Institute of Undergraduate Education for Yale faculty, part of the Howard Hughes Medical Institute (HHMI) National Academies series.
- June 9-12 2014: Facilitator for the Summer Institute of Undergraduate Education for Yale faculty, part of the Howard Hughes Medical Institute (HHMI) National Academies series.

## **CONFERENCES, WORKSHOPS AND SCHOOLS**

### **Education:**

- PERC (Physics Education Research Conference) 2020, Virtual Conference, July 22-23.
- AAPT (American Association of Physics Teachers) 2020 Virtual Summer Meeting, July 19-22.
- PERC (Physics Education Research Conference) 2019, July 24-25 (Provo, UT).
- AAPT (American Association of Physics Teachers) 2019 Summer Meeting, July 20-24 (Provo, UT).
- National Teaching Assistant Workshop, 2019, May 29-31, Georgia Institute of Technology, Atlanta, Georgia.
- AERA (American Educational Research Association) Annual Meeting 2019, April 5-9, Toronto.
- PERC (Physics Education Research Conference) 2018, August 1-2, (Washington, DC).
- AAPT (American Association of Physics Teachers) 2018 Summer Meeting, July 28-August 1st (Washington, DC).
- GIREP-ICPE-EPEC 2017, The Conference of International Research Group on Physics Teaching, Dublin, July 3-7, 2017.
- AAPT (American Association of Physics Teachers) 2016 Summer Meeting, July 16-20 (Sacramento, California).

- AAPT (American Association of Physics Teachers) 2015 Summer Meeting, July 25-29 (University of Maryland, College Park, Maryland).
- Workshop *Teaching at Teaching-Intensive Institutions*, organized by Bridgewater State University, October 3rd, 2014, Marlboro, MA.
- Gordon Research Conference: *Visualization in Science and Education*, July 21-26, 2013, Bryant University, Smithfield, RI and pre-conference workshop: *Assessing the effectiveness of Visualization Projects*, led by Mike Stieff, July 19-21, Providence RI.

### **Condensed matter physics:**

- Workshop NZIAS-MPIPES Nonlinear Physics at the Nanoscale: *A Cross-Fertilization on Stochastic Methods*, Rotorua, 2-6 February 2015, New Zealand..
- APS March Meeting 2014, Denver, Colorado (March 3-7, 2014).
- Kavli Institute for Theoretical Physics, University of California, Santa Barbara (UCSB) workshop: *Quantum Dynamics in Far-from-Equilibrium Isolated Systems* (October 15- November 1st, 2012).
- PCTS, Princeton University: *Summer school for condensed matter physics*, (July 23-27, 2012).
- APS March Meeting 2012, Boston, Massachusetts (February 27–March 2, 2012).
- BEC 2011, *Bose-Einstein condensation 2011, Frontiers in quantum gases*, 10-16 September 2011, Sant Feliu de Guixols (Costa Brava), Spain.
- *Workshop on many-body quantum dynamics in closed systems*, Barcelona September 7-9, 2011, Barcelona, Spain.
- École de physique des Houches: *Quantum Machines*, Summer School July 4-29, 2011, Les Houches, France.
- ICTP: *Autumn College on Non-Equilibrium Quantum Systems*, (2-13 May 2011), Buenos Aires, Argentina.
- APS March Meeting 2011, Dallas, Texas (March 21-25 2011).
- Kavli Institute for Theoretical Physics, University of California, Santa Barbara (UCSB): workshop: *Beyond Standard Optical Lattices* (13 September-10 December, 2010), conference: *Frontiers of Ultracold Atoms and Molecules* (11-15 October, 2010), workshop: *Disentangling Quantum Many-body Systems: Computational and Conceptual Approaches* (18 October-17 December 2010).
- Max Planck Institute for the Physics of complex systems (Dresden-Germany): seminar and workshop *Correlated phenomena in low-dimensional systems* (05-23 July 2010).
- ICTP (Trieste-Italy): *Workshop on dynamics of strongly correlated quantum systems*, (21-25 June 2010).
- APS March Meeting 2010, Portland, Oregon (March 15-19 2010).
- ICTS *Condensed Matter Programme* 2009-Mahabaleshwar, India (5-23 Dec. 2009).
- *Summer College on Nonequilibrium Physics from Classical to Quantum Low Dimensional Systems* in Trieste, Italy, July 6-24, 2009.
- *Second Annual Greater Boston Area Quantum Matter Meeting*, May 9, 2009 (Boston University).
- APS March Meeting 2009, Pittsburgh, Pennsylvania (March 16–20 2009).

- Workshop *Non-equilibrium Dynamics and Correlations in Strongly Interacting Atomic, Optical and Solid State Systems*, Center for Ultracold Atoms and ITAMP, Cambridge MA (26-28 Jan 2009).
- SSFS 08 *Superconductivity and Superfluidity in Finite Systems*, University of Wisconsin, Madison (27-29 May 2008).
- *First Annual Greater Boston Area Quantum Matter Meeting* Harvard University, 05/10/2008
- APS March Meeting 2008, New Orleans, Louisiana (10-14 March 2008).
- *Summer School on Novel Quantum Phases and Non-equilibrium Phenomena in Cold Atomic Gases*, ICTP, Trieste (27 August-7 September 2007).

## INVITED TALKS

### Education:

- *Managing an Effective Instructional Team: How to Support Your TAs and LAs*, Center for Science and Mathematics Education (CSME)-Exchange, October 19th, 2018, University of Utah.
- *Pedagogical strategies to increase students' engagement and motivation*, GIREP-ICPE-EPEC 2017, The Conference of International Research Group on Physics Teaching, Dublin, July 4th, 2017
- *Pedagogical strategies to increase students' engagement and motivation*, Yale Teaching and Learning Lunches, April 27th, 2017.
- *Pedagogical strategies to increase students' engagement and motivation*, Boston University, Department of Physics, October 19th, 2016
- *Pedagogical strategies to increase students' engagement and motivation*, University College London, Center for Teaching and Learning Economics, June 8th, 2016

### Condensed matter physics:

- *Dissipative dynamics in arrays of superconducting qubits*, Workshop NZIAS-MPIPKS Nonlinear Physics at the Nanoscale: A Cross-Fertilization on Stochastic Methods, Rotorua, 2-6 February 2015, New Zealand.
- *Adiabatic quenches of quantum critical systems*, Workshop on many-body quantum dynamics in closed systems, Barcelona September 7-9, 2011, Barcelona, Spain.
- *Probing quantum systems through quenches: an 'exciting' approach*, UMass Boston Physics Colloquium, October 7th, 2009.

## ACADEMIC DISTINCTIONS

- KITP Graduate Fellowship: Fall 2010 (Kavli Institute for Theoretical Physics at University of California, Santa Barbara (UCSB)).

- I2CAM Travel Award: June 2008 (to participate to Summer College on Nonequilibrium Physics from Classical to Quantum Low Dimensional Systems in Trieste, Italy, July 6-24, 2009).
- I2CAM Travel Award: May 2008 (to participate to SSFS 08 "Superconductivity and Superfluidity in Finite Systems" (27-29 May 2008)).
- Marie-Curie fellowship: May-July 2007 Institute Henri Poincaré (Paris, France).

## SCIENCE OUTREACH

- May 27th, 2014: Speaker for the Outreach series of science lectures *Yale Science in the News*, New Haven Public Library, talk title: *Entangled Information: How the quantum world can shape our future*.
- April 2014: classroom volunteer for the science class project *Making speakers*, at the Metropolitan Business Academy Magnet High School in New Haven (CT).
- May 2013: volunteer as a judge for the New Haven Science Fair: 5th grade, Physical Sciences.
- April 2013: classroom volunteer for the science class project *On the move*, at the Metropolitan Business Academy Magnet High School in New Haven (CT).

## OTHER ACTIVITIES

- Fall 2018-Spring 2019: UPSTEM Faculty Fellow at University of Utah.
- Fall 2015-2017: developing and implementing social-psychological interventions to increase sense of belonging in introductory physics courses at Yale.
- Co-organizer of the [Science Education Seminar Series](#) at Yale, July 2015 to May 2018.
- Designer of the Yale Physics department website on [Innovative Teaching](#).
- Spring 2012-Spring 2015: *organizer* of the *Tea\_club*: informal meeting among postdocs and graduate students in condensed matter theory where participants share their expertise through blackboard talks on various topics.
- Fall 2013-Fall 2017: *organizer* of social events for women graduate students and postdocs in physics.
- *Referee* for Science Education (2018).
- *Referee* for Journal of the Korean Physical Society (2012).
- Selected drawing for the [APS 2014 Image Gallery](#) (March 2014).

## CERTIFICATIONS

- First Aid CPR AED Certificate, August 2017.
- National Academies Mentor in Science and Engineering, 2014 to present.
- *Scientific Teaching Fellow*, certificated by the Yale Center for Scientific Teaching, Spring 2013.



- Responsible Conduct of Research (for NSF): Yale University, June 2012.

## TECHNOLOGY SKILLS

### I. *Programming languages*

- Fortran 90, Mathematica, LaTeX [broad experience].
- C, R, Matlab, Python, QuTiP, linear algebra LAPACK libraries, Arnoldi package ARPACK, High Performance Computing, parallel computing (OpenMPI) [working knowledge].

### II. *Softwares*

- Experience with Drupal software (managing and building Yale condensed matter theory website).
- Teaching experience in the TEAL (Technology Enabled Active Learning) classroom and its software interface.
- Broad experience with: Learning Catalytics, Coursera, Canvas, Blackboard, Qualtrics, Turning Point Technology (clicker software).

## LANGUAGES

Italian (native), English (fluent), French (intermediate), German (beginner).

## PUBLICATIONS

### Education:

4. *Using Open-Source Videos to Flip a First-Year College Physics Class*, Frank J. Robinson, Philip M. Reeves, Helen Louise Caines, **Claudia De Grandi**, *Journal of Science Education and Technology* (2020), Springer. DOI: <https://doi.org/10.1007/s10956-020-09814-y>

3. *STEM climate survey developed through student-faculty collaboration*, **Claudia De Grandi**, Zachary B. Smithline, Philip M. Reeves, Teddy G. Goetz, Nathaniel Barbour, Erika Hairston, Joyce Guo, Fadeke Muraina, Joel A. Bervell, Lauren M. Chambers, Helen Caines, Andrew D. Miranker & Simon G. J. Mochrie (2019), *Teaching in Higher Education*, DOI: [10.1080/13562517.2019.1636219](https://doi.org/10.1080/13562517.2019.1636219)

2. *Assessment of strategies to build a welcoming STEM classroom environment for all students*, **C. De Grandi**, R. Ramos, and S. G. J. Mochrie, 2018 PERC Proceedings [Washington, DC, August 1-2, 2018], edited by A. Traxler, Y. Cao, and S. Wolf, DOI: [10.1119/perc.2018.pr.De\\_Grandi](https://doi.org/10.1119/perc.2018.pr.De_Grandi)

1. *Pedagogical strategies to increase students' engagement and motivation*, **Claudia De Grandi**, Simon Mochrie, Rona Ramos, chapter in "Concepts, Strategies and Models to Enhance Physics Teaching and Learning", Eilish McLoughlin, Paul Van Kampen, Springer International Publishing, 2019. [10.1007/978-3-030-18137-6\\_19](https://doi.org/10.1007/978-3-030-18137-6_19), ISBN: 978-3-030-18137-6

### **Condensed matter physics:**

8. *Cooling and Autonomous Feedback in a Bose-Hubbard chain with attractive interactions*  
Shay Hacoheh-Gourgy, Vinay Ramasesh, **Claudia De Grandi**, Irfan Siddiqi, Steve M. Girvin  
Phys. Rev. Lett. 115, 240501 (2015)
7. *Microscopic theory of non-adiabatic response in real and imaginary time*  
**C. De Grandi**, A. Polkovnikov, A.W. Sandvik  
J. Phys.: Condens. Matter 25, 404216 (2013)
6. *Universal nonequilibrium quantum dynamics in imaginary time*  
**C. De Grandi**, A. Polkovnikov, A.W. Sandvik  
Phys. Rev. B 84, 224303 (2011)
5. *Quench dynamics near a quantum critical point: application to the sine-Gordon model*  
**C. De Grandi**, V. Gritsev, A. Polkovnikov  
Phys. Rev. B 81, 224301 (2010)
4. *Adiabatic perturbation theory: from Landau-Zener problem to quenching through a quantum critical point*  
**C. De Grandi**, A. Polkovnikov  
"Quantum Quenching, Annealing and Computation", Eds. A. Das, A. Chandra and B. K. Chakrabarti, Lect. Notes in Phys., vol. 802 (Springer, Heidelberg 2010)
3. *Quench dynamics near a quantum critical point*  
**C. De Grandi**, V. Gritsev, A. Polkovnikov  
Phys. Rev. B 81, 012303 (2010)
2. *Adiabatic nonlinear probes of one-dimensional Bose gases*  
**C. De Grandi**, R. A. Barankov, A. Polkovnikov  
Phys. Rev. Lett. 101, 230402 (2008)
1. *Renormalization flow for unrooted forests on a triangular lattice*  
Sergio Caracciolo, **Claudia De Grandi**, Andrea Sportiello,  
Nucl. Phys. B 787:260-282, (2007).

### **GRANTS**

*Exploring Students' Learning of Data Analysis in a Three-Dimensional Lab Environment.*  
National Science Foundation DUE-IUSE (#7968866). Lauren Barth-Cohen (PI), **Claudia De Grandi** (Co- PI), Jordan Gerton (Co-PI), and David Goldenberg (Co-PI). \$299,191.  
(05/01/20-04/30/23)

## COMMITTEES

### University Committees:

August 2019-present: *University Teaching Committee*, University of Utah,

### Department Committees: Physics and Astronomy Department University of Utah

- *Teaching Excellence Committee* (Chair), August 2020- Present
- *Undergraduate Curriculum Reform Committee*, August 2020- present
- *Ombuds Committee*, August 2020- present
- *Diversity and Inclusion Committee*, August 2019- July 2020
- *Undergraduate Program Committee*, August 2018- July 2020
- *Awards Committee*, August 2019- June 2020
- *Faculty Search Committee PER (Physics Education Research)*, Fall 2018-Spring 2019.

### Graduate Students Advisory Committees

- Jason May
- Isaac Brown

## STUDENTS SUPERVISED

- Callie Clontz, Graduate Student Mentor TA, Fall 2020.
- Devon Fischer, Graduate Student Mentor TA, Fall 2019.
- Maile Burnett, Undergraduate Student working on curriculum re-design of the Lab Course PHYS 3719, Summer 2019.
- Isaac Brown, Graduate Student working on curriculum re-design of the Lab Course PHYS 3719, Summer 2019.
- Paul Bergeron, Graduate Student Mentor TA, Fall 2018.

## REFERENCES

- Steven Girvin, Eugene Higgins Professor of Physics & Applied Physics, Yale University, [steven.girvin@yale.edu](mailto:steven.girvin@yale.edu) (research postdoc advisor).
- Jennifer Frederick, Executive Director of Yale Center for Teaching and Learning, [jennifer.frederick@yale.edu](mailto:jennifer.frederick@yale.edu) (teacher, teaching advisor and mentor).
- Simon Mochrie, Professor of Physics and Applied Physics, Yale University, [simon.mochrie@yale.edu](mailto:simon.mochrie@yale.edu) (teaching advisor, collaborator and mentor).
- Michelle Withers, Associate Professor, Binghamton University, [mwithers@binghamton.edu](mailto:mwithers@binghamton.edu) (teaching advisor, collaborator and mentor).
- Paul Tipton, Professor of Physics, Physics Department, Yale University, [paul.tipton@yale.edu](mailto:paul.tipton@yale.edu) (postdoc advisor).
- Helen Caines, Associate Professor of Physics, Yale University, [helen.caines@yale.edu](mailto:helen.caines@yale.edu) (teaching advisor and mentor).
- Anatoli Polkovnikov, Associate Professor of Physics, Boston University, [asp@physics.bu.edu](mailto:asp@physics.bu.edu) (PhD advisor).