Enrico Rossi

Curriculum Vitae

Department of Physics	**Phone**	: 1-757-221-3515
College of William and Mary	**Fax**	: 1-757-221-3540
Williamsburg, VA 23187	**Email**	: erossi@wm.edu
W. Small Hall 153	**Webpage**	: physics.wm.edu/∼erossi

Education · Appointments · Experience · Awards · Teaching · Advising · Publications · Invited Talks

EDUCATION

Ph.D. in Physics, 2005,
University of Texas at Austin
Advisor: Professor Allan H. MacDonald.

Joint B.S. & M.S. in Engineering Physics, 1998.
Turin Polytechnic, Turin, Italy
Italian Laurea: 110/110 *Summa Cum Laude*

PROFESSIONAL APPOINTMENTS

Professor. August 2022-Present
Physics Department
William & Mary

Visiting Scientist. January 2024-March 2024
Mini-Sabbatical Program
Lawrence Livermore National Laboratory

Associate Professor. August 2016-July 2022
Physics Department
William & Mary

Visiting Scientist. August 2016-July 2017
Microsoft Station Q, Santa Barbara, CA

Assistant Professor. August 2010-August 2016
Physics Department
William & Mary

Postdoctoral Research Associate. September 2007-August 2010.
Condensed Matter Theory Center, Physics Department
University of Maryland

Postdoctoral Research Associate. 2005-2007.
Physics Department
University of Illinois at Chicago

ADDITIONAL PROFESSIONAL EXPERIENCE

- Invited Participant, "Topology and Strong Correlations: Emerging Universality" program, Aspen Center for Physics, (July 2026).
- Invited to "Ultra Quantum Matter: Synergy Between Theory and Experiment" Aspen Center for Physics, (July-August 2025); invitation declined due to prior committments.
- Invited Participant, Program on "Tunable Two-Dimensional Materials: Moiré and Beyond", Kavli Institute for Theoretical Physics (KITP), UCSB (October 2024).

- Invited Participant, "Quantum Matter Through the Lens of Moiré materials" program, Aspen Center for Physics, (June 2024).
- Invited Participant, "Disorder and Quantum Phases of Matter" workshop, Aspen Center for Physics, (December 2023).
- Invited Participant, Program on "Quantum Matter with and without Quasiparticles", Kavli Institute for Theoretical Physics (KITP), UCSB (October 2023).
- Invited Participant, Program on "Exotic Phases, Gauge Field Theories and Dynamics in Systems with Constraints", Aspen Center for Physics (June-July 2023).
- Invited Participant, Program on "A Quantum Universe in a Crystal: Symmetry and Topology across the Correlation Spectrum", Kavli Institute for Theoretical Physics (KITP), UCSB (04/2023-05/2023).
- Invited Participant, Program on "Programmable Quantum Matter: Many- Body Physics in the Era of Quantum Advantage", Aspen Center for Physics (July 2022)
- Invited Participant, Program on "Spin and heat transport in quantum and topological materials", Kavli Institute for Theoretical Physics (KITP), UCSB (December 2019).
- Invited Participant, Program on "Topological Quantum Matter", Nordic Institute for Theoretical Physics (NORDITA), Stockholm, Sweden (August 2019).
- Invited Participant, Program on "Moiré Materials: Strong Correlations in Synthetic Superlattices", Aspen Center for Physics (June-July 2019).
- Invited Participant, Program on "From Physics to Applications of Quantum Computers", Aspen Center for Physics (July 2018)
- Invited Participant, Program on "Physics of Interfaces and Layered Structures", Nordic Institute for Theoretical Physics (NORDITA) program, Stockholm, Sweden (August 2015).
- Invited Participant, Program on "Graphene Program", Kavli Institute for Theoretical Physics (KITP) UCSB, Spring 2012.

AWARDS AND HONORS

- University Professor of Research Excellence, (2026-present).
- Jospeh Plumeri Award for Faculty Excellence ($10,000), (2017).
- NSF-CAREER Award ($475,000), (2015).
- ACS-PRF Doctoral New Investigator Award. ($100,000), (2013).
- Scholarship Award, First International School and Conference on Nanoscale Molecular Mechanics, Maui, HI (2002).

COURSES TAUGHT

PHYS 432-633 Quantum Materials and Quantum Devices F2024
PHYS 623 Statistical Physics and Thermodynamics, S2022, S2023, S2025, S2026
PHYS 603, Mathematical Physics, F2020, F2021, F2022
PHYS 690, Quantum Materials, F2021
PHYS 102P, General Physics II (Problem Session), S2021
PHYS 101P, General Physics I (Problem Session), F2018
PHYS 611, Classical Electricity and Magnetism II, F2017, F2018, F2025, F2026
PHYS 622, Quantum Mechanics II, S2018, S2019, S2020, S2021
PHYS 301, Introduction to Mathematical Physics, S2014, S2015, S2016

PHYS 155, Freshman Research, S2016
PHYS 255, Sophomore Research, F2018, S2019
PHYS 355, Junior Research, F2017, S2018, F2019, S2020
PHYS 496, Honors, F2018, S2019
PHYS 455, Senior Research, F2012, S2013, F2015, S2016, F2018, F2021
PHYS 742, Solid State Physics II, S2011, S2012, S2013
PHYS 621, Quantum Mechanics I, F2011
PHYS 741, Solid State Physics I, F2012, F2013, F2014, F2015
PHYS 108P, Physics for Life-Sciences (Problem Session), S2013
PHYS 800, Dissertation, F2019, S2020, F2021, S2022, F2022, S2023, F2023, S2024, F2024

On Research Leave: Fall 2010, Fall 2016, Spring 2017, Fall 2023, Spring 2024.

GRADUATE STUDENTS SUPERVISION

- Mariami Bagishvili, 2022-Present
- Michael Sizemore, 2022-2025
- Brandon Korb, 2022-2023
- Jaeyeong Lee, 2022-2023, 2026-Present
- Joseph J. Cuozzo, Ph.D. 2022
  Dissertation's Title: *Electronic Transport in Topological Superconducting Heterostructures*
  Next: Truman Fellow, Sandia National Laboratory. Currently: Assistant Professor at the University of Texas El Paso (TX).
- Yohanes S. Gani, Ph.D. 2019
  Dissertation's Title: *Electronic properties of two-dimensional van der Waals systems*
  Data Analyst at PT Bank.
- Christopher Hipp (2017-2019).
- Jiani Lu (2016-2017)
- Martin Rodriguez-Vega, Ph.D. 2016.
  Dissertation's Title: *Disorder effects in Dirac heterostructures*
  Next: Postdoctoral Research Associate at the University of Texas at Austin; Director's Fellow at Los Alamos National Laboratory. Currently: Associate Editor at Physical Review Letters.
- William Dickinson (2011-2012)
- Christopher Triola, Ph.D. 2015.
  Dissertation's Title: *Electronic properties of chiral two-dimensional materials*
  Next: Postdoctoral Research Associate at the Nordic Institute for Theoretical Physics (NORDITA).
  Currently: Los Alamos National Laboratory Permanent Staff Member

POSTDOCTORAL RESEARCH ASSOCIATES SUPERVISION

- Jonathan Schirmer, 2023-2026.
- Han Fu, 2022-2023.
  Next/Currently: Assistant Professor at Florida Atlantic University.
- Sayed Ali Akbar Ghorashi, 2018-2021.
  Next: Postdoctoral Research Associate at Stony Brook University. Currently: Research Associate at the University of Pennsylvania.

- Xiang Hu, 2016-2020.
  Next: Professor at Guangxi Normal University, Guilin, China.
- Driss Badiane, 2014-2015. Next/Currently: Quantitative Analyst at National Bank Financial.
- Junhua Zhang, 2011-2015. Next: Postdoctoral research associate at University of California, Riverside.

UNDERGRADUATE STUDENTS SUPERVISION

- Jacopo Gliozzi (2016-2019): *Chiral Transport in Anisotropic Materials*, Honors Senior Thesis, 2019.
  Recipient of: 2018 E. Gary Clark Memorial Scholarship; 2019 Don Edward Harrison Jr. Award for Excellence in Physics; 2019 Thomas Jefferson Prize in Natural Philosophy. Next: Graduate Program in Physics at UIUC.
- Stuart Thomas (2017-2021).
  Recipient of: 2019 E. Gary Clark Memorial Scholarship; 2020 Don Edward Harrison Jr. Award for Excellence in Physics. Next: Graduate Program in Physics at the University of Maryland, College Park (MD).
- Daniel Kang (2014-2016): *Quantum transport in two dimensions*, Senior Thesis, 2016.
  Next: Innovative Defense Technologies and graduate program in computer science at George Mason University.
- Sean Youn (2013-2014)
- Jonathan Fischer: *Ground state of disordered draphene heterostructures*, Honors Senior Thesis, 2013.
  Next: Graduate program in Statistics at the University of California, Berkeley

PUBLICATIONS

Citations indices

Number of citations (Google Scholar)	$\sim 9,500$
h-index (Google Scholar)	39
Number of publications	83+1 Preprint under review

Refereed Publications

1. Wenyao Liu, Gabriel Natale, Camron Farhang, Michael Geiwitz, Qishuo Tan, Xingyao Guo, Mason Gray, Vincent Lamberti, Jazzmin Victorin, Huairuo Zhang, James L. Hart, Vsevolod Belosevich, Xi Ling, Qiong Ma, Wan Kyu Park, Kenji Watanabe, Takashi Taniguchi, Judy J. Cha, Albert V. Davydov, Kin Chung Fong, Ethan G. Arnault, Genda Gu, Rui-Xing Zhang, Enrico Rossi, Jing Xia, Kenneth S. Burch
   Nontrivial Boundary-Mediated Superconducting Transport in a TRSB Topological Iron-Based Superconductor
   Physical Review X, **16**, 041022 (2026)
   Featured in Physics, the online magazine from the American Physical Society
2. Yafis Barlas, Fan Zhang, Enrico Rossi
   Quantum Geometry Induced Kekulé Superconductivity in Haldane phases
   Physical Review Letters, accepted (2026). arXiv: 2508.21791

3. Peng Yu, Han Fu, William F. Schiela, William Strickland, Bassel Heiba Elfeky, S. M. Farzaneh, Jacob Issokson, Wei Pan, Enrico Rossi, Javad Shabani
Enhanced superconducting diode effect in hybrid Josephson junctions
Physical Review B, **113**, 205411 (2026)
4. Joseph J. Cuozzo, Wenlong Yu, Xiaoyan Shi, Aaron J. Muhowski, Samuel D. Hawkins, John F. Klem, Enrico Rossi, Wei Pan
Buried Dirac Points in Quantum Spin Hall Insulators: Implications for Majorana Kramers Pair-Based Quantum Computing
PRX-Quantum, **7**, 010313 (2026)
5. Jaibin Yu, B. Andrei Bernevig, Raquel Quieroz, Enrico Rossi, Päivi Törmä, Bohm-Jung Yang
Quantum Geometry in Quantum Materials
npj-Quanutum Materials, **10**, 101 (2025)
6. Jonathan Schirmer, Enrico Rossi
Superfluid Weight of Strongly Inhomogeneous Superconductors
Physical Review B (Letter), **112**, L180501 (2025)
7. Uddalok Nag, Jonathan Schirmer, Enrico Rossi, C. -X. Liu, J. K. Jain
Phase diagram of a bilayer superconductor under an in-plane magnetic field
Physical Review B, **112**, 144513 (2025)
8. W. Pan, W. Pan, K. R. Sapkota, P. Lu, A. J. Muhowski, W. M. Martinez, C. L. H. Sovinec, R. Reyna, J. P. Mendez, D. Mamaluy, S. D. Hawkins, J. F. Klem, L. S. L. Smith, D. A. Temple, Z. Enderson, Z. Jiang, E. Rossi
Epitaxial aluminum layer on antimonide heterostructures for exploring Josephson junction effects
Materials Science and Engineering: B, **8**, 118285 (2025)
9. Peng Yu, Han Fu, William F. Schiela, William Strickland, Bassel Heiba Elfeky, S. M. Farzaneh, Jacob Issokson, Enrico Rossi, Javad Shabani
Gate tunable enhancement of supercurrent in hybrid planar Josephson junctions
Physical Review B, **112**, 075419 (2025). **Editors' Suggestion**
10. Xiang Hu, Enrico Rossi, Yafis Barlas
Effect of Inversion Asymmetry on Bilayer Graphene's Superconducting and Exciton Condensates
Physical Review B, **112**, 144502 (2025)
11. Joseph J. Cuozzo, Wenlong Yu, Paul Davids, Tina M. Nenoff, Daniel B. Soh, Wei Pan, Enrico Rossi
Leggett Modes in Dirac Semimetals
Nature Physics, **20**, 1118 (2024)
12. Mehdi Hatefipour, Joseph J. Cuozzo, Ido Levy, William M. Strickland, Dylan Langone, Enrico Rossi, and Javad Shabani
Andreev reflection of quantum Hall states through a quantum point contact
Physical Review B, **109**, 035430, (2024)
13. Joseph J. Cuozzo, Wei Pan, Javad Shabani, Enrico Rossi
Microwave-Tunable Diode Effect in Asymmetric SQUIDs with Topological Josephson Junctions
Physical Review Research, **6**, 023011 (2024)
14. Yu, W. ; Cuozzo, J. J. ; Sapkota, K. ; Rossi, E. ; Rademacher, D. X. ; Nenoff, T. M. ; Pan, W
Time reversal symmetry breaking and zero magnetic field Josephson diode effect in Dirac semimetal Cd3As2-mediated asymmetric SQUIDs
Phys. Rev. B **110**, 104510 (2024)

15. Joseph J. Cuozzo, Enrico Rossi
SU(4) Symmetry Breaking and Induced Superconductivity in Graphene Quantum Hall Edges
Phys. Rev. B **110**, 024518 (2024)

16. Qu, Dong-Xia; Cuozzo, Joseph J.; Teslich, Nick E.; Ray, Keith G.; Dai, Zurong; Li, Tian T.; Chapline, George F.; DuBois, Jonathan L.; Rossi, Enrico
Phase-Slip Lines and Anomalous Josephson Effects in Tungsten Nanoscale Cluster-Based Topological Insulator Nanobridges: Implications for Topologically Protected Qubits and Quantum Sensors
ACS Applied Nano Materials, **7**, 3702 (2024)

17. Sayed Ali Akbar Ghorashi, Jennifer Cano, Enrico Rossi, Taylor L. Hughes
Higher-Order Nodal Hinge States in Doped Superconducting Topological Insulator
Physical Review B **108**, 094504 (2023)

18. Bassel Heiba Elfeky, Joseph J. Cuozzo, Neda Lotfizadeh, William F. Schiela, William M. Strickland, Dylan Langone, Enrico Rossi, Javad Shabani
Reemergence of missing Shapiro steps in the presence of in-plane magnetic field
ACS Nano **17**, 4650 (2023)

19. T. R. Devidas, Tom Dvir, Enrico Rossi, Hadar Steinberg
Kondo Effect in Defect-bound Quantum Dots Coupled to NbSe2
Physical Review B **106**, 094502 (2023)

20. Xiang Hu, Timo Hyart, Dmitry I. Pikulin, Enrico Rossi
Quantum-metric-enabled exciton condensate in double twisted bilayer graphene
Physical Review B (Letter) **105**, L140506 (2022)

21. Alexander Lau, Sebastiano Peotta, Dmitry I. Pikulin, Enrico Rossi, Timo Hyart
Universal suppression of superfluid weight by non-magnetic disorder in s-wave superconductors independent of quantum geometry and band dispersion
SciPost Physics, **13**, 086 (2022)

22. Mehdi Hatefipour, Joseph J. Cuozzo, Jesse Kanter, William Strickland, Tzu-Ming Lu, Enrico Rossi, Javad Shabani
Induced superconducting pairing in integer quantum Hall edge states
Nano Letters, **22**, 6173, (2022)

23. Enrico Rossi
Quantum Metric and Correlated States in Two-dimensional Systems
Current Opinion in Solid State & Materials Science **25**, 100952 (2021)

24. Matthieu C. Dartiailh, Joseph J. Cuozzo, William Mayer, Joseph Yuan, Kaushini S. Wickramasinghe, Enrico Rossi, Javad Shabani
Missing Shapiro steps in topologically trivial Josephson Junction on InAs quantum well
Nature Communications **12**, 78 (2021)

25. William Mayer, Matthieu C. Dartiailh, Joseph Yuan, Kaushini S. Wickramasinghe, Enrico Rossi, Javad Shabani
Gate Controlled Anomalous Phase Shift in Al/InAs Josephson Junctions
Nature Communications **11**, 212 (2020)

26. Sayed Ali Akbar Ghorashi, Taylor L. Hughes, Enrico Rossi
Vortex and Surface Phase Transitions in Superconducting Higher-order Topological Insulators
Phys. Rev. Lett, **125**, 037001 (2020)

27. Xiang Hu, Timo Hyart, Dmitry I. Pikulin, Enrico Rossi
Geometric and conventional contribution to superfluid weight in twisted bilayer graphene
Phys. Rev. Lett, **123**, 237002 (2019)
Featured in Physics, the online magazine from the American Physical Society

28. Yohanes S. Gani, Eric. J. Walter, Enrico Rossi
Proximity induced spin-orbit splitting in graphene nanoribbons on transition metal dichalcogenides
Phys. Rev. B, **101**, 195416 (2020)

29. Enrico Rossi, Christopher Triola
Van der Waals heterostructures with spin-orbit coupling
Annalen der Physik 1900344 (2019)

30. M. Rodriguez-Vega, G. Schwiete, Enrico Rossi
Spin-charge coupled transport in van der Waals systems with random tunneling
Phys. Rev. Research, **1**, 033085 (2019)

31. Sayed Ali Akbar Ghorashi, Xiang Hu, Taylor L. Hughes, Enrico Rossi
Second-order Dirac superconductors and magnetic field induced Majorana hinge modes
Phys. Rev. B, **100**, 020509(R) Rapid Comm. (2019). Editor's suggestion

32. Yohanes S. Gani, Hadar Steinberg, Enrico Rossi
Superconductivity in twisted Graphene NbSe2 heterostructures
Phys. Rev. B, 99, 235404 (2019)

33. Yohanes S. Gani, D.S.L. Abergel, Enrico Rossi
Electronic structure of graphene-nanoribbons on hexagonal boron nitride
Phys. Rev. B, **98**, 205415 (2018)

34. Andrey E. Antipov, Arno Bargerbos, Georg W. Winkler, Bela Bauer, Enrico Rossi, Roman M. Lutchyn
Effects of gate-induced electric fields on semiconductor Majorana nanowires
Phys. Rev. X, **8**, 031041 (2018)

35. Dong E. Liu, Enrico Rossi, Roman M. Lutchyn,
Impurity-induced states in superconducting heterostructures
Phys. Rev. B., Rapid Communication **97**, 161408(R)(2018)

36. M. Rodriguez-Vega, G. Schwiete, J. Sinova, E. Rossi,
Giant Edelstein effect in topological-insulator-graphene heterostructures
Phys. Rev. B., **96**, 235419(2017).

37. Chih-Pin Lu, Martin Rodriguez-Vega, Guohong Li, Adina Luican-Mayer, K. Watanabe, T. Taniguchi, E. Rossi, Eva Y. Andrei,
Local, global, and nonlinear screening in twisted double-layer graphene
PNAS **113**, 6623 (2016).

38. C. Triola, D. M. Badiane, A. V. Balatsky, E. Rossi,
General conditions for proximity-induced odd-frequency superconductivity in two-dimensional electronic systems
Phys. Rev. Lett. **116**, 257001 (2016).

39. Junhua Zhang, Younghyun Kim, E. Rossi, Roman M. Lutchyn,
Topological superconductivity in a multichannel Yu-Shiba-Rusinov chain
Phys. Rev. B **93**, 024507 (2016).

40. M. Rodriguez-Vega, M. T. Simons, E. Radue, S. Kittiwatanakul, J. Lu, S. A. Wolf, R. A. Lukaszew, I. Novikova, E. Rossi,
Effect of inhomogeneties and substrate on the dynamics of the metal-insulator transition in VO2 thin films
Phys. Rev. B. **92**, 115420 (2015).

41. A. Principi, G. Vignale, E. Rossi,
Kondo effect and non-Fermi liquid behavior in Dirac and Weyl semimetals
Phys. Rev. B Rapid Communication **92**, 041107(R) (2015).

42. Y. Kim, J. Zhang, E. Rossi, R. M. Lutchyn,
Impurity-induced bound states in superconductors with spin-orbit coupling
Phys. Rev. Lett. **114**, 236804 (2015).

43. J. Zhang, R. Nandkishore, E. Rossi,
Disorder-tuned selection of order in bilayer graphene
Phys. Rev. B. **91**, 205425 (2015).

44. E. Radue, L. Wang, S.Kittiwatanakul, J. Lu, S.A. Wolf, E. Rossi, R.A. Lukaszew, I. Novikova,
Substrate-induced microstructure effects on the dynamics of the photo-induced Metal-insulator transition in VO2 thin films
Journal of Optics **17**, 025503 (2015).

45. Junhua Zhang, C. Triola, E. Rossi,
Proximity effect in graphene-topological insulator heterostructures
Phys. Rev. Lett. **112**, 096802 (2014).

46. C. Triola, E. Rossi, A. V. Balatsky,
Effect of a spin-active interface on proximity-induced superconductivity in topological insulators
Phys. Rev. B. **89**, 165309 (2014).

47. Martin Rodriguez-Vega, Jonathan Fischer, S. Das Sarma, E. Rossi,
Ground state of graphene heterostructures in the presence of random charged impurities
Phys. Rev. B **90**, 035406 (2014).

48. J. Zhang, E. Rossi,
Chiral states in hybrid graphene heterostructures
Phys. Rev. Lett. **111**, 086804 (2013).

49. D. S. L. Abergel, M. Rodriguez-Vega, E. Rossi, S. Das Sarma,
Inter-layer excitonic superfluidity in graphene
Phys. Rev. B. **88**, 235402 (2013).

50. Qiuzi Li, E. Rossi, S. Das Sarma,
Two-dimensional electronic transport on the surface of 3D topological insulators
Phys. Rev. B. **86**, 235443 (2012).

51. C. Triola, E. Rossi,
Screening and collective modes in gapped bilayer graphene
Phys. Rev. B. **86**, 161408(R) Rapid Comm. (2012).

52. D. S. L. Abergel, E. Rossi, S. Das Sarma,
Inhomogeneity and nonlinear screening in gapped bilayer graphene
Phys. Rev. B. **86**, 155447 (2012).

53. Qiuzi Li, E. H. Hwang, E. Rossi,
Effect of charged impurity correlation on transport in monolayer and bilayer graphene,
Solid State Communications **152**, 1390 (2012).

54. E. Rossi, J. H. Bardarson, M. S. Fuhrer, S. Das Sarma,
Universal conductance fluctuations in Dirac materials in the presence of long-range disorder,
Phys. Rev. Lett. **109**, 096801 (2012).

55. Qiuzi Li, E. H. Hwang, E. Rossi, S. Das Sarma,
Theory of 2D transport in graphene for correlated disorder,
Phys. Rev. Lett. **107**, 156601 (2011).

56. E. Rossi, S. Das Sarma,
Inhomogenous electronic structure, transport gap, and percolation threshold in disordered bilayer graphene,
Phys. Rev. Lett. **107**, 155502 (2011).

57. E. Rossi, J.H. Bardarson, P.W. Brouwer,
Klein Tunneling in Graphene p-n-p Junctions
ECS Trans. **35**, 271 (2011).

58. S. Das Sarma, S. Adam, E. H. Hwang and E. Rossi,
Electronic transport in two dimensional graphene,
Reviews of Modern Physics **83**, 407 (2011).

59. R. M. Lutchyn, E. Rossi, S. Das Sarma,
Spontaneous interlayer superfluidity in bilayer systems of cold polar molecules
Phys. Rev. A **82**, 061604 Rapid Communication (2010).

60. J.-P. Ismer, Ilya Eremin, E. Rossi, Dirk K. Morr, G. Blumberg,
Theory of Multiband Superconductivity in Spin-Density-Wave Metals,
Phys. Rev. Lett. **105**, 037003 (2010).

61. S. Das Sarma, E. H. Hwang, E. Rossi,
Theory of carrier transport in bilayer graphene
Phys. Rev. B **81**, 161407 Rapid Communication (2010).
Selected as Editor's suggestion.

62. E. Rossi, J.H. Bardarson, P.W. Brouwer, S. Das Sarma,
Signatures of Klein tunneling in disordered graphene p-n-p junctions,
Phys. Rev. B **81**, 121408 Rapid Communication (2010).
Selected as Editor's suggestion.

63. E. Rossi, D. K. Morr,
Vertex corrections of impurity scattering at a ferromagnetic quantum critical point,
Phys. Rev. B **81**, 054443 (2010).

64. E. H. Hwang, E. Rossi, S. Das Sarma,
Theory of thermopower in 2D graphene ,
Phys. Rev. B. **80**, 235415 (2009).

65. S. Adam, E. H. Hwang, E. Rossi, S. Das Sarma,
Theory of charged impurity scattering in two dimensional graphene,
Invited review for the graphene special issue of Solid State Communications,
Solid State Communications **149** 1072 (2009).

66. E. Rossi, S. Adam, S. Das Sarma,
Effective medium theory of disordered two-dimensional graphene,
Phys. Rev. B **79**, 245423 (2009).

67. E. Rossi, S. Das Sarma,
Ground-state of graphene in the presence of random charged impurities,
Phys. Rev. Lett. **101** 166803 (2008).

Featured in the 'Virtual Journal of Nanoscale Science & Technology', **18**, Issue 17, October 27, 2008.

68. R. H. Nyberg, E. Rossi, D. K. Morr,
Identifying Collective Modes in $d_{x^2-y^2}$-wave superconductors via Impurities,
Phys. Rev. B **78**, 054504 (2008).

69. J.-P. Ismer, I. Eremin, E. Rossi, Dirk K. Morr,
Dynamical spin susceptibility and the resonance peak in the electron-doped cuprate superconductors,
Phys. Rev. Lett. **99**, 047005 (2007).

70. U. Chatterjee, D. K. Morr, M. R. Norman, M. Randeria, A. Kanigel, M. Shi, E. Rossi, A. Kaminski, H. M. Fretwell, S. Rosenkranz, K. Kadowaki, J. C. Campuzano,
Dynamic Response Functions from Angle Resolved Photoemission Spectra,
Phys. Rev. B **75**, 172504 (2007).

71. E. Rossi, D. K. Morr,
Spatially dependent Kondo-effect in quantum corrals,
Phys. Rev. Lett. **97**, 236602 (2006).
Featured in the 'Virtual Journal of Nanoscale Science & Technology', **14**, Issue 25, December 8, 2006.

72. E. Rossi, A. S. Nunez, A. H. MacDonald,
Interlayer Transport in Bilayer Quantum Hall Systems,
Phys. Rev. Lett. **95**, 266804 (2005).

73. E. Rossi, O. G. Heinonen, A. H. MacDonald,
Dynamics of magnetization coupled to a thermal bath of elastic modes,
Phys. Rev. B, **72**, 174412 (2005).

74. Q. Q. Wang, A. Muller, P. Bianucci, E. Rossi, Q. K. Xue, T. Takagahara, C. Piermarocchi, A. H. MacDonald, C. K. Shih,
Decoherence processes during active manipulation of excitonic qubits in semiconductor quantum dots,
Phys. Rev. B, **72**, 035306 (2005).
Featured in the 'Virtual Journal of Nanoscale Science & Technology'. **12**, Issue 3, July 18, 2005.

75. A. A. Burkov, Y. N. Joglekar, E. Rossi, A. H. MacDonald,
Collective transport in bilayer quantum Hall systems,
Physica E **22**, 19 (2004).

76. A. H. MacDonald, A. A. Burkov, Y. N. Joglekar, E. Rossi,
Collective transport properties of bilayer-quantum-Hall excitonic condensates,
Physics of Semiconductors **171**, 29, (2003).

77. R. Fitzpatrick, E. Rossi, and E.P. Yu,
Improved evolution equations for magnetic island chains in toroidal pinch plasmas subject to externally applied resonant magnetic perturbations,
Physics of Plasmas **8** 4489 (2001).

78. R. Fitzpatrick and E. Rossi,
Control of tearing modes in toroidal fusion experiments using "designer" error-fields,
Physics of Plasmas **8**, 2760 (2001).

79. I. Furno, C. Angioni, F. Porcelli, H. Weisen, R. Behn, T.P. Goodman, M.A. Henderson, Z.A. Pietrzyk, A. Pochelon, H. Reimerdes, E. Rossi,
Understanding sawtooth activity during intense electron cyclotron heating experiments on TCV,
Nuclear Fusion **41** (4), 403, (2001).

80. F. Porcelli, A. Airoldi, C. Angioni, A. Bruschi, P. Buratti, F. Califano, S. Cirant, I. Furno, D. Grasso, E. Lazzaro, A.A. Martynov, M. Ottaviani, F. Pegoraro, G.Ramponi, E. Rossi, O. Sauter, C. Tebaldi, O. Tudisco,
Modeling of macroscopic magnetic islands in tokamaks,
Nuclear Fusion **41** (9), 1207, (2001).

81. F. Porcelli, C. Angioni, R. Behn, I. Furno, T. Goodman, M.A. Henderson, Z.A. Pietrzyk, A. Pochelon, H. Reimerdes, E. Rossi, O. Sauter,
Model for humpback relaxation oscillations,
Nuclear Fusion **40** (10), 1691, (2000).

82. A. Pochelon *et al.*,
Energy confinement and MHD activity in shaped TCV plasmas with localized electron cyclotron heating,
Nuclear Fusion **39** (11Y), 1807, (1999).

83. F. Porcelli, E. Rossi, G. Cima, and A. Wootton,
Macroscopic magnetic islands and plasma energy transport,
Phys. Rev. Lett. **82**, 1458, (1999).

Publications Under Review

84. Daniele Guerci, Enrico Rossi
Quantum Oscillations across Hole Crystallization in Rhombohedral Graphene
*Preprint arXiv: 2610.27134

INVITED TALKS

1. *Disorder-Induced Quasiparticle Poisoning of Majorana Qubits*
Microsoft Quantum Pioneer Forum, Santa Barbara, CA (March 2026).
2. *Quantum metric effects in two-dimensional superconductors*
Condensed Matter Seminar, Princeton University (February 2026).
3. *Quantum Geometry in Quantum Materials*
VCU (February 2026).
4. *How Quantum Geometry and Disorder Affect the Superfluid Weight of Superconductors*
Quantum Geometry and Moiré Materials Conference, University of Florida, Gainesville, FL, (November 2025).
5. *Interplay of Quantum Geometry and Inhomogeneities in Superconductors*
Geometry-Driven Quantum Phenomena: Principles, Devices, and Applications Workshop, Ohio State University, Columbus OH, (October 2025).
6. *Quantum Geometry and Vertex Corrections Contributions to Superfluid Stiffness*
The Conference of Condensed Matter Physics, Liyang China, (August 2025).
7. *Quantum geometry and superfluid states in 2D systems*
Joint 26th International Conference on Electronic Properties of 2D Systems & the 22nd International Conference on Modulated Semiconductor Structures, St. Louis MO, (July 2025).
8. *Tunable Josephson Diode Effect for Qubit Noise Shielding*
DOE-QIS Program, PI Meeting, Rockville MD, (July 2025).

9. *Quantum Metric and Superconductivity*
   Physics Colloquium, University of Tennessee, Knoxville TN, (April 2025).
10. *Quantum Metric and Superconductivity*
    Physics Colloquium, Howard University, Washington DC, (February 2025).
11. *Quantum Geometry and Transport in Cold Magnetized Plasmas*
    51st NRSM/URSI Meeting, Boulder CO (January 2025)
12. *Progress on Detecting Topological States in Novel Josephson Junctions*
    Progress on Realization of Topological States of Matter, Honolulu HI (December 2024)
13. *Exciton condensate in double twisted bilayer graphene*
    Kavli Institute for Theoretical Physics (KITP), Santa Barbara, CA (October 2024).
14. *Shapiro Steps and Microwave Tunable Diode Effect in Novel Josephson Junctions*
    SPIE Optics+Photonics-Spintronics XVII Conference (August 2024).
15. Anomalous Response of Novel Josephson Junctions Under Microwave Radiation: Implications for Topologically Protected Qubits,
    Lawrence Livermore National Lab, (March 2024)
16. *Leggett Modes in Superconducting Dirac Semimetals*
    Sandia National Lab (CA), (February 2024)
17. *Interplay of Quantum Metric and Disorder in 2D Superconductors*
    Kavli Institute for Theoretical Physics (KITP), Santa Barbara, CA (October 2023).
18. *Quantum Metric in 2D Superconductors and Exciton Condensates*
    Condensed Matter Seminar, University of California Irvine, Irvine, CA (October 2023).
19. *Quantum Metric and Superconductivity*
    Physics Colloquium, University of Indiana, Bloomington, IN, (September 2023).
20. *Anomalous Response of Novel Josephson Junctions Under Microwave Radiation*
    Condensed Matter Seminar, University of Indiana, Bloomington, IN, (September 2023).
21. *Quantum Metric in 2D Superconductors and Exciton Condensates* Microsoft Station Q, Santa Barbara, CA (August 2023).
22. *Quantum Metric and examples of its effect on physical observables*
    Aspen Center for Physics, Aspen, CO (July 2023).
23. *Quantum Metric and Correlated States in Two-dimensional Systems*
    Kavli Institute for Theoretical Physics (KITP), Santa Barbara, CA (May 2023).
24. *Leggett Modes in Dirac Semimetals*
    Center for Quantum Information Physics, New York University (January 2023)
25. *Quantum Metric and Superfluid States in Twisted Bilayer Graphene Systems*
    Condensed Matter Seminar, Stony Brook University (January 2023)
26. *Quantum Metric and Correlated States in Two-dimensional Systems*
    Physics **Colloquium**, University of Alabama (October 2022)
27. *Quantum Metric and Superfluid States in Twisted Bilayer Graphene Systems*
    Pioneering Symposium, Korean Physical Society (April 2022)
28. *Superconductivity and quantum metric in magic-angle twisted bilayer graphene*
    Condensed Matter Seminar, Georgia Tech (March 2021)
29. Effect of spin-orbit coupling and magnetic field on Josephson effect in Majorana nanowires
    Microsoft Theory Summit (September 2020)
30. *Superconductor-based heterostructures*
    ARO Program Division Review, Raleigh, NC, February 2020.

31. *Geometric and conventional contribution to superfluid weight in twisted bilayer graphene*
KITP program "Spin and heat transport in quantum and topological materials, Santa Barbara CA (December 2019).
32. *Superconductivity in higher order topological insulators and twisted bilayer graphene*
Colloquium, Physics Department, University of Nevada (November 2019).
33. *Impurity-Induced States in Majorana Superconductors Nanowires*
Microsoft Theory Summit (September 2019)
34. *Second order Dirac superconductors and superfluid weight in twisted bilayer graphene*
NORDITA workshop "Topological Quantum Matter", Stockholm, Sweden (August 2019).
35. *Superconducting van der Waals heterostructures*
Condensed Matter Seminar, Weizmann Institute, Rehovot, Israel (June 2019).
36. *Van der Waals heterostructures with spin-orbit coupling*
Condensed Matter Seminar, Technion, Haifa, Israel (June 2019).
37. *Van der Waals heterostructures with spin-orbit coupling*
Condensed Matter Seminar, Hebrew University of Jerusalem, Jerusalem, Israel (June 2019).
38. *Effects of electric fields and disorder on superconductor-semiconductor Majorana nanowires*
Condensed Matter Seminar, Scuola Normale di Pisa, Pisa, Italy (July 2018).
39. Effects of electric fields and disorder on superconductor-semiconductor Majorana nanowires
Condensed Matter Seminar, Polytechnic University of Turin, Turin, Italy (July 2018).
40. *Giant spin-orbit torque in graphene-topological insulator heterostructures*
The Electronic and Optical Properties for 2D and Dirac Materials, Conference, Jacksonville, Florida (December 2016).
41. *Spin-orbit coupling effects in 2D heterostructures and superconductors*
Condensed Matter Theory Seminar, Radboud University, Nijmegen, Netherlands (October 2016).
42. *Spin-orbit coupling effects in 2D heterostructures and superconductors*
Colloquium, Physics Department, University of Texas at Dallas, TX (September 2016).
43. *Spin Orbit effects in 2D*
Quantum Matter Symposium Virginia Tech, VA, (August 2016).
44. *2D transport theory*
First Annual 2D Materials Summer School, University of Minnesota, Minneapolis (MN) (June 2016).
45. *Two-dimensional heterostructures with spin-orbit coupling*
International Winter School on Electronic Properties of Novel Materials (IWEPNM2016), Kirchberg, Austria (February 2016).
46. *On the interplay of Interactions and disorder*
Condensed Matter Seminar, Indiana University (October 2015).
47. *From transistors to Majorana fermions: a brief history of the physics of interfaces*
Nordita, Stockholm, Sweden (August 2015).
48. *Two-dimensional heterostructures with spin-orbit coupling*
Physics of Interfaces and Layered Structures, Nordita, Stockholm, Sweden (August 2015).
49. *Dirac materials*
Physics Seminar, James Madison University, Harrisonburg, VA (October 2015).
50. *Kondo Effect in Dirac Materials and Yu-Shiba-Rusinov states in 2D superconductors with spin-orbit coupling*
Physical Sciences Symposia-2015, Boston MA (September 2015).

51. *Interplay of impurities and correlations in bilayer graphene and 2D superconductors with spin-orbit coupling*
Interaction effects in graphene and related materials workshop, San Sebastian, Spain (July 2015)
52. *Kondo effect in Weyl semimetals and impurity states in superconductors with spin orbit coupling*
Quantum Matter Seminar, Physics Department, University of Waterloo, Canada (May 2015).
53. *Kondo Effect and Non Fermi Liquid Behavior in Dirac Materials*
Quantum and Dirac Materials for Energy Applications Conference, Santa Fe NM (March 2015).
54. *Two-dimensional heterostructures with spin-orbit coupling*
Condensed Matter Seminar, Center for Complex Quantum Systems, Physics Department, University of Texas at Austin (March 2015).
55. *Effects of interactions and disorder in graphene heterostructures*
Physical Sciences Symposia-2013, Boston MA (September 2013).
56. *Chiral superfluid states in graphene heterostructures*
Colloquium at the School of Physics, Astronomy, and Computational Sciences at George Mason University (November 2012).
57. *Surprises in the electronic transport of graphene and bilayer graphene*
Condensed Matter & Nanophysics Seminar at the Physics Department at the University of Delaware, DE (September 2012).
58. *Graphene: how electrons move and interact in the ultimate flatland*
Colloquium at the Department of Physics at the University of Virginia, Charlottesville, VA (August 2012).
59. *Inhomogenous electronic structure and transport gap in disordered bilayer graphene*
4th International Conference on Smart Materials Structures and Systems (CIMTEC conference), Montecatini, Italy (June 2012).
60. *Electronic transport in graphene*
15th International Workshop on Computational Electronics (IWCE 2012), Madison WI (May 2012).
61. APS Invited Talk
Superfluidity in Bilayer Systems of Cold Polar Molecules
2011 APS Southeastern Section in Roanoke, VA (November 2011).
62. *Graphene: the ultimate flatland*
Applied Science Department, William and Mary, Williamsburg, VA (November 2011)
63. *Quantum motion of electrons and holes in the random puddle landscape of graphene*
Centre for the Physics of Materials Seminar, Physics Department, McGill University, Canada (May 2011).
64. APS Invited talk
Quantum motion of electrons and holes in the random puddle landscape of graphene
2011 APS March Meeting in Dallas, TX.
65. ECS Invited talk
Klein Tunneling in Graphene p-n-p junctions
219th Meeting of Electrochemical Society, Montreal CA (May 2011).
66. *Quantum transport in disordered graphene*
Colloquium at the Computational Materials Science Center at George Mason University, Fairfax, VA (April 2010).

67. *Spontaneous interlayer superfluidity in bilayer systems*
Condensed Matter Seminar at the Department of Physics&Astronomy at the University of Iowa, Iowa city, PA (March 2010).
68. *Transport of massless Dirac Fermions in disordered graphene*
Colloquium at the Department of Physics&Astronomy at the University of Iowa, Iowa city, PA (March 2010).
69. *Quantum transport in graphene: finding the missing "pi"*
Colloquium at the Department of Physics, College of William & Mary, Williamsburg, VA (February 2010).
70. *Quantum transport in graphene: finding the missing "pi"*
Colloquium at the Department of Physics&Astronomy at the University of Pittsburgh, Pittsburgh, PA (January 2010).
71. *Klein tunneling in p-n-p graphene junctions*
Nanoelectronics Research Initiative annual review, Gaithersburg, MD (October 2009).
72. *Signatures of Klein tunneling in disordered graphene p-n-p junctions*
CMTC symposium, University of Maryland, College Park, MD (September 2009).
73. *Disorder and quantum transport in graphene*
Condensed Matter Seminar, Texas A&M University (September 2009)
74. *Klein tunneling in disordered graphene p-n-p junctions*
Condensed Matter Seminar, University of Texas at Austin (September 2009)
75. *Disorder and quantum transport in graphene*
SouthWest Academy of Nanoelectronics Annual review (September 2009).
76. *Theory of thermopower in 2D graphene*
Invited talk at the Scuola Normale Superiore, Pisa, Italy (June 2009).
77. APS Invited talk
Ground-state of Two-dimensional Graphene in the Presence of Random Charged Impurities, 2009 March Meeting in Pittsburgh, PA.
78. *Graphene: massless electrons in the ultimate flatland*
Colloquium at the Department of Physics at Virginia Tech, Blacksburg, VA (February 2009).
79. *Electronic structure and transport of disordered graphene*
Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD (November 2008).
80. *Graphene: massless electrons in flatland*
Colloquium at the University of Chile, Santiago, Chile (October 2008).
81. *Effective medium theory of disordered two-dimensional graphene*
CMTC symposium, University of Maryland, College Park, MD (October 2008).
82. *Pseudospintronics*
NRI-SRC Annual review, Santa Clara, CA (November 2007).
83. *Impurity-Induced States in 2DEG and d-wave superconductors*
CMTC symposium, University of Maryland, College Park, MD (September 2007).
84. *Neutron resonance in electron-doped cuprates*
Aspen Center for Physics, CO, Novel Aspects of Superconductivity program, (August 2007).
85. *Kondo Effect in Nanostructures*
Argonne National Laboratory, IL (May 2007)
86. *Spatially dependent Kondo-effect in quantum corrals*
University of Illinois at Chicago, Chicago, IL (February 2006).

87. *Effect of Disorder and Thermal Fluctuations on the Transport properties of Quantum Hall Bilayers*
University of Illinois at Chicago, Chicago, IL (February 2005).