

# Curriculum Vitae

## EDUARDO HECTOR FRADKIN

### OFFICE ADDRESS:

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DATE AND PLACE OF BIRTH: February 21, 1950; Buenos Aires, Argentina

MARITAL STATUS: Married, three children.

### ACADEMIC DEGREES:

Licenciado en Física, Universidad de Buenos Aires, Argentina (1973)  
Ph. D., Physics, Stanford University (1979)  
Thesis Title: Phase Transitions in Lattice Gauge Theories (Advisor: Prof. L. Susskind)

### EMPLOYMENT HISTORY:

Postdoctoral Research Associate, University of California, Santa Cruz (1979)  
Postdoctoral Research Associate, University of Illinois (1979-80)  
Research Assistant Professor, University of Illinois (1980-1981)  
Assistant Professor of Physics, University of Illinois (1981-1984)  
Associate Professor of Physics, University of Illinois (1984-1989)  
Professor of Physics, University of Illinois (since Fall 1989)  
Director, Institute for Condensed Matter Theory (since Fall 2011)  
Donald Biggar Willett Professor of Physics, College of Engineering, University of Illinois at Urbana-Champaign, invested 2015

### AWARDS:

1. Member of the National Academy of Sciences (elected in 2013)
2. Fellow of the American Academy of Arts and Sciences (elected in 2009)
3. Fellow of the American Physical Society (since 1998)
4. John Simon Guggenheim Memorial Foundation Fellowship Award, 1998/1999.
5. Arnold O. Beckman Associate, Center for Advanced Study, University of Illinois (1990-91)
6. Arnold O. Beckman Research Award, Research Board, University of Illinois, Academic Year 2006.
7. César Milstein Research Award, MinCyT, Argentina, August 2007, June 2011, and July 2014.

8. Member, American Physical Society
9. Member, Asociación Física Argentina (Argentine Physical Association)

#### VISITING POSITIONS:

1. Visiting Scientist, Institute for Theoretical Physics, University of California, Santa Barbara CA (USA)(Summer, 1980).
2. Consultant at IBM Thomas J. Watson Research Center (Fall 1980).
3. Visiting Scientist, Institute for Theoretical Physics, University of California, Santa Barbara CA (USA)( Summer 1981).
4. Invited Lecturer, École d'Eté de Physique Théorique, Les Houches, France (Summer 1982 and Summer 2009).
5. Visiting Scientist, Commissariat a l'Energie Atomique, Service de Physique Theorique, Saclay, France (Fall 1982).
6. Visiting Professor, Ecole Normale Supérieure, Laboratoire de Physique Theorique, Paris, France (Winter 1983).
7. Visiting Professor, Departamento de Física, Universidad de La Plata, Argentina (Summer 1984)
8. Visiting Scientist, Institute for Theoretical Physics, University of California, Santa Barbara CA (USA) (Summer 1985).
9. Visiting Professor, Departamento de Física, Universidad de La Plata, Argentina (1986-87).
10. Visiting Professor, Departamento de Física, Universidad de La Plata, Argentina (Summer 1995).
11. Visiting Professor, Departamento de Física, Universidad de La Plata, Argentina (Summer 1998).
12. External Oponent, Institute of Theoretical Physics, Chalmers University of Technology, Göteborg, Sweden (Summer 1995).
13. Visiting Scientist, Institute for Theoretical Physics, University of California, Santa Barbara (Spring and Summer 1997).
14. Visiting Scientist, Institute for Theoretical Physics, University of California, Santa Barbara CA (USA) (August-September 1998).
15. Visiting Scientist, Institute for Theoretical Physics, University of California, Santa Barbara (Spring and Summer 2006).
16. Visiting Professor, Laboratoire de Physique Théorique et Hautes Energies, Université Pierre et Marie Curie (Paris VI) et Denis Diderot (Paris VII), Paris, France (November 1998).
17. Visiting Scientist at the Program on Frontiers in Quantum Computation at the Princeton Center for Theoretical Physics, February 2008.
18. Visiting Professor, Department of Physics, Faculty of Exact and Natural Sciences, University of Buenos Aires, Argentina, December 2006.
19. Visiting Professor, Department of Physics, Stanford University, October 15-December 15, 2007.
20. Co-organizer of the Program and Conference on "Higher Temperature Superconductivity" at the Kavli Institute for Theoretical Physics of the University of California, Santa Barbara, CA (USA) (Summer 2009).
21. Co-organizer of the Program "The CFT/Gravity Duality and Condensed Matter Physics" at the Kavli Institute for Theoretical Physics of the University of California, Santa Barbara, CA (USA) (Fall 2011).
22. Visiting Professor, Department of Physics, Faculty of Exact and Natural Sciences, University of Buenos Aires, Argentina, July 2010 and June 2013.
23. Co-organizer of the workshop "Field Theoretic Computer Simulations for Particle Physics and Condensed Matter", Boston University (May 8-10, 2014).
24. Co-organizer of the Nobel Symposium "New forms of matter: topological insulators and superconductors", Stockholm, Sweden (June 13-15, 2014).

#### RESEARCH INTERESTS:

Condensed Matter Theory, Strongly Correlated Systems, Quantum Hall Systems, Topological Phases and Topological Field Theories, Disordered Systems, Quantum Field theory.

## DOCTORAL STUDENTS:

1. Dr. Michael Ma (Prof. W. McMillan codirector). B.S, University of Hong Kong. PhD University of Illinois at Urbana-Champaign, July 1982. Dr. Ma is currently Professor of Physics at the University of Cincinnati, Cincinnati OH (USA).
2. Dr. Matthew P. A. Fisher (Prof. A. J. Leggett main director). B.S. Cornell University. PhD University of Illinois at Urbana-Champaign, July 1986. Member of Research Staff at the IBM T. J. Watson Research Center until 1993. Member of the Kavli Institute for Theoretical Physics of the University of California Santa Barbara (1993-2007) and Professor of Physics, University of California Santa Barbara since 1993.
3. Dr. Franco Nori. BS, Universidad Simón Bolívar (Venezuela). PhD University of Illinois at Urbana-Champaign, July 1987. Dr. Nori is currently an Professor of Physics at the University of Michigan, Ann Arbor MI (USA) and Group Director of the Quantum Condensed Matter Research Group (QCMRG), at the Center for Emergent Matter Science (CEMS), in RIKEN (Japan). He is also a Chief Scientist at RIKEN.
4. Dr. Avinash Singh. BS, IIT Kanpur (India). PhD University of Illinois at Urbana-Champaign, January 1988. Dr. Singh is currently a Professor of Physics at the Indian Institute of Technology in Kanpur, India.
5. Dr. David Withoff. BS, Illinois Institute of technology. PhD University of Illinois at Urbana-Champaign, July 1988. Dr. Withoff was a member of the staff of Wolfram Research, Champaign IL (USA). He is currently at the University of Alaska, Fairbanks.
6. Dr. Cecilia von Reichenbach. Licenciado and PhD Universidad de La Plata (La Plata, Argentina) July 1988. Dr. von Reichenbach is currently a Professor of Physics at Universidad de La Plata, Argentina.
7. Dr. Joel Cannon; PhD University of Illinois at Urbana-Champaign, July 1989. Dr. Cannon is currently Professor of Physics at Washington and Jefferson College, Washington PA (USA).
8. Dr. Christopher Mudry. BS, Université de Genève, Switzerland. PhD University of Illinois at Urbana-Champaign, July 1994. Dr. Mudry is currently a permanent member of the staff and the Head of the Theory Group of the Paul Scherrer Institute at Villigen, Switzerland.
9. Dr. Ana Maria López. Licenciado, University of Buenos Aires (Argentina). PhD University of Illinois at Urbana-Champaign, July 1994. Formerly a Wolfson Research Fellow at the Department of Physics at Oxford University, Oxford, England, Dr. López was a member of CONICET (Argentina) at the Instituto de Física Balseiro in S. C. de Bariloche, Río Negro, Argentina. She is member of the staff at the London School of Economics, London (UK).
10. Dr. Antonio Helio Castro Neto. BS, Universidad de Campinas, Brazil. PhD University of Illinois at Urbana-Champaign, July 1994. Dr. Castro Neto is currently a Professor of Physics at Boston University, Boston MA (USA) and the Distinguished Professor at the Department of Physics of the Faculty of Science of the National University of Singapore, Singapore, where he is the Director of the Graphene Research Centre.
11. Dr. Manuel A. Fuentes. Licenciado, University of Buenos Aires (Argentina). PhD University of Illinois at Urbana-Champaign, July 1995. Dr. Fuentes was an Instructor at Oxford Brookes University, Oxford UK. He is currently a consultant on renewable energies with ITPower, London, United Kingdom.
12. Dr. Carlos Cassanello. Licenciado, University of Buenos Aires (Argentina). PhD University of Illinois at Urbana-Champaign, September 1996. PDRA at the University of Köln (Germany), at the Sloan Center for Theoretical neurobiology of the University of California San Francisco, and at the Department of Physics of the University of California Berkeley. Dr. Cassanello was a Postdoctoral Research Fellow at the Center for Neurobiology and Behavior of Columbia University of California, New York City. He was a Postdoctoral Fellow at the Department of Psychology of the Australia National University, Canberra (Australia). He is currently a Scientist at the Bernstein Center for Computational Neuroscience (Berlin, Germany).
13. Dr. Nancy P. Sandler. Licenciado, University of Buenos Aires (Argentina). PhD University of Illinois at Urbana-Champaign, August 1998. Dr. Sandler is currently an Associate Professor of Physics (with tenure) at the University of Ohio, Athens OH, USA.
14. Dr. Eun-Ah Kim. BS, National Seoul University (Korea). PhD University of Illinois at Urbana-Champaign, August 2005. Dr. Kim was a postdoctoral research associate at the Department of Physics of Stanford University, Stanford CA, from August 2005 till August 2008. Since August 2008 she is an Assistant Professor of Physics at the Department of Physics of Cornell University, Ithaca NY, USA.
15. Dr. Michael J. Lawler. BS, Queens University, Canada. PhD University of Illinois at Urbana-Champaign, August 2006. Dr. Lawler was a postdoctoral research associate at the Department of Physics of the University of Toronto, Toronto, Ontario, Canada, from August 2006 till August 2008. He is currently an Assistant Professor of Physics at Binghamton University, Binghamton, NY, USA.

16. Dr. Stefanos Papanikolaou. BS, University of Athens (Greece). PhD University of Illinois at Urbana-Champaign, August 2008. Dr. Papanikolaou was a postdoctoral research associate at the Department of Physics of Cornell University, Ithaca NY (2008-2011). He was a Research Scientist at the Department of Materials Science, Yale University, New Haven CT (USA) (Fall 2011- Summer 2014). He is currently an Assistant Research Professor at the Whiting School of Engineering of Johns Hopkins University (Baltimore, MD).
17. Dr. Kai Sun. BS, Beijing University (China). PhD University of Illinois at Urbana-Champaign, May 2009. Postdoctoral Fellow at the Joint Quantum Institute of the Department of Physics of the University of Maryland, College Park, MD, USA, 2009-2012. Dr. Kai Sun is an Assistant Professor of Physics at the Department of Physics of the University of Michigan since the Fall of 2012.
18. Dr. Benjamín Muñoz Fregoso. BS, University of Monterrey (Mexico). PhD University of Illinois at Urbana-Champaign, May 2010. Dr. Fregoso was a postdoctoral research associate at the Department of Physics of the University of Chicago, Chicago IL, USA (2010-2011). He was a postdoctoral research associate at the Department of Physics of the University of Maryland, College Park MD (USA) (2011-2014). Since the Fall 2014 he is a Postdoctoral Research Associate at the Department of Physics of the University of California Berkeley, Berkeley (CA).
19. Dr. Benjamin Hsu. BS Cornell University. PhD University of Illinois at Urbana-Champaign, August 2011. Since the Fall 2011 till the Fall of 2013 Dr. Hsu was a Postdoctoral Research Associate at the Department of Physics of Princeton University, Princeton NJ (USA). He is now a Statistician at NAXION, Philadelphia, PA (USA).
20. Dr. Akbar Jaefari. BS Sharif University (Iran). PhD University of Illinois at Urbana-Champaign, August 2012. Since September 2012 Dr. Jaefari is a Postdoctoral research Associate at the Department of Physics of the University of Oklahoma, Norman, OK (USA).
21. Dr. Rodrigo Andrés Soto Garrido. Licenciado en Física, Universidad Federico Santa María (Valparaíso, Chile). Dr. Soto Garrido graduated in the Summer 2015 and he is returning to his home country, Chile.
22. Ms. Yizhi You. B.S. Tsinghua University (Beijing, China). She is a current graduate student in my group.
23. Mr. Xiao Chen. B. S. Tsinghua University (Beijing, China). He is a current graduate student in my group.
24. Mr. Krishna Kumar. B.S. University of Texas at Austin (TX). He is a current graduate student in my group.
25. Mr. Wathid Assawasunthonnet. B.S. Massachusetts Institute of technology. He is a current graduate student in my group.

#### MASTER STUDENTS:

1. Dr. Leticia Cugliandolo, MSc Universidad de La Plata (La Plata, Argentina) July 1989. Dr. Cugliandolo went on to earn her PhD in 1992 at the Universidad de La Plata, and is currently a Professor of Physics at the Université Pierre et Marie Curie - Paris VI, in Paris, France. She is a junior member of the Institute Universitaire de France (IUF) and the Director of the Les Houches School of Physics.

#### POSTDOCTORAL RESEARCH ASSOCIATES:

1. Dr. Wu-Pei Su (1983-1985, PhD university of Pennsylvania (1983)). Dr. Su is now Professor of Physics at the University of Houston, Houston TX (USA).
2. Dr. Elbio Dagotto (1985-1988), PhD Instituto Balseiro, Argentina (1984). Dr. Dagotto is now a Professor of Physics at the University of Tennessee, Knoxville TN (USA), and a Group Leader at Oak Ridge National Laboratory.
3. Dr. Qian Niu (1984-1985), PhD University of Washington (1984). Dr. Niu is now Professor of Physics at the University of Texas at Austin, Austin TX (USA).
4. Dr. Adriana Moreo (1985-1988), PhD Instituto Balseiro, Argentina (1985). Dr. Moreo is now a Professor of Physics at the University of Tennessee, Knoxville TN (USA), and a member of the research staff, Materials Theory Group, of Oak Ridge National Laboratory.
5. Dr. Scott Renn (1987-1988), PhD University of Pennsylvania (1987). Dr. Renn was an Assistant Professor of Physics at the University of California at San Diego, La Jolla CA (USA). He is now working in the private sector.
6. Dr. Shoudan Liang (1988-1990). PhD University of Chicago, Chicago IL (1985). Dr. Liang was an Assistant Professor of Physics at Penn State University. He is now a Professor at the Department of Biostatistics and Applied Mathematics of The University of Texas M.D. Anderson Cancer Center, Houston TX (USA).

7. Dr. Enrique Moreno (1988-1990), PhD Universidad de La Plata, Argentina (1987). Dr. Moreno is now a Lecturer at the Physics Department of Northeastern University, Boston MA (USA).
8. Dr. Vadim Kalmeyer (1989-1990), PhD Stanford University (1989). Dr. Kalmeyer was a postdoctoral associate at IBM Almaden, San Jose CA (USA). He is currently at Agilent Technologies, Santa Clara, CA.
9. Dr. Lev Ioffe (1989-1990), PhD Landau Institute for Theoretical Physics, USSR (1988). Dr. Ioffe is now a Professor of Physics at Rutgers University, New Brunswick NJ (USA) and Directeur de Recherche at the Laboratory of Theoretical and High Energy Physics (LPTHE) of the University of Paris Pierre et Marie Curie, Paris (France).
10. Dr. Eduardo R. Gagliano (1989-1992), PhD Instituto Balseiro, Argentina (1987). Dr. Gagliano was on the faculty of Instituto de Física Balseiro, Bariloche, Argentina. Dr. Gagliano passed away in 1998.
11. Dr. Silvia Bacci (1989-1992), PhD Instituto Balseiro, Argentina (1989). Dr. Bacci is now at Instituto de Física Balseiro, Bariloche, Argentina.
12. Dr. Shivaji Sondhi (1992-1995), PhD UCLA (1992). Dr. Sondhi is now a Professor of Physics at Princeton University, Princeton NJ (USA).
13. Dr. Claudio C. Chamon (1995-1997), PhD MIT (1995). He is now a Professor of Physics at Boston University, Boston MA (USA).
14. Dr. José María Román Faúndez (1998-2002), PhD Universitat de Barcelona, Spain. PDRA at Universidade de Évora (Évora, Portugal) and at the Institute for Theoretical Physics, Consejo Superior de Investigación Científica, Madrid, Spain; now Chief Scientist, Service for Photovoltaic Systems, National Center for Renewable Energies (CENER), Navarra, Spain.
15. Dr. Daniel G. Barci (1999-2001), PhD Universidad de La Plata, Argentina (1995). He is now a tenured faculty member of the Departamento de Física, Universidad Estadual de Rio de Janeiro, RJ Brazil.
16. Dr. Wengsheng Vincent Liu (1999-2001), PhD University of Texas at Austin (1999). He was a Postdoctoral Research Associate at the Massachusetts Institute of Technology. He is now a Professor of Physics (with tenure) at the University of Pittsburgh, Pittsburgh PA (USA).
17. Dr. Victoria Fernández, (PDRA 2003-2005) member of the faculty of the Department of Physics, University of La Plata, Argentina, and scientist at the National Research and Technology council (CONICET) of Argentina.
18. Dr. Eddy Ardonne (2002-2005), PhD University of Amsterdam (2002). He was a postdoctoral research associate at the Quantum Information Institute of Caltech and at Station Q of Microsoft Corporation, University of California Santa Barbara (2005-2007). He is currently an Assistant Professor of Physics at the Department of Physics of Stockholm University, Stockholm (Sweden).
19. Dr. Kumar S. Raman (2005-2007), PhD Princeton University (2005). Dr. Raman was a postdoctoral research associate at the Department of Physics of the University of California, Riverside, CA (USA). He is currently a member of the technical staff of Lawrence Livermore National Laboratory.
20. Dr. Bruno Uchoa (2008-2010), PhD University of Campinas, Sao Paulo, Brazil (2002). Dr. Uchoa is now an Assistant Professor of Physics at the Department of Physics of the University of Oklahoma (since the Fall 2011).
21. Dr. Eytan Grosfeld (2008-2011), PhD Weizmann Institute of Science, Israel (2008). In the Fall 2011 Dr. Grosfeld became an Assistant Professor of Physics of the Department of Physics of Ben Gurion University, Israel.
22. Dr. Taylor Hughes (2009-2011), PhD Stanford University, Stanford, CA (USA) (2009). Since the Fall of 2011 Dr. Hughes is an Assistant Professor of Physics of the Department of Physics of the University of Illinois at Urbana-Champaign.
23. Dr. Chin Yan Jeffrey Teo (2011-2014), PhD University of Pennsylvania (2011). Dr. Teo is an Assistant Professor of Physics at the University of Virginia (Charlottesville, VA) since in the Fall 2014.
24. Dr. Pouyan Ghaemi (2011-2014), PhD Massachusetts Institute of Technology (2009). Dr. Ghaemi was a postdoctoral research associate at the Department of Physics of the University of California, Berkeley, CA (USA) (2009-2011). Dr. Ghaemi is an Assistant Professor of Physics at the City College of New York (New York City, NY) since January 2014.
25. Dr. Rudro Rana Biswas (2011- 2014), PhD Harvard University(2011). Since the Fall 2015 he is an Assistant Professor of Physics at Purdue University (West Lafayette, Indiana).
26. Dr. Gil Young Cho (2013 - 2015), PhD University of California Berkeley (2013). Currently a Postdoctoral Research Associate (and military service) at the Korea Advanced Institute of Science and Technology (KAIST) (Daejeon, South Korea).
27. Dr. Victor Kooi Ming Chua (since the Fall 2013), PhD University of Texas, Austin (2013).

- 28. Dr. Peng Ye (since the Fall 2015), PhD Tsinghua University, China (2012).
- 29. Dr. Yuxuan Wang (since the Fall 2015), PhD University of Wisconsin-Madison (2015).
- 30. Dr. Luiz Santos (since the Fall 2015), PhD Harvard University (2012).

Grants: I have been supported by the National Science Foundation since 1982 through a variety of grants, by the Basic Energy Sciences division of the US Department of Energy, by the Simons Foundation, and by the Gordon and Betty Moore Foundation.

Member of the Board of Scientific Directors the Journal of Statistical Mechanics: Theory and Experiment

Member of the Scientific Advisory Committee of the Institute for Theoretical Physics of the Faculty of Science of the University of Amsterdam (ITFA), The Netherlands.

Chair, External Review Committee, Department of Physics & Astronomy, University of Kentucky, Lexington (Kentucky), February 2014.

Organizer of the University of Chicago/University of Illinois, Joint Physics Meeting (1981-1989, and 2015).

Co-organizer of the Nobel Symposium *New forms of matter: topological insulators and superconductors*, Lidingö (Sweden), June 2014.

Member of the International Advisory Board of the 27th International Conference in Low Temperature Physics (LT27), Buenos Aires (Argentina), August 2014.

Co-organizer of the Workshop *Field Theoretic Computer Simulations for Particle Physics and Condensed Matter*, Boston University (Boston, MA), May 2014.

Member and Chair of the 2012 Bardeen Prize Committee.

Member of the 2011 and 2012 Onsager Prize Committee of the American Physical Society.

Referee for Physical Review Letters, Physical Review B, Reviews of Modern Physics, Europhysics Letters, Nature, Science, Nuclear Physics B, Annals of Physics, American Journal of Physics, Journal of Mathematical Physics, Princeton University Press, and Cambridge University Press.

Referee for the US National Science Foundation, the US Department of Energy, FOM (the National Science Foundation of The Netherlands), the US-Israel Binational Science Foundation, The John Simon Guggenheim Memorial Fellowship Foundation, the Sloan Foundation (USA), Agencia Nacional de Promoción Científica y Tecnológica (Argentina), the Research Corporation, the National Science and Engineering Research Council of Canada, Ministerio de Ciencia y Tecnología (España), Fundación Nacional de Ciencia y Tecnología (Chile), Consejo Nacional de Ciencia y Técnica (Argentina), and the Centre for the Advanced Study of the University of Oslo (Norway).