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EDUCATION

Doctor of Philosophy (Ph.D.):

Physics, August 1994, Massachusetts Institute of Technology, Cambridge, MA, USA.
Thesis: *Universal Correlations in the Quantum Spectra of Chaotic Systems and Exactly Solvable Many-Body Problems*. Adviser: Boris L. Altshuler (Columbia University, emeritus)

Master of Science (M.S.):

Nuclear Physics, December 1988, University of São Paulo, São Paulo, Brazil
Dissertation: *Double Gamma Decay in ^{90}Zr* . Adviser: Otaviano A. M. Helene (retired)

Bachelor of Science (B.S.):

Physics, December 1986, University of São Paulo, São Paulo, Brazil

EMPLOYMENT

- *Chair*: Department of Physics, University of Central Florida (May 2016 – May 2021).
- *Professor*: Department of Physics, University of Central Florida (since August 2010).
- *Associate Professor*: Department of Physics, University of Central Florida (December 2003 – July 2010).
- *Visiting Associate Professor*: Department of Physics, Duke University, Durham, NC (December 2002 – December 2003).
- *Associate Professor*: Department of Physics, Pontifical Catholic University of Rio de Janeiro (PUC-RJ) (October 2002 – December 2005). On leave December 2002 – December 2005.
- *Assistant Professor*: Department of Physics, PUC-RJ (August 1996 – September 2002).
- *Post-doctoral Fellow*: NORDITA, Denmark (September 1994 – July 1996).
- *Research Assistant*: Department of Physics, Massachusetts Institute of Technology (March – August 1994).

PUBLICATIONS¹

Number of citations (October 28, 2025): 3521 (Web of Science), 4714 (Google Scholar)
 h-index (October 28, 2025): 32 (Web of Science), 39 (Google Scholar)

Papers in peer-reviewed international indexed journals (105)

127. C. Chamon, A. E. Ruckenstein, E. R. Mucciolo, and R. Canetti, *Circuit complexity and functionality: a thermodynamic perspective*, Proceedings of the National Academic of Sciences **122**, e2415913122 (2025). 13 pages.
126. C. Chamon, E. R. Mucciolo, A. E. Ruckenstein, and Z.-C. Yang, *Fast pseudorandom quantum state generators via inflationary quantum gates*, npj Quantum Information **10**, 37 (2024). 11 pages.
125. P. Jouzdani, H. A. Hashim*, and E. R. Mucciolo, *Quantum Algorithms for State Preparation and Data Classification based on Stabilizer Codes*, Physical Review A **109**, 022602 (2024). 16 pages.
124. J. Nieminen, S. Dhara*, W.-C. Chiu*, E. R. Mucciolo, and A. Bansil, *Atomistic modeling of a superconductor-transition-metal dichalcogenide-superconductor Josephson junction*, Physical Review B **107**, 174524 (2023). 16 pages.
123. S. Dhara*, G. Goldstein[†], C. Chamon, and E. R. Mucciolo, *Logical Majorana zero modes in a nanowire network*, Physical Review B **107**, 075402 (2023). 12 pages
122. P. Jouzdani, C. W. Johnson, E. R. Mucciolo, and I. Stetcu, *Alternative approach to quantum imaginary time evolution*, Physical Review A **106**, 062435 (2022). 15 pages.
121. C. Chamon, E. R. Mucciolo, and A. E. Ruckenstein, *Quantum statistical mechanics of encryption: Reaching the speed limit of classical block ciphers*, Annals of Physics **446**, 169086 (2022). 30 pages.
120. B. Blue*, R. Tsuchikawa, A. Ahmadi, Z. Zhang, D. Heligman, S. D. Lough*, J. Hone, E. R. Mucciolo, and M. Ishigami *Observation of Wigner cusps in a metallic carbon nanotube*, Solid State Communications **353**, 114834 (2022). 3 pages.
119. W. E. Richardson*, E. R. Mucciolo, and P. K. Schelling, *Resistivity size effect due to surface steps on ruthenium thin films computed with a realistic tight-binding model*, Journal of Applied Physics **130**, 195108 (2021). 12 pages. (Editor's pick, featured at the journal's webpage.)
118. J. P. Santos Pires*, B. Amorim, A. Ferreira, I. Adagideli, E. R. Mucciolo, and J. M. Viana Parente Lopes, *Breakdown of universality in three-dimensional Dirac semimetals with random impurities*, Physical Review Research **3**, 013183 (2021). 13 pages.
117. J. A. Reyes*, D. C. Marinescu, and E. R. Mucciolo, *Simulation of quantum many-body systems on Amazon cloud*, Computer Physics Communications **261**, 107750 (2020). 10 pages.
116. S. Dhara*, A. Hamma, and E. R. Mucciolo, *Quantum coherence in ergodic and many-body localized systems*, Physical Review B **102**, 045140 (2020). 7 pages.

¹Student and post-doctoral co-authors are indicated with * and [†], respectively.

115. L. Zhang*, J. A. Reyes*, S. Kourtis, C. Chamon, E. R. Mucciolo, and A. E. Ruckenstein, *Nonuniversal Entanglement Level Statistics in Projection-driven Quantum Circuits*, Physical Review B **101**, 235104 (2020). 7 pages.

114. K. Barmak, S. Ezzat, R. Gusley, A. Jog, S. Kerdsongpanya, A. Khanya*, E. Milosevic, W. Richardson*, K. Sentosun, A. Zangiabadi, D. Gall, W. E. Kaden, E. R. Mucciolo, P. K. Schelling, A. C. West, and K. R. Coffey, *Epitaxial metals for interconnects beyond Cu*. Journal of Vacuum Science and Technology A **38**, 033406 (2020). 11 pages.

113. A. M. C. Souza, G. M. A. Almeida, and E. R. Mucciolo, *Localization properties of a two-channel 3D Anderson model*, Journal of Physics: Condensed Matter **32**, 285504 (2020). 7 pages.

112. S. Kourtis[†], C. Chamon, E. R. Mucciolo, and A. E. Ruckenstein, *Fast counting with tensor networks*, SciPost Physics **7**, 060 (2019). 18 pages

111. L. Zhang*, S. Kourtis[†], C. Chamon, E. R. Mucciolo, and A. E. Ruckenstein, *Ultra-slow dynamics in a translationally invariant spin model for multiplication and factorization*, Physical Review Research **1**, 033001 (2019). 8 pages

110. P. Patil*, S. Kourtis[†], C. Chamon, E. R. Mucciolo, and A. E. Ruckenstein, *Obstacles to quantum annealing in a planar embedding of XORSAT*. Physical Review B **100**, 054435 (2019). 11 pages

109. Z.-C. Yang*, S. Kourtis[†], C. Chamon, E. R. Mucciolo, and A. E. Ruckenstein, *Iterative compression-decimation scheme for tensor network optimization*. Physical Review E **97**, 033303 (2018). 13 pages

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107. Z.-C. Yang*, A. Hamma, S. M. Giampaolo, E. R. Mucciolo, and C. Chamon, *Entanglement complexity in quantum many-body dynamics, thermalization, and localization*. Physical Review B Rapid Comm. **96**, 020408 (2017). 5 pages

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98. Z.-C. Yang*, C. Chamon, A. Hamma, and E. R. Mucciolo *Two-component structure in the entanglement spectrum of highly excited states*. Physical Review Letters **115**, 267206 (2015). 5 pages.

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95. S. Singh*, A. Ahmadi*, C. T. Cherian, E. R. Mucciolo, E. del Barco, and B. Özyilmaz, *Study of dynamical spin injection at ferromagnet-graphene interfaces*. Applied Physics Letters **106**, 032411 (2015). 4 pages.

94. D. Shaffer*, C. Chamon, A. Hamma, and E. R. Mucciolo, *Irreversibility and entanglement spectrum statistics in quantum circuits*. Journal of Statistical Mechanics: Theory and Experiment, P12007 (2014). 15 pages.

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91. P. Jouzdani* and E. R. Mucciolo, *Numerical evaluation of the fidelity error threshold for the surface code*, Physical Review A **90**, 012315 (2014). 8 pages.

90. J. I. Romero*, E. Vernek, G. B. Martins, and E. R. Mucciolo, *Magnetic field modulated Kondo effect in a single-magnetic-ion molecule*. Physical Review B **90**, 195417 (2014). 5 pages.

89. J. I. Romero* and E. R. Mucciolo, *Single-electron transport in a three-ion magnetic molecule modulated by a transverse field*. Journal of Physics: Condensed Matter **26**, 195301 (2014). 8 pages.

88. A. P. Hinz*, E. R. Mucciolo, and S. Kettemann, *Quantum corrections to thermopower and conductivity in graphene*. Physical Review B **89**, 075411 (2014). 21 pages.

87. P. Jouzdani*, E. Novais, and E. R. Mucciolo, *Fidelity of the surface code in the presence of a bosonic bath*. Physical Review A **88**, 012336 (2013). 13 pages.

86. C. H. Lewenkopf and E. R. Mucciolo *The recursive Green's function method for graphene*. Journal of Computational Electronics **12**, 203 (2013). 29 pages.

85. C. Chamon and E. R. Mucciolo, *Rényi entropies as a measure of the complexity of counting problems*. Journal of Statistical Mechanics: Theory and Experiment P04008 (2013). 13 pages.

84. E. Novais and E. R. Mucciolo, *Surface code threshold in the presence of correlated errors*. Physical Review Letters **110**, 010502 (2013). 5 pages.

83. A. Patra, S. Singh*, B. Barin, Y. Lee, J.-H. Ahn, E. del Barco, E. R. Mucciolo, and B. Özyilmaz, *Dynamic spin injection into chemical vapor deposited graphene*. Applied Physics Letters **101**, 162407 (2012). 4 pages.

82. L. R. F. Lima*, F. A. Pinheiro, R. B. Capaz, C. H. Lewenkopf, and E. R. Mucciolo, *The role of the disorder range and electronic energy in the graphene nanoribbons perfect transmission*. Physical Review B **86**, 205111 (2012). 6 pages.

81. H. Y. Lee*, E. R. Mucciolo, G. Bouzerar, and S. Kettemann, *RKKY interactions in graphene: dependence on disorder and gate voltage*. Physical Review B **86**, 205427 (2012). 7 pages.

80. L. Arrachea, E. R. Mucciolo, C. Chamon, and R. B. Capaz, *Microscopic model of a phononic refrigerator*, Physical Review B **86**, 125424 (2012). 9 pages.

79. C. Chamon and E. R. Mucciolo, *Virtual parallel computing and a search algorithm using matrix product states*, Physical Review Letters **109**, 030503 (2012). 4 pages.

78. S. Kettemann, E. R. Mucciolo, I. Varga, and K. Slevin, *Kondo-Anderson transitions*, Physical Review B **85**, 115112 (2012). 16 pages.

77. H. Y. Lee*, J. H. Kim, E. R. Mucciolo, G. Bouzerar, and S. Kettemann, *RKKY interaction in disordered graphene*, Physical Review B **85**, 075420 (2012). 5 pages.

76. A. L. C. Pereira, C. H. Lewenkopf, and E. R. Mucciolo, *Correlated random hopping disorder in graphene at high magnetic fields: Landau level broadening and wave function symmetries*, Physical Review B **84**, 165406 (2011). 9 pages.

75. C. Chamon, E. R. Mucciolo, L. Arrachea, and R. B. Capaz, *Heat pumping in nanomechanical systems*, Physical Review Letters **106**, 135504 (2011). 4 pages.

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73. J. Katoch*, J. H. Chen[†], R. Tsuchikawa*, C. W. Smith*, E. R. Mucciolo, and M. Ishigami, *Uncovering the dominant scatterer in graphene sheets on SiO₂*, Physical Review B **82**, Rapid Comm. 081417 (2010). 4 pages.

72. E. R. Mucciolo and C. H. Lewenkopf, *Disorder and electronic transport in graphene*, Journal of Physics: Condensed Matter **22**, 273201 (2010). 12 pages.

71. D. C. B. Valente*, E. R. Mucciolo, and F. K. Wilhelm, *Decoherence by electromagnetic fluctuations in double-quantum-dot charge qubits*, Physical Review B **82**, 125302 (2010). 12 pages.

70. E. Novais, E. R. Mucciolo, and H. U. Baranger, *Bound on quantum computation time: Quantum error correction in a critical environment*, Physical Review A **82**, Rapid Comm. 020303 (2010). 4 pages.

69. A. R. Hernández*, F. A. Pinheiro, C. H. Lewenkopf, and E. R. Mucciolo, *Adiabatic charge pumping through quantum dots in the Coulomb blockade regime*, Physical Review B **80**, 115311 (2009). 10 pages.

68. S. Kettemann, E. R. Mucciolo, and I. Varga, *Critical metal phase at the Anderson metal-insulator transition with Kondo impurities*, Physical Review Letters **103**, 126401 (2009). 4 pages.

67. E. R. Mucciolo, C. H. Lewenkopf, and A. H. Castro Neto, *Conductance quantization and transport gap in disordered graphene nanoribbons*, Physical Review B **79**, 075407 (2009). 5 pages.

66. G. González*, M. N. Leuenberger, and E. R. Mucciolo, *Kondo effect in single-molecule magnet transistors*, Physical Review B **78**, 054445 (2008). 12 pages.

65. C. H. Lewenkopf, E. R. Mucciolo, and A. H. Castro Neto, *Numerical studies of conductivity and Fano factor in disordered graphene*, Physical Review B **77**, Rapid Comm. 081410 (2008). 4 pages.

64. E. Novais[†], E. R. Mucciolo, and H. U. Baranger, *Hamiltonian formulation of quantum error correction and correlated noise: Effects of syndrome extraction in the long-time limit*, Physical Review A **78**, 012314 (2008). 18 pages

63. A. Zhuravlev[†], I. Zharekeshev, E. Gorelov*, A. I. Lichtenstein, E. R. Mucciolo, and S. Kettemann, *Nonperturbative scaling theory of free magnetic moment phases in disordered metals*, Physical Review Letters **99**, 247202 (2007). 4 pages.

62. M. Hentschel, D. C. B. Valente*, E. R. Mucciolo, and H. U. Baranger, *Improving intrinsic decoherence in multi-quantum-dot charge qubits*, Physical Review B **76**, 235309 (2007). 12 pages.

61. E. R. Mucciolo and C. H. Lewenkopf, *Spin pumping with quantum dots*, International Journal of Nanotechnology **4**, 482–495 (2007).

60. S. Kettemann and E. R. Mucciolo, *Disorder-quenched Kondo effect in mesoscopic electronic systems*, Physical Review B **75**, 184407 (2007). 17 pages.

59. M. D. Hogue*, E. R. Mucciolo, and C. I. Calle, *Triboelectric, corona, and induction charging of insulators as a function of pressure*, Annual Meeting of the Electrostatics Society of America, Berkeley, CA, June 2006 [Journal of Electrostatics **65**, 274–279 (2007)].

58. E. Novais[†], E. R. Mucciolo, and H. U. Baranger, *Resilient quantum computation in correlated environments: A quantum phase transition perspective*, Physical Review Letters **98**, 040501 (2007). 4 pages.

57. E. R. Mucciolo, C. H. Lewenkopf, and L. I. Glazman, *g factors and discrete energy level velocities in nanoparticles*, Physical Review B **74**, Rapid Comm. 121402 (2006). 4 pages.

56. M. N. Leuenberger and E. R. Mucciolo, *Berry phase oscillations of the Kondo effect in single-molecule magnets*, Physical Review Letters **97**, 126601 (2006). 4 pages.

55. S. Kettemann and E. R. Mucciolo, *Free magnetic moments in disordered metals*, JETP Letters **83**, 240–245 (2006) [Pis'ma v ZhETF, **83**, 284 (2006)].

54. M. Thorwart, J. Eckel*, and E. R. Mucciolo, *Non-Markovian dynamics of double quantum dot charge qubits due to acoustic phonons*, Physical Review B **72**, 235320 (2005). 6 pages.

53. S. Vorojtsov*, E. R. Mucciolo, and H. U. Baranger, *Phonon decoherence of a double quantum dot charge qubit*, Physical Review B **71**, 205322 (2005). 7 pages

52. M. D. Hogue*, E. R. Mucciolo, C. I. Calle, and C. R. Buhler, *Two-phase equilibrium model of insulator-insulator contact charging with electrostatic potential*, Annual Meeting of the Electrostatics Society of America, Rochester, NY, June 2004 [Journal of Electrostatics **63**, 179–188 (2005)].

51. E. R. Mucciolo, C. Chamon, and A. H. Castro Neto, *Excitations and quantum fluctuations in site-diluted two-dimensional antiferromagnets*, Physical Review B **69**, 214424 (2004). 15 pages.

50. M. Martínez-Mares[†], C. H. Lewenkopf, and E. R. Mucciolo, *Statistical fluctuations of pumping and rectification currents in quantum dots*, Physical Review B **69**, 085301 (2004). 12 pages.

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47. W. A. M. Morgado and E. R. Mucciolo, *Numerical simulation of vibrated granular gases under realistic boundary conditions*, Physica A **311**, 150–168 (2002).

46. F. M. Cucchietti*, C. H. Lewenkopf, E. R. Mucciolo, H. M. Pastawski, and R. O Vallejos, *Measuring the Lyapunov exponent with quantum mechanics*, Physical Review E **65**, 046209 (2002). 9 pages.

45. A. M. F. Rivas[†], E. R. Mucciolo, and A. Kamenev, *Numerical study of quasiparticle lifetime in quantum dots*, Physical Review B **65**, 155309 (2002). 8 pages.

44. C. Chamon, E. R. Mucciolo, and A. H. Castro Neto, *P-wave pairing and ferromagnetism in the metal-insulator transition in 2D*, Physical Review B **64**, 245115 (2001). 12 pages.

43. C. Chamon and E. R. Mucciolo, *Non-perturbative saddle point for the effective action of disordered and interacting electrons in 2D*, Physical Review Letters **85**, 5607–5610 (2000).

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41. L. E. Oxman, E. R. Mucciolo, and I. V. Krive, *Transport in finite incommensurate Peierls-Fröhlich systems*, Physical Review B **61**, 4603–4607 (2000).

40. M. A. M. Aguiar, H. S. Brandi, B. Koiller, and E. R. Mucciolo, *Chaos in one-dimensional lattices under intense laser fields*, European Physical Journal B **14**, 329–335 (2000).

39. R. O. Vallejos[†], C. H. Lewenkopf, and E. R. Mucciolo, *Coulomb blockade conductance peak fluctuations in quantum dots and the independent particle model*, Physical Review B **60**, 13682–13694 (1999).

38. I. V. Krive and E. R. Mucciolo, *Transport properties of quasiparticles with fractional exclusion statistics*, Physical Review B **60**, 1429–1432 (1999).

37. A. M. Ozorio de Almeida, C. H. Lewenkopf, and E. R. Mucciolo, *Semiclassical limit of universal parametric density correlations*, Physical Review E **58**, 5693–5703 (1998).

36. R. O. Vallejos[†], C. H. Lewenkopf, and E. R. Mucciolo, *Coulomb blockade peak spacing fluctuations in deformable quantum dots: a further test of Random Matrix Theory*, Physical Review Letters **81**, 677–680 (1998).

35. E. R. Mucciolo[†], R. A. Jalabert, and J.-L. Pichard, *Parametric statistics of the scattering matrix: From metallic to insulating quasi-unidimensional disordered systems*, Journal de Physique I **17**, 1267–1296 (1997).

34. H. Bruus[†], C. H. Lewenkopf, and E. R. Mucciolo[†], *Parametric correlation of Coulomb blockade conductance peaks in chaotic quantum dots*, Proceedings of the XVII Nordic Semiconductor Meeting, Trondheim, Norway, June 1996 [Physica Scripta **T69**, 13–16 (1997)].

33. H. S. Brandi, B. Koiller, and E. R. Mucciolo[†], *Laser-induced quantum chaos in 1-D crystals*, Laser Physics **7**, 481–484 (1997).

32. P. A. Lee, E. R. Mucciolo[†], and H. Smith, *Dephasing time of composite fermions*, Physical Review B **54**, 8782–8788 (1996).

31. H. Bruus[†], C. H. Lewenkopf, and E. R. Mucciolo[†], *Parametric conductance correlation for irregularly shaped quantum dots*, Physical Review B **53**, 9968–9983 (1996).

30. E. R. Mucciolo[†], B. D. Simons[†], A. V. Andreev*, and V. N. Prigodin, *Sensitivity of quantum chaotic wave function intensities to change in external perturbations*, Physical Review Letters **75**, 1360–1363 (1995).

29. E. R. Mucciolo*, V. N. Prigodin, and B. L. Altshuler, *Statistical properties of level widths and conductance peaks in a quantum dot*, Physical Review B **51**, 1714–1721 (1995).

28. E. R. Mucciolo*, R. B. Capaz*, B. L. Altshuler, and J. D. Joannopoulos, *Manifestations of quantum chaos in electronic band structures*, Physical Review B **50**, 8245–8251 (1994).

27. E. R. Mucciolo*, B. S. Shastry, B. D. Simons[†], and B. L. Altshuler, *Exact dynamical correlations of the $1/r^2$ model*, Physical Review B **49**, 15197–15211 (1994).

26. S. P. Tsai*, E. R. Mucciolo*, and O. Helene, *Relocation of multichannel spectra*, Nuclear Instruments and Methods A **345**, 538–540 (1994).

25. E. R. Mucciolo* and X.-G. Wen, *Optical properties of an antiferromagnetic ordered TP-violating phase*, Physical Review B **47**, 12172–12177 (1993).

24. E. R. Mucciolo* and O. Helene, *Double gamma decay in ^{90}Zr* , Physical Review C **40**, 2403–2405 (1989).

23. E. R. Mucciolo* and O. Helene, *Energy measurements of gamma rays from ^{133}Ba decay: Consistency with cascade crossover relations*, Nuclear Instruments and Methods A **256**, 153–160 (1987).

Papers in peer-reviewed indexed conference proceedings (1)

22. R. Canetti, C. Chamon, E. R. Mucciolo, and A. E. Ruckenstein, *Towards general-purpose program obfuscation via local mixing*. Proceedings of the Theory of Cryptography TCC2024, Milan, Italy, December 2024 [Lecture Notes in Computer Science **15367**, edited by E. Boyle and M. Mahmood (Springer, 2025), p. 37–70].

Papers in non-indexed conference proceedings (7)

21. W. E. Richardson*, P. K. Schelling, and E. R. Mucciolo, *Beyond Cu Interconnects: A Scalable Approach to Model Transport in Nanowires*, TechCon 2019 annual conference, Austin, TX.

20. S. Kettemann and E. R. Mucciolo, *Dephasing of conduction electrons and the quenching of the Kondo effect in disordered metals*, VI Rencontres du Vietnam, Hanoi, Vietnam, August 2006 [*Nanophysics, from Fundamentals to Applications*, edited by D. Mailly, T. Martin, N. van Hieu, B. Placais, and J. Trần Thanh Vân (The Gioi Publishers, 2007), p. 105–110].
19. E. R. Mucciolo, S. Vorojtsov*, and H. U. Baranger, *Phonon decoherence in quantum dot qubits*, Conference on Quantum Information and Computation III, Orlando, FL, March 2005 [Proceedings of the SPIE Security and Defense Symposium, edited by E. J. Donkor, A. R. Pirich, and H. E. Brandt, **5815**, p. 53–61].
18. L. E. Oxman, D. G. Barci, and E. R. Mucciolo, *Universal properties in low dimensional fermionic systems and bosonization*, Proceedings of the XVIII Lisbon Autumn School, Lisbon, Portugal, October 2000 [*Topology of Strongly Correlated Systems*, edited by P. Bicudo, J. E. Ribeiro, P. Sacramento, J. Seixas, and V. Vieira (World Scientific, 2001), p. 228].
17. L. E. Oxman and E. R. Mucciolo, *Universality of conductance in mesoscopic junctions and chiral anomaly*, Proceedings of the II Workshop on Electronic Transport in Mesoscopic Systems, Mérida, Venezuela, September 1999 [Rev. Mex. Fis. **45** S1, 64–68 (2001)].
16. B. Koiller, E. R. Mucciolo, H. S. Brandi, and M. A. M. de Aguiar, *Electrons in one-dimensional lattices under laser fields: Quantum and classical chaotic behavior*, Proceedings of the International Workshop on Collective Excitations in Fermi and Bose Systems, Serra Negra, Brazil, September 1998 [edited by C. A. Bertulani, L. F. Canto, and M. S. Hussein (World Scientific, 1999), p. 246–263].
15. P. A. Lee, E. R. Mucciolo†, and H. Smith, *Lifetime of composite fermions*, XXXI Rencontres de Moriond, Les Arcs, France, January 1996 [*Correlated Fermions and Transport in Mesoscopic Systems*, ed. T. Martin, G. Montambaux, and J. Trần Thanh Vân (Editions Frontiers, 1996), p. 417–419].

Book chapters (2)

14. E. Novais†, E. R. Mucciolo, and H. U. Baranger, *Hamiltonian Methods in Quantum Error Correction and Fault Tolerance*, in *Quantum Error Correction*, edited by D. Lidar and T. Brun (Cambridge University Press, 2013). p. 585–611.
13. E. R. Mucciolo, *Adiabatic spin pumping with quantum dots*, in *CFN Lectures on Functional Nanostructures*, edited by C. Röthig, G. Schön, and M. Vojta (Springer Verlag, Heidelberg, 2011). p. 125–144.

Lecture notes (4)

12. E. R. Mucciolo, *Introduction to Quantum Information Processing* (108 pages), undergraduate course taught at UCF (2022–2025).
11. E. R. Mucciolo, *Introduction to Quantum Computation* (64 pages), slides used in a graduate course on quantum computation, Spring 2005, Department of Physics, UCF.
10. E. R. Mucciolo, *Chaos and Interactions in Quantum Dots* (10 pages, in Portuguese), Proceedings of the VII Brazilian School on Electronic Structure, Goiânia, Brazil, July 2000.
9. E. R. Mucciolo, *Theory of Phase Transitions and the Renormalization Group* (93 pages, in Portuguese), graduate course on statistical mechanics, August 2000, Department of Physics, PUC-RJ.

Books (1)

8. E. R. Mucciolo, *Introduction to Quantum Information Processing* (Taylor & Francis, September 2025).

Unpublished preprints and papers under review (4)

7. E. R. Mucciolo, J. Nieminen, X. Xiao, W.-C. Chiu[†], and A. Bansil, *Green's Function Methods for Computing Supercurrents in Josephson Junctions*, arXiv:2509.07165. Submitted to Reports on Progress in Physics.
6. U. E. Usturali*, C. Chamon, A. E. Ruckenstein, and E. R. Mucciolo, *A Matrix Product State Representation of Boolean Functions*, arXiv:2505.01930. Submitted to the Journal of the Association of Computing Machinery (JACM).
5. C. Chamon, J. Jakes-Schauer, E. R. Mucciolo, and A. E. Ruckenstein, *Encrypted Operator Computing: a novel scheme for computation on encrypted data*, arXiv:2203.08876.
4. J. A. Reyes[†], S. Dhara*, and E. R. Mucciolo, *Machine learning regression for operator dynamics*, arXiv:2102.11868.

Patents (3)

3. E. Mucciolo and C. Chamon, *Techniques for Securely Executing Code that Operates on Encrypted Data on a Public Computer*. US Patent 11,461,435 (October 4, 2022).
2. C. Chamon, E. Mucciolo, A. Ruckenstein, Z.-C. Yang*, *Systems and Methods for Universal Reversible Computing*, Patent Pub No. US 2019/012134 A1 (April 25, 2019).
1. C. Chamon and E. Mucciolo, *Systems and Methods for Virtual Parallel Computing using Matrix Product States*, US Patent No. 9355363 B2 (May 31, 2016); Pub. No. US2014/0223147 A1 (August 7, 2014).

FUNDING AND RESEARCH GRANTS**Department of Energy, Basic Energy Sciences, USA (1)**

29. *Design, Control and Application of Next-Generation Qubits*, grant DE-SC0019275.
PI: A. Bansil (Northeastern University). Co-PIs: C. Chamon (Boston University), A. Feinguin (Northeastern University), L. Fu (MIT), E. Mucciolo (UCF), and Q. Yan (Temple University). Amount: \$3,540,000 (October 2018 – September 2021). Participation: 10%.

Office of Naval Research, USA (1)

28. *Physical Limitations of Quantum Information Processing*, grant #10024674.
PI: E. Mucciolo (UCF). Co-PI: H. Baranger (Duke University). Amount: \$400,000 (October 2008 – August 2013). Participation: 60%.

Air Force Office of Scientific Research, USA (1)

27. *Thermoelectric phenomena in quasi 1-dimensional metals*. PI: K. Coffey (UCF). Co-PIs: W. Kaden (UCF), P. Schelling (UCF), and E. Mucciolo (UCF). Amount: \$255,166 (December 2017 – March 2020). Participation: 25%. Subaward from Columbia University.

National Science Foundation, USA (9)

26. *Collaborative Research: GCR: Towards a Physics-Inspired Approach to Computation on Encrypted Data*, Award OIE 2428488. PI: E. Mucciolo (UCF). Collaborators: R. Canetti, C. Chamon, A. Ruckenstein (Boston University), Tim Riley (Cornell). Amount at UCF: \$209,368 (Phase I: September 2024 – August 2026). Participation: 100%.
25. *EAGER: Collaborative Research: Tensor Network Methods for Quantum Simulations*, Award CCF 1844434. PI: E. Mucciolo (UCF); Collaborators: C. Chamon and A. Ruckenstein (Boston University). Amount at UCF: \$109,222 (October 2018 – September 2020). Participation: 100%.
24. *E2CDA: Type I: Collaborative Research: Interconnects Beyond Cu*. Award ECCS 1740228. PI: K. Coffey (UCF). Co-PIs: T. Jiang, W. Kaden, P. Schelling, and E. Mucciolo (UCF). Amount: \$234,497 (September 2017 – August 2021). Participation: 20%. Jointly sponsored by the Semiconductor Research Corporation.
23. *AF: Small: Is the Simulation of Quantum Many-Body Systems Feasible on the Cloud?* Award CCF 1525943. PI: P. Wocjan (UCF). Co-PIs: D. Marinescu (UCF) and E. Mucciolo (UCF). Amount: \$385,434 (August 2015 – July 2018). Participation: 25%.
22. *Spin Injection and Manipulation in Graphene-based Spintronics Devices*. Award ECCS 1402990. PI: E. del Barco (UCF). Co-PI: E. Mucciolo (UCF). Amount: \$360,000 (June 2014 – May 2017). Participation: 35%.
21. *Robustness of Topological Quantum Memories*. Award CCF 1117241. PI: E. Mucciolo (UCF). Amount: \$223,000 (July 2011 – June 2015). Participation: 100%. REU supplement: \$16,000 (August 2014).
20. *The Origin of Resistance in Nanotubes: Semi-classical to Quantum Transport in One-Dimension*. Award DMR 1006230. PI: M. Ishigami (UCF). Co-PI: E. Mucciolo (UCF). Amount: \$225,000 (July 2010 – June 2013). Participation: 25%.
19. *Molecular Spintronics with Single-Molecule Magnets*. Award ECCS 1001755. PI: E. del Barco (UCF). Co-PI: E. Mucciolo (UCF). Amount: \$400,000 (May 2010 – April 2013). Participation: 30%.
18. *Is Resilient Quantum Computing in Solid-State Systems Possible?* Award CCF 0523603. PI: E. Mucciolo (UCF). Co-PI: D. Marinescu (UCF). Amount: \$200,000 (August 2005 – July 2009). Participation: 60%.

University of Central Florida, USA – Internal (2)

17. *Quantum-Computing-Assisted Density Functional Theory* (February 2025). Internal seed grant. PI: E. Mucciolo. Co-PI: Volodymyr Turkowski. Amount: \$9,320.79. Participation: 50%.
16. *Decoherence, Scalability, and Fault-Tolerant Quantum Computation in Solid-State Systems* (November 2005). Supplemental funds provided to the NSF award CCF 0523603 by the UCF I²Lab. PI: E. Mucciolo. Co-PI: D. Marinescu. Amount: \$16,000. Participation: 50%.

FAPERJ, Brazil (The State of Rio de Janeiro Research Foundation) (4)

15. *Transport Properties in Electronic Mesoscopic Systems* (March 2001). Grant for supporting a short-term visiting professor at PUC-RJ. PI: E. Mucciolo (PUC-Rio). Amount: R\$2,460 (US\$1,200 approx.).
14. *Mesoscopic Systems: Phase Coherence, Chaos, Disorder, and Interactions in Micro and Nano Electronic Structures* (May 2000). Young Scientist Award. PI: E. Mucciolo (PUC-Rio). Amount: R\$14,500 (US\$7,900 approx.).
13. *XXI National Condensed Matter Physics Meeting of the Brazilian Physical Society* (May 1998). Grant for partial support of the event. PI: E. Mucciolo (PUC-Rio). Amount: R\$19,500 (US\$17,000 approx.).
12. *Renewal of the Computer Network at the Physics Department of the Pontifical Catholic University: Connecting Teaching and Research* (February, 1998). Grant for the acquisition of equipment and materials. PI: E. Mucciolo (PUC-Rio). Amount: R\$10,000 (US\$8,800 approx.).

Participation in other group funded projects in Brazil and in the USA (11)

11. NSF Collaborative Research: *Advancing Quantum Education by Adaptively Addressing Misconceptions in Virtual Reality*, Award IIS 2302816. PI: R. McMahan (UCF). Senior personnel: E. Mucciolo (UCF). Amount: \$451,673 (August 2023 – July 2026). Participation: 13%.
10. NIST SBIR Phase I: *Establishing the Security of Ciphers Designed Using Statistical Physics Principles to Enable Direct Computation on Encrypted Data*. Award 70NANB22H188. PI: L. Veltri (USEncryption). Senior personnel: C. Chamon and E. Mucciolo (USEncryption). Amount: \$99,999 (October 2022 – March 2023).
9. NSF SBIR Phase I: *Enabling Computation on Encrypted Data on the Cloud and Beyond*. PI: L. Veltri (USEncryption). Senior personnel: C. Chamon and E. Mucciolo (USEncryption). Amount: \$224,800 (October 2019 - September 2020).
8. *Spin Transport in Quantum Dots*, (February 2006). American Physical Society Travel Grant Award Program. PI: C. Lewenkopf (UERJ, Brazil). Co-PI: E. Mucciolo (UCF). Amount: \$2,000.
7. *A High-Performance Computer Cluster for Nanophysics Simulations* (January, 2005). UCF Presidential Initiative – Equipment Funding Award (matched by startup funds from the PIs). PI: K. Busch (UCF). Co-PI: E. Mucciolo (UCF). Amount: \$34,500.
6. *Research Network on Nanostructured Materials* (December, 2001). Project involving several Brazilian institutions, sponsored by CNPq. PI: I. Baumvol (UFRG). Amount: R\$750,000 (US\$300,000 approx.). Participation: Co-PI.
5. *Nanoscience Institute* (October 2001 – September 2004). Project involving several Brazilian institutions, sponsored by the Brazilian Ministry for Science and Technology. PI: A. S. Chaves (UFMG). Amount: R\$ 4,600,000 (US\$ 1,700,000 approx.). Participation: one of many Co-PIs.

4. *Experimental Study and Theoretical Modeling of Energy Losses in Air-Conditioning* (August 2001 – July 2003). Project sponsored by Light S.A., the local electricity distribution company in Rio de Janeiro. PI: E. Bezerra (Light S.A.). Co-PIs: E. Mucciolo (PUC-RJ), C. Cesar (UFRJ), and M. Cruz (UFRJ). Amount: R\$350,000 (US\$140,000 approx.).
3. *Materials for Nanotechnology* (September 2001 – August 2004). Project involving several institutions in the Rio de Janeiro State, sponsored by FAPERJ. PI: H. Brandi (UFRJ). Amount R\$450,000 (US\$170,000 approx.). Participation: Co-PI.
2. Co-PI, *Decoherence Effects in Mesoscopic Systems* (August 2000). Award by the Trinational Cooperation Program of the Vitae Foundation. PI: C. Lewenkopf (UERJ). Co-PI: E. Mucciolo. Amount R\$ 18,000 (US\$ 10,000 approx.).
1. Co-PI, *Hamiltonian Systems: Chaos and Quantization* (January 1998 – December 2003). “Center of Excellence” (PRONEX) award by the Brazilian Federal Government. PI: A. M. Ozorio de Almeida (CBPF). Co-PIs: C. Lewenkopf (UERJ), E. Mucciolo (PUC-RJ), M. A. M. Aguiar (UNICAMP), and M. C. Nemes (UFMG). Amount: R\$250,000 (US\$220,000 approx.).

INVITED PRESENTATIONS AND PARTICIPATIONS

In conferences, workshops, schools, and panels (37)

116. Panelist: *Florida Rising: Universities Powering the Quantum Wave*, Quantum Beach Conference, West Palm Beach, FL (October 2025).
115. *Fast Scrambling with Quantum Circuits and Circuit Thermodynamics*, Dirac Quantum Discussions Symposium, Florida State University and NHML, Tallahassee, FL (February 2025).
114. Panelist: *Venture Lab Stakeholders: Faculty and Venture Capitalists*, 1st Annual UCF Innovative Symposium (March 2024).
113. Panelist: *The Intern: Undergraduate Student Breakout Session*, Quantum Information Science Career Fair 2023, virtual (September 2023).
112. Panelist: *Building the Quantum Computer & Supply Chains*, National Quantum Literacy Conference, Annapolis, MD (October 2022).
111. *Machine Learning Regression for Many-Body Operator Dynamics*, Conference on Real-space Simulations of Topological Matter and Disordered Materials, Institute of Physics, U.K., virtual (October 2021).
110. *Quantum vertex model for reversible classical computing*, IBM Quantalab Quantum Computing School, INL, Braga, Portugal (October 2018).
109. *Solving computational problems by annealing a planar quantum vertex model*, 6th Mexican Meeting on Mathematical and Experimental Physics, El Colegio Nacional, Mexico City, Mexico (September 2016).
108. *Critical delocalization of chiral zero energy modes in graphene*, International Symposium on Recent Developments on 2D Materials Research: Theory and Experiment, University of York, York, U.K. (May 2016).

107. Panelist: *Professional development and undergraduate career options to mentees*, National Mentoring Community & Bridge Program Conference, American Physical Society, Miami, FL (October 2015).

106. *Irreversibility and entanglement spectrum statistics in quantum circuits and many-body systems*, 38th Condensed Matter Physics Annual Meeting, Brazilian Physical Society, Foz do Iguaçu, Brazil (May 2015).

105. *Unified description of electronic transport in graphene based on resonant scatterers*, Asia-Pacific Centre for Theoretical Physics: Conference on Localisation, Pohang, South Korea (August 2011).

104. *Resonant impurity scatterers and dc conductivity in graphene*, Boston-Area Carbon Nanoscience Annual Workshop, Boston, MA, USA (June 2011).

103. *Probing the dominant scatterers in graphene via hydrogenation*, Advanced Materials Science Workshop on Metal-Insulator Transitions in Disordered and Magnetic Systems, Pohang, South Korea (September 2010).

102. *For how long is it possible to quantum compute?*, Workshop on Quantum Algorithms, Computational Models, and Foundations of Quantum Mechanics, University of British Columbia, Vancouver, Canada (July 2010)

101. *Kondo effect in single-molecule magnets*, 3rd Workshop on Current Trends in Molecular and Nanoscale Magnetism, Orlando, FL, USA (June, 2010)

100. *Physical limitations of quantum information processing*, Workshop on Quantum Information, Office of Naval Research, Shepherdstown, WV, USA (May 2010).

99. *Phonon decoherence in semiconductor charge qubits*, 13th International Conference on Vibrations at Surfaces, University of Central Florida, Orlando, USA (March 2010)

98. *Numerical methods and simulations for graphene-based electronic devices*, Workshop on Centre for Carbon Science and Technology, National University of Singapore, Singapore (September 2009).

97. Two talks: *Conductivity of disordered graphene; Kondo effect of magnetic molecules*. Advanced Materials Science Workshop on Correlations in Disordered Materials, POSTECH, Pohang, South Korea (August 2009).

96. *Physical limitations of quantum information processing*, Workshop on Quantum Information, Office of Naval Research, Washington DC, USA (May 2009).

95. *Electronic transport in disordered graphene sheets and nanoribbons*, American Physical Society March Meeting, Pittsburgh, USA (March 2009).

94. *Universal and non-universal scaling of the conductivity in disordered graphene*, Workshop on Delocalization Transitions and Multicriticality, Isaac Newton Institute for Mathematical Sciences, Gregynog Hall, UK (November 2008).

93. *Conductance suppression in disordered graphene nanoribbons*, Workshop on the Physics of Graphene, Aspen Center for Physics, Aspen, CO, USA (June 2008).

92. *Carbon-based devices for high-speed microelectronics*, group leader presentation, Workshop on Carbon Electronics for Radio-Frequency Applications, DARPA, Arlington, VA, USA (April 2007).

91. *Coherent spin transport and spin pumping*, lecture, CFN Summer School on Nanoelectronics, *Bad Herrenalb, Germany* (September 2005).
90. *Adiabatic pumping of spin currents with quantum dots*, American Physical Society March Meeting, *Montreal, Canada* (March 2004).
89. *Ferromagnetic instability in two-dimensional disordered metals*, Workshop on Strange Metals, *ICCMP, Brasília, Brazil* (November 2002).
88. *Quantum dot spin pump*, Workshop of the Nanostructured Materials Research Network - Theory Group, *São Paulo, Brazil* (October 2002).
87. *Adiabatic spin pumping*, Workshop on Mesoscopic Physics and Electron Interaction, *ICTP, Trieste, Italy* (June 2002).
86. *Adiabatic spin pumping with quantum dots*, Workshop of the Nanostructured Materials Research Network - Semiconductor Group, *Belo Horizonte, Brazil* (April 2002).
85. *Chaos and interactions in quantum dots*, lecture, VII Brazilian School on Electronic Structure *Goiânia, Brazil* (July 2000).
84. *Electronic transport in CDW-metal junctions*, II Workshop on Electronic Transport in Mesoscopic Systems, *Mérida, Venezuela* (September 1999).
83. Lecture on Mesoscopic Physics, II Workshop on Electronic Transport in Mesoscopic Systems, *Mérida, Venezuela* (September 1999).
82. *Electronic transport in CDW-metal junctions*, International Conference on Spin Ladders and Low-Dimensional Strongly Correlated Systems, *ICCMP, Brasília, Brazil* (September 1999).
81. Workshop on Nonlinear Dynamics and Chaos in Physical and Biological Systems, *São Paulo, Brazil* (October 1997).
80. VIII Brazilian Workshop on Semiconductor Physics, *Águas de Lindóia, Brazil* (February 1997).

In universities and research institutions (79)

79. *Information Scrambling, Circuit Complexity, and Thermodynamics: From Black Holes to Cryptography*, colloquium, Department of Mathematics, Florida State University, Tallahassee, FL, USA (October 2025).
78. *Quantum Computing, Information Scrambling, and Thermodynamics: What do they have in common?*, colloquium, Department of Physics, University of Miami, Miami, FL, USA (September 2024).
77. *Atomistic modeling of superconductor-TMD-superconductor Josephson junctions*, seminar, Institute of Physics, Fluminense Federal University, Niterói, Brazil (May 2023).
76. *Alternative approach to quantum imaginary time evolution*, virtual seminar, Institute of Physics, Fluminense Federal University, Niterói, Brazil (October 2022).
75. *Extended Temporal Prediction of Expectation Values via Machine Learning*, virtual seminar, Institute of Physics, Federal University of Uberlândia, Uberlândia, Brazil (September 2021).
74. *New Developments at the Interface between Physics and Computer Science*, seminar, Department of Physics, Emory University, Atlanta, GA, USA (December 2018).

73. *Entanglement Complexity and Irreversibility in Classical and Quantum Circuits*, seminar, Department of Physics, Instituto Superior Técnico, Lisbon, Portugal (November 2018).

72. Two lectures: *Quantum Computation: How it works, What it can do, and Where it stands*; and *New Developments at the Interface between Physics and Computer Science*; School of Engineering, University of Porto, Porto, Portugal (November 2018).

71. *New Developments and Ideas at the Interface between Physics and Computer Science*, colloquium, Department of Physics, Florida State University, Tallahassee, FL, USA (October 2017).

70. *Solving Classical Computational Problems by Annealing a Planar Quantum Vertex Model*, University of York, York, U.K. (May 2016).

69. *Irreversibility and Entanglement Spectrum Statistics in Quantum Circuits and Many-Body Systems*, Fluminense Federal University, Niteroi, Brazil (June 2015).

68. *Irreversibility and Entanglement Spectrum Statistics in Quantum Circuits and Many-Body Systems*, Brazilian Center of Physics Research, Rio de Janeiro, Brazil (June 2015).

67. *Irreversibility and entanglement spectrum statistics in quantum circuits*, Naval Research Laboratory, Washington DC, USA (October 2014).

66. *Irreversibility and entanglement spectrum statistics in quantum circuits*, Perimeter Institute, Waterloo, Canada (September 2014).

65. *A new approach to teaching physics*, colloquium, Institute of Physics, Fluminense Federal University, Niterói, Brazil (June 2013).

64. *Rényi entropies, counting problems, and matrix computing*, Institute of Physics, Fluminense Federal University, Niterói, Brazil (May 2013).

63. *Virtual parallel computing with matrix product states*, Federal University of ABC, Santo André, Brazil (July, 2012).

62. *Virtual parallel computing with matrix product states* University of São Paulo, São Paulo, Brazil (July, 2012).

61. *Virtual parallel computing with matrix product states* Fluminense Federal University, Niterói, Brazil (June, 2012).

60. *Virtual parallel computing with matrix product states* Federal University of Rio de Janeiro, Rio de Janeiro, Brazil (June, 2012).

59. *Virtual parallel computing with matrix product states* Naval Research Laboratory, Washington D.C., USA (June 2012).

58. *Resonant scatterers and electronic transport in graphene*, School of Physics, Trinity College, Dublin, Ireland (December 2011).

57. *A unified description of electronic transport in graphene based on resonant scatterers*, National High Magnetic Field Laboratory, Tallahassee, FL, USA (November 2011).

56. *Quantum information processing: What is new and what is possible*, colloquium, Department of Physics and Astronomy, University of North Carolina, Chapel Hill, NC, USA (November 2010).

55. Two seminars: *Long-time dynamics of quantum computers in the presence of correlated errors*; and *Kondo and Coulomb blockade effects in single molecule magnets*. Department of Physics and Astronomy, University of British Columbia, Vancouver, Canada (March 2009).
54. *Electronics with single-molecule magnets*, colloquium, Department of Physics, University of Ohio, Athens, OH, USA (October 2008).
53. *Electronic transport in disordered graphene*, seminar, Department of Physics, University of Regensburg, Regensburg, Germany (July 2008).
52. *Electronics and spintronics with single-molecule magnets*, seminar, Institute of Applied Physics, Hamburg University, Hamburg, Germany (July 2008).
51. *Simulations and numerical modeling of electronics transport in disordered graphene*, seminar, Department of Physics, University of California, San Diego, CA, USA (May 2008).
50. *Simulations and numerical modeling of electronics transport in disordered graphene*, seminar, Department of Physics, University of California, Riverside, CA, USA (May 2008).
49. *Simulations and numerical modeling of electronics transport in disordered graphene*, seminar, Department of Physics, Stanford University, Palo Alto, CA, USA (May 2008).
48. *Graphene*, lecture, Department of Chemistry, University of Central Florida, Orlando, FL, USA (April, 2008).
47. *Conductivity and Fano factor in disordered graphene*, seminar, Department of Physics, Duke University, Durham, NC, USA (January 2008).
46. *Electronics with single-molecule magnets*, seminar, Institute for Theoretical Solid-State Physics, Karlsruhe University, Karlsruhe, Germany (June 2007).
45. *Electronics with single-molecule magnets*, seminar, Institute of Theoretical Physics, University of Hamburg, Hamburg, Germany (June 2007).
44. A series of three seminars on my research activities, Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany (June 2007).
43. *Quantum oscillations in the conductance of a single-molecule magnet*, seminar, Department of Physics, Ohio State University, Columbus, OH, USA (May 2007).
42. *Electronics with single-molecule magnets*, seminar, Department of Physics, Boston University, Boston, MA, USA (February 2007).
41. *Electronics with single-molecule magnets*, colloquium, Physics Department, University of Waterloo, Waterloo, Canada (February 2007).
40. *Berry phase oscillations of the Kondo effect in single-molecule magnets*, seminar, Department of Physics, University of Florida, Gainesville, FL, USA (January 2007).
39. *Berry phase oscillations of the Kondo effect in single-molecule magnets*, seminar, Theory Division, Los Alamos National Laboratory, Los Alamos, NM, USA (May 2006).
38. *Phonon decoherence in quantum dot qubits*, seminar, Institute of Physics, State University of Rio de Janeiro, Rio de Janeiro, Brazil (December 2005).
37. *Quantum spin pumping*, seminar, Condensed Matter Science Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA (November 2005).

36. *Quantum spin pumping*, seminar, Department of Physics, Karlsruhe University, *Karlsruhe, Germany* (May 2005).
35. *Quantum spin pumping*, seminar, Department of Physics, Ludwig-Maximilians University, *Munich, Germany* (May 2005).
34. *Quantum spin pumping*, seminar, Department of Physics, Heinrich-Heinz University, *Düsseldorf, Germany* (May 2005).
33. *Quantum spin pumping*, seminar, Institute for Theoretical Physics, Hamburg University, *Hamburg, Germany* (May 2005).
32. *Exploring non-equilibrium phenomena in quantum dots, wires, and alike*, colloquium, Department of Physics, University of Central Florida, *Orlando, FL, USA* (April 2005).
31. *Quantum pumping*, colloquium, Department of Physics, Florida State University, *Tallahassee, FL, USA* (January 2005).
30. *Quantum adiabatic pumping of charge, spin, and heat*, seminar, Department of Physics, New York University, *New York, NY, USA* (October 2004).
29. *Quantum adiabatic pumping of charge, spin, and heat*, seminar, Brazilian Center for Physical Research, *Rio de Janeiro, Brazil* (June 2004).
28. *Quantum spin pumping*, colloquium, Department of Physics, University of Central Florida, *Orlando, FL, USA* (March 2003).
27. Seminar, Institute of Physics, University of Campinas, *Campinas, Brazil* (October 2002).
26. *Quantum spin pumping*, seminar, Department of Physics, Pontifical Catholic University, *Rio de Janeiro, Brazil* (September 2002).
25. Colloquium, Department of Physics, University of Central Florida, *Orlando, FL, USA* (February 2002).
24. Colloquium, Department of Physics, Ohio University, *Athens, OH, USA* (February 2002).
23. Seminar, Department of Physics, Duke University, *Durham, NC, USA* (February 2002).
22. Colloquium, Department of Physics, Pontifical Catholic University, *Rio de Janeiro, Brazil* (April 2001).
21. Seminar, Institute of Physics, University of Campinas, *Campinas, Brazil* (August 2000).
20. Colloquium, Institute of Physics, Fluminense Federal University, *Niterói, Brazil* (May 2000).
19. Seminar, Institute of Physics, Federal University of Rio de Janeiro, *Rio de Janeiro, Brazil* (October 1999).
18. Seminar, Institute of Physics, State University of Rio de Janeiro *Rio de Janeiro, Brazil* (June 1999).
17. Seminar, Institute of Physics, University of Campinas, *Campinas, Brazil* (November 1998).
16. Seminar, Linear Accelerator Laboratory, University of São Paulo, *São Paulo, Brazil* (May 1998).
15. Colloquium, Department of Physics, Federal University of Minas Gerais, *Belo Horizonte, Brazil* (November 1997).

14. Seminar, Department of Physics, Federal University of Minas Gerais, *Belo Horizonte, Brazil* (November 1997).
13. Seminar, Institute of Physics, University of Rio de Janeiro, *Rio de Janeiro, Brazil* (May 1997).
12. Seminar, Institute of Physics, Fluminense Federal University, *Niterói, Brazil* (April 1997).
11. Seminar, Brazilian Center for Physical Research, *Rio de Janeiro, Brazil* (November 1996).
10. Seminar, Department of Physics, Pontifical Catholic University, *Rio de Janeiro, Brazil* (October 1996).
9. Seminar, University of Essen, *Essen, Germany* (June 1996).
8. Seminar, Institute of Physics, University of São Paulo, *São Paulo, Brazil* (March 1996).
7. Seminar, Institute of Physics, University of Campinas, *Campinas, Brazil* (March 1996).
6. Seminar, Department of Physics, Pontifical Catholic University, *Rio de Janeiro, Brazil* (March 1996).
5. Seminar, Institute of Physics and Astronomy, Aarhus University, *Aarhus, Denmark* (May 1995).
4. Seminar, Max-Planck Institute for Solid State Physics, *Stuttgart, Germany* (January 1995).
3. Seminar, Max-Planck Institute for Nuclear Physics, *Heidelberg, Germany* (January 1995).
2. Seminar, NORDITA & Niels Bohr Institute, *Copenhagen, Denmark* (October 1994).
1. Seminar, Institute of Physics, University of São Paulo, *São Paulo, Brazil* (May 1988).

PROFESSIONAL EXPERIENCE

Teaching

- At the Department of Physics, University of Central Florida:

17. PHY 6667, *Quantum Field Theory I* (Fall 2024)
16. PHY 4932/3650, *Quantum Information Processing* (Spring 2022, Spring 2023, Spring 2024, Spring 2025)
15. PHY 4932, *Special Topics: Advanced Mechanics* (Fall 2015).
14. PHY 3320, *Mechanics I* (Spring 2015, Spring 2016).
13. PHY 2048, *Physics for Engineers and Scientists I* – SCALE-UP mode: Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014).
12. PHY 5524, *Statistical Physics* (Spring 2011).
11. PHY 3513, *Thermodynamics and Statistical Physics* (Fall 2010).
10. PHY 4605, *Wave Mechanics II* (Spring 2009, Spring 2010).
9. PHY 4604, *Wave Mechanics I* (Fall 2008, Fall 2009).
8. PHY 6624, *Quantum Mechanics II* (Spring 2007, Spring 2008).
7. PHY 5606, *Quantum Mechanics I* (Fall 2006, Fall 2007).
6. PHY 6939, *Graduate Research Seminar* (Summer 2006).
5. PHY 2048, *Physics for Engineers and Scientists I* (Spring 2006, Fall 2023).
4. PHZ 5405, *Condensed Matter Physics* (Fall 2005).

- 3. PHY 5650, *Special Topics: Introduction to Quantum Computation* (Spring 2005).
- 2. PHY 6246, *Classical Mechanics* (Fall 2004, Fall 2015, Fall 2025).
- 1. PHY 5524, *Statistical Physics* (Spring 2004).
- At the Department of Physics, Duke University:
 - 1. PHYSICS 307, *Introduction to Condensed Matter* (Fall 2003). Graduate level.
- At the Department of Physics, Pontifical Catholic University:
 - 10. *Quantum Mechanics II* (2002). Senior level.
 - 9. *Quantum Mechanics I* (2001 and 2002). Senior level.
 - 8. *Laboratory, Physics 2* (2000). Freshman level.
 - 7. *Laboratory, Physics 4* (2000). Sophomore level.
 - 6. *Laboratory, Physics 3* (four consecutive semesters, from 1998 to 2001; also in 2002). Sophomore level.
 - 5. *Electromagnetism III* (1999 and 2001). Graduate level.
 - 4. *Statistical Mechanics* (2000). Graduate level.
 - 3. *Statistical Physics* (1998, 1999, 2000). Senior level.
 - 2. *Electronic Transport in Mesoscopic Systems* (taught jointly with C. Lewenkopf) (1997). Graduate level.
 - 1. *Physics 4* (four successive semesters, from 1996 to 1998). Sophomore level.
- At the Department of Physics, Massachusetts Institute of Technology:
 - 1. Teaching Assistant of Prof. Boris Altshuler in the graduate course *Solid State Theory* (Fall 1991).

Supervision of graduate students at UCF

- 24. Shantanu Chaudhary, Ph.D. student. Project: *Matrix product state and quantum many-body systems* (May – August 2024). Now under Dr. Han Zhao's supervision.
- 23. Maxine Khumalo, Ph.D. candidate. Project: *Applying quantum learning theory for classical encryption* (since January 2024).
- 22. Andrew Silverman, Ph.D. candidate. Project: *Topological states and phases in multi-terminal Josephson junctions* (since August 2023).
- 21. Arslan Hashim, Ph.D. candidate. Project: *Quantum Algorithms for density function theory* (since January 2023).
- 20. Suman Mandal, Ph.D. candidate. Project: *Origins of barren plateaux in variational quantum algorithms* (since August 2021).
- 19. João Pedro dos Santos Pires, visiting Ph.D. student. Project: *Disordered Weyl semimetals* (June – July 2019). Currently a consultant with Deloitte, Portugal.
- 18. William Richardson, Ph.D. dissertation *An Atomistic Approach to Large Scale Transport: An Investigation of the Resistivity-Size Effect in Thin Films with Realistic Disorder* (April 2024). Co-advised by P. K. Schelling.

17. Sayandip Dhara, Ph.D. dissertation: *Methods and Characterization of Topological and Disordered-Induced Protection of Coherence in Quantum Systems* (December 2022). Currently a post-doctoral associate at Virginia Tech.
16. George Davila, M.S. student. Project: *Compressing DNA databases with matrix product states* (March 2017 – July 2018).
15. Tyler Campbell, Ph.D. student. Project: *Computation via thermal annealing of vertex models* (May 2016 – October 2016).
14. Justin Reyes, Ph.D. dissertation: *Tensor Network States: Optimizations and Applications in Quantum Many-Body Physics and Machine Learning* (July 2020). Currently an assistant professor at Florida Polytech.
13. Angel Martínez Argüello, visiting Ph.D. student. Project: *Are entanglement fluctuations universal?* (March 2015). Currently at the Benemérita Universidad Autónoma de Puebla, Mexico.
12. Emilia Ridolfi, visiting Ph.D. student. Project: *An accurate tight-binding model for MoS₂* (September – November 2014). Currently a post-doctoral associate at the Université Libre de Bruxelles, Belgium.
11. Daniel Bonior, Ph.D. dissertation: *Mathematical foundations of adaptive quantum processing*; co-advisor: Keye Martin (October, 2018). Research scientist at the Naval Research Laboratory in Washington DC.
10. Leandro Lima, visiting Ph.D. student. Project: *Recursive electronic transport calculations in interacting and disordered wires* (August – October 2012). CNPq fellow from the Federal University of Rio de Janeiro, Brazil. Currently an assistant professor at UFRRJ, Brazil.
9. Sabine Pelton, Ph.D. dissertation: *Solving constraint satisfaction problems with matrix product states* (August 2017). Currently with the National Park Services.
8. Guilherme Martins, visiting M.S. student. Project: *Fidelity decay of a spin lattice in a correlated environment* (November – December 2011). SBF-APS fellowship recipient from the Federal University of Sergipe, Brazil. Ph.D. in physics from UFS, Brasil; currently an assistant professor at UFA, Brazil.
7. Amin Ahmadi, Ph.D. dissertation: *Charge and spin transport in low-dimensional materials* (April 2017). Currently working at a big data startup in Sweden.
6. Javier Romero. Ph.D. dissertation: *Electronic transport in single-molecule magnet transistors* (July 2014). APS-SBF fellowship recipient (July 2013). Currently working toward an MS degree in STEM Education at Tufts University.
5. Pejman Jouzdani. Ph.D. dissertation: *Fault tolerance in topological quantum memories* (November 2014). Scientist at KLA in CA.
4. Sabine Pelton. M.S. thesis: *Spin pumping with double quantum dots* (March 2012).
3. Diego C. Valente. Ph.D. dissertation: *Decoherence in Semiconductor Solid State Quantum Computers* (October 2009). Lecturer at University of Connecticut.
2. James McCracken. M.S. thesis: *Decoherence in Quantum Dot Charge Qubits: the Role of Electromagnetic Fluctuations*. (April 2006). Currently a consultant in the Washington DC area.

1. Michael D. Hogue. Ph.D. dissertation: *Insulator-Insulator Contact Charging as a Function of Pressure* (November 2005). Member of the technical staff at the NASA Kennedy Space Center, FL (retired).

Supervision of undergraduate students at UCF

19. Bradford Geiger, Physics major. Project: *Quantum entanglement of photonic modes*. (January – April 2025).
18. Isaac Restrepo, Physics major. Project: *Scrambling and learning in T-doped Clifford circuits*. (since May 2024 – April 2025).
17. Jacob Halpern, Physics major. Project: *Ginzburg-Landau modeling of multi-contact Josephson junctions*. (May 2024 – April 2025).
16. Alexa McKeay, B.S. in Physics, 2024. Project: *Universal vs. non-universal entanglement spectrum statistics in quantum circuits*. (January – July 2024). Graduate student at Ohio State University.
15. Zehra Baqri, Physics major. Project: *Scrambling and universality in tree-like quantum circuits*. (since August 2023).
14. Maximillian Daughtry, Physics major. Project: *Barren plateau in variational quantum algorithms*. (August 2023 – July 2024).
13. Luke Anderson, Computer Engineering major. Project: *Machine learning for quantum error correction*. (August 2023 – December 2023).
12. Mikhil Gotmare, Physics major. Project: *Matrix product state quantum circuit simulator*. (January – April 2023).
11. Jesse Jones Johnson, B.S. in Physics, 2023. Project: *Quantum error correction via machine learning*. (January – April 2023).
10. Peter Smucz, B.S. in Physics, 2022. Project: *Alternative approach to quantum imaginary time evolution*. (May – July 2022).
9. Antonett Nunez del Prado, B.S. in Physics, 2019. Project: *Entanglement complexity in SAT problems*. (August 2015 – May 2019). Currently a Ph.D. student at UCLA.
8. Kursti DeLollo, B.S. in Physics, 2016. Projects: *Phase transitions in counting problems; Electronic structure and electronic transport in phosphorene – Honors in the Major thesis*. (February 2014 – May 2016). Currently a Ph.D. student at Cornell University.
7. Alexander Stanforth, B.S. in Physics, 2017. Projects: *A Monte-Carlo method for evaluating the permanent of Hermitian matrices; Statistical properties of random permutation gates and Fidelity threshold in the surface code over multiple cycles* (January 2013 – April 2017). Currently a medical physics assistant at Emory Healthcare, Atlanta, GA.
6. Richard Bergmann, B.S. in Physics, 2015. Project: *Variational matrix product state solution of spin chain problems*. (August 2013 – May 2015). Software engineer with COLSA.
5. Thomas Evaskis, Physics & Math major. Project: *Phase transitions in the #2-SAT class of problems* (August – December 2012).
4. Evelyn Strunk, B.S. in Physics, 2013. Project: *Percolation and electrical conductance in graphene oxide* (May 2012 – May 2013). Currently at Lockheed-Martin, Orlando, FL.

3. Stephen Wood, Physics major. Project: *Artificial magnetic fields and strain in graphene* (August – December 2010).
2. Jonathan Edmiston, Physics major. Project: *Transfer-matrix calculation of conductance in graphene nanoribbons* (August – December 2009). Currently at Qorvo, Orlando, FL.
1. William Cole, B.S. in Physics, 2008. Project: *Weak localization in disordered graphene* (August 2007 – May 2008). Currently a researcher at Microsoft Station Q.

Supervision of students at the Department of Physics, PUC-RJ

5. Bernardo S. Fernandes, undergraduate student (CNPq-PIBIC fellow). Project: *Development of a laboratory kit for the observation of the conductance quantum* (August 1999 – July 2000).
4. Marcelo S. Schiaffino, undergraduate student (CNPq-PIBIC fellow). Project: *Self-consistent confining potential in semiconductor heterostructures* (March 1999 – February 2000). Key account manager at BICS Telecomm in Brazil.
3. Kenjiro K. Gomes, undergraduate student (CNPq-PIBIC fellow). Project: *Description of half-filled Landau levels* (August 1997 – July 1999). Project: *Superconductivity in disordered metallic grains* (March – July 2000). Graduate student (CAPES fellow) M.S. dissertation: *Spontaneous Spin Polarization in Disordered Quantum Dots* (July 2002). Co-founder, Monad, San Francisco, CA.
2. Ana Luiza Cardoso Pereira, undergraduate student (CNPq-PIBIC fellow). Project: *Transport and spectral fluctuations in mesoscopic structures* (August 1997 – March 1999). Faculty member at UNICAMP-Limeira. Winner of the L’Oreal Prize for Brazilian Women in Sciences.
1. Marco e Silva de Melo Távora, graduate student (CAPES and CNPq fellow). M.S. dissertation: *Vortex States in Unconventional Superconductors* (September 2002). Founder, Principia Technologies, Brazil.

Supervision of postdoctoral fellows

1. Justin Reyes, NSF Mathematical and Physical Sciences Ascending Postdoctoral Research fellow (January 2022 – July 2023). Currently an assistant professor at Florida Polytech.
2. Carlos Paez, FAPESP fellow (September 2015 – June 2016). visiting from UNICAMP, Brazil. Currently an assistant professor in Colombia.
3. Alejandro M. F. Rivas, FAPERJ fellow (May 1999 – April 2001). Currently a member of the technical staff at the Tandar National Laboratory, Argentina.

Administrative activities

- At UCF:
 - Chair/Head, Department of Physics (May 2016 – May 2021).
 - Director of the Physics Graduate Program (December 2004 – July 2006)

- At the Department of Physics, PUC-RJ:
 - Director of the Physics Graduate Program (December 2000 – August 2002)

Institutional service

- At UCF:
 - Co-Chair of the College of Science Dean search committee (since October 2025).
 - Co-Leader, UCF Quantum Initiative (since August 2025).
 - Chair of the Theoretical Quantum Computing faculty search committee, Department of Physics (since April 2025).
 - Member of the Associate Dean of Research search committee, College of Sciences (April 2024).
 - Chair of the Theoretical Condensed Matter faculty search committee, Department of Physics (January – May 2024).
 - Member of the College of Sciences Technology Advisory Committee (since May 2023).
 - Member of the Attosecond Theory faculty search committee, Department of Physics (December 2022 – April 2023).
 - Co-chair, UCF Research Cyberinfrastructure Advisory Committee (since October 2022).
 - Coordinator, computer cluster room, Department of Physics (since January 2022).
 - Member of the Lecturer search committee, Department of Physics (January – May 2022).
 - Member of the Global Initiatives Advisory Committee Meeting (since September 2020).
 - Member of the Quantum Optics faculty search committee, College of Optics and Photonics (Fall 2020).
 - Member of the AI + QC work group (November 2020 – April 2021).
 - Member of the Chief Information Officer search committee (September – November 2020).
 - Member of the university committee “What Will UCF Be Known For” (Fall 2019).
 - Member of the Associate Dean search committee, College of Sciences (July 2018).
 - Chair of the Psychology Department Chair search committee (February – April 2018)
 - Co-organizer of the Freshman Physics Seminar (Fall 2015 and Spring 2016).
 - Chair of the Physics Education Research faculty search committee (November 2015 – April 2016)
 - Chair of the Ultrafast Experimental Condensed Matter Physics faculty search committee (November 2014 – March 2015)
 - Member of the UCF Physics Career Day organizing team; member of the Physics Outreach Committee (2014 – 2015)
 - Member of the Physics Department’s Strategic Planning Committee (September 2011 – 2015).
 - Member of the UCF Graduate Council Policy Committee (September 2009 – March 2011).
 - Member of the UCF Faculty Senate (April 2009 – March 2011).
 - External member of the Chemistry Annual Evaluations, Procedures and Standards Committee: Criteria Revisions (January 2009).

- Chair of the Physics Computer and Technology Committee (August 2006 – January 2007)
- Member of the new Physical Science Building Committee (February 2006 – August 2010)
- Member of the Physics Annual Evaluations, Procedures and Standards Committee (May 2005 – December 2005; September 2011 – August 2013)
- Member of the Physics Department Chair search committee (March 2005 – April 2006)
- Member of the Interdisciplinary Information Science and Technology Laboratory (I2Lab) Steering Committee (December 2004 – August 2006). Member of the fellowship subcommittee.
- Member of the Physics Graduate Program governance (August 2004 – July 2015).
- Internal reviewer of grant proposals for limited-submission solicitations.
- At the Department of Physics, PUC-RJ:
 - Member of the Graduate Committee (December 1999 – November 2000)
 - Manager of the computer network (March 1997 – February 2001)
 - Library liaison (November 1996 – February 1999)
 - Member of the Steering Committee (November 1996 – October 1999)
- Thesis and dissertation committees (excluding of own advisees):
 - External member in 6 committees in Brazil (1996 – 2015), 1 in Ireland (2012), and 1 in Germany (2013).
 - Member in many tens of committees at UCF (Computer Sciences, Mathematics, Education, Electrical Engineering, Optics and Photonics, and Physics).

Service to the profession and the community

- Chair of the Advisory Board, NSF ExpandQISE Project *Exotic Phases and Applications of Solid-State Qubits* at Howard University (since February 2024).
- Member of the US Department of Energy Quantum Information Science Education Working Group (March 2021).
- Consultant, panelist, editorial, and referee work:
 - *Journal*: Nature Communications (October 2025)
 - *Journal*: PNAS Nexus (February 2025)
 - *Journal*: Physical Review X Quantum (September 2023).
 - *Journal*: Quanta (since January 2023).
 - *Publisher*: Springer – editor of Tracts in Modern Physics book series (since November 2020).
 - *Journal*: Nature Quantum Information (January 2019)
 - *Journal*: IEEE Transactions on Information Theory (December 2015)
 - *Journal*: Synthetic Metals (June 2015)
 - *Publisher*: Cambridge University Press – book proposal reviewer (November 2013)
 - *Journal*: Physica Status Solidi B (October 2013)
 - *Journal*: Carbon (August 2013)
 - *Journal*: Annals of Physics (June 2013)

- *Journal*: Journal of Computational Electronics (December 2012)
- *Funding Agency*: CONICYT, the Chilean foundation for science and technology (July 2011)
- *Journal*: Journal of Magnetism and Magnetic Materials (June 2011)
- *Journal*: Reports on Progress in Physics (March 2011)
- *Publisher*: Springer Verlag – book chapter review (August 2010)
- *Journal*: Small (August 2010)
- *Journal*: Applied Physics B – Laser and Optics (April 2010)
- *Journal*: Applied Physics Letters (since September 2009)
- *Journal*: Journal of Applied Physics (since June 2009)
- *Journal*: Reviews of Modern Physics (since May 2009)
- *Journal*: Journal of the American Chemical Society (since April 2009)
- *Funding Agency*: Office of Basic Energy Sciences, Department of Energy (since April 2009)
- *Journal*: Nano Research (August 2008)
- *Journal*: New Journal of Physics (since January 2008)
- *Journal*: Journal of Physics: Condensed Matter (since August 2007)
- *Journal*: Nanotechnology (since May 2007)
- *Journal*: Physica E (May 2006)
- *Funding Agency*: John Simon Guggenheim Foundation (February 2006)
- *Journal*: European Journal of Physics B (since February 2006)
- *Journal*: Europhysics Letters (since September 2005)
- *Funding Agency*: American Chemical Society Petroleum Research Fund, (August 2005)
- *Funding Agency*: FONCyT, the Argentinean national fund for science and technology (March 2005)
- *Funding Agency*: National Science Foundation (since November 2004)
- *Journal*: Chemical Physics Letters (August 2004)
- *Journal*: Solid State Communications (since December 2003)
- *Government Agency*: The Brazilian Ministry of Education (November 2000)
- *Funding Agency*: FAPESP, the State of São Paulo Research Foundation, Brazil (since August 2000)
- *Journal*: Physics Letters A (since April 1999)
- *Funding Agency*: CNPq, the Brazilian federal agency for the promotion of science and technology (since September 1998)
- *Journal*: Physical Review A, B, E, and Letters (since November 1994)
- Member of the National Mentoring Community program of the American Physical Society (since December 2015).
- Outside Academia:
 - Advisory Board Member, National Quantum Literacy Network (since June 2021)
 - Volunteer, 28th Annual Science Olympiad National Tournament, Orlando, FL (May 2012)
 - Judge, U.S. Army, Navy and Air Force sponsored 46th National Junior Science Humanities Symposium (JSHS), Orlando, FL (May 2008)
 - Member of the Community Council at the Orlando Science Center, Orlando, FL (November 2004 – December 2005)

Organization of scientific and professional events

9. Local Organizer – National Mentoring Community Annual Meeting, *Orlando, FL*, February, 2020. Jointly organized with the American Physical Society.
8. Local Organizer – Inclusive Graduate Network (IGEN) National Meeting, *Orlando, FL*, October, 2019).
7. Sorting Team Leader – Complex Structured Materials; Focus Session Organizer for Graphene: Structure, Dopants, and Defects (10 sessions). American Physical Society 2011 March Meeting, *Dallas, TX*.
6. Workshop on Quantum Coherent Properties of Spins III, *Orlando, FL*, December 2010. Other members: Enrique del Barco (chairman), Philip Stamp (UBC, Canada), and Stephen Hill (FSU).
5. Sorting Team Leader – Complex Structured Materials. American Physical Society 2010 March Meeting, *Portland, OR*.
4. Workshop on Frontiers in Quantum and Biological Information Processing, *Orlando, FL*, November 2006 (sponsored by the Interdisciplinary Information Science and Technology Laboratory at UCF). Other members of the organizing committee: James Hickman, Michael Leuenberger, Dan Marinescu, and Pawel Wocjan (UCF).
3. School on Mesoscopic Electronics. International Center for Condensed Matter Physics, *Brasília, Brazil*, July 1998. Chairmen: Múcio A. Continentino (UFF, Brazil) and Gilles Montambaux (Université Paris-Sud, France).
2. Latin-American Winter School “Chaos and Quantum Mechanics: Theory and Applications”. *Rio de Janeiro, Brazil*, July 1998. Chairman: Alfredo M. Ozorio de Almeida (CBPF, Brazil).
1. XXI National Meeting of Condensed Matter Physics. *Caxambu, Brazil*, May 1998. Chairman: Sylvio R. A. Canuto (USP).

AWARDS AND HONORS

- College of Sciences Recognition for Outstanding Instruction, UCF (April 2024).
- Outstanding Referee, Physicsl Review journals, American Physical Society (February 2022)
- Research Incentive Award, UCF (February 2016, February 2022)
- UCF Scroll and Quill Society (October 2021)
- Teaching Incentive Award, UCF (March 2011)
- Honored Instructor, Class of 2002, Department of Physics, PUC-RJ
- Invited commencement speaker, Class of 2000, Department of Physics, PUC-RJ
- Rio de Janeiro State Young Scientist Award, FAPERJ (March 2000)
- CNPq research fellowship (March 1997 – February 2003)
- CNPq doctorate scholarship (September 1989 – February 1994)
- CAPES doctorate scholarship (March 1989 – August 1989)

- FAPESP graduate scholarship (March 1987 – December 1988)
- FAPESP undergraduate research scholarship (August 1985 – February 1987)

PARTICIPATION IN SCIENTIFIC SOCIETIES

- Member, American Association for the Advancement of Science (since 2016)
- Member, American Association of Physics Teachers (since 2016)
- Member, European Physical Society (since 2012)
- Founding member, Brazilian Society for Materials Research (2001)
- Fellow, American Physical Society (since 2017; member since 1993)
- Member, Brazilian Physical Society (since 1988)

VISITING POSITIONS

- Visiting professor, Department of Physics, Northeastern University, Burlington, MA (June 3 – 28, 2024).
- Visiting scientist, Institute of Physics, Fluminense Federal University, Niterói, Brazil (May – June, 2013; May – June, 2014; June – July 2015; November/2019).
- Fellow, International Center for Transdisciplinary Studies, Jacob University, Bremen, Germany (July 09 – 30, 2008).
- Visiting scientist, Max-Planck Institute for the Physics of Complex Systems, Dresden, Germany (June 03 – 30, 2007).
- Visiting scientist, Centre d'Études Nucléaire de Bordeaux-Gradignan, France (May – July 1989).

OTHER POSITIONS

- Co-Founder, USEncryption, Inc. (Orlando, FL).