

ELIO J. KÖNIG

Curriculum Vitae - December 23, 2023

PERSONAL AND CONTACT INFORMATION

Full name: Elio Johannes König-Tarasevich,
Date and place of birth: January 31st, 1985
in Karlsruhe, Germany
Sex: male
Marital status: married
Citizenship: German
Fluent in German, Italian, English, French, Russian

Max-Planck-Institute
for Solid State Research
Heisenbergstraße 1
70569 Stuttgart
Germany
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eliokoenig.weebly.com

RESEARCH INTERESTS

Theoretical condensed matter physics with an emphasis on transport and quantum materials, emergent complex order, highly entangled states of matter, and quantum criticality in disordered, correlated, and topological systems.

Quantum information theory and quantum sensing applied to solid state physics.

Recent focus: Topological Qbits, quantum spin liquids, fractionalization, unconventional superconductivity, twistronics, Weyl semimetals, linear and non-linear optical and electronic responses in Berry curved materials.

EMPLOYMENT HISTORY

Aug. 15th, 2020 – present

Research group leader

topics: strongly correlated quantum materials, condensed matter theory for quantum information science

Dept. for Quantum Many-Body Theory,
Max-Planck-Institute for Solid State Research,
Stuttgart, Germany
(Dept. head: Walter Metzner)

Feb. 21st, 2017 – July 31st, 2020

Postdoctoral researcher

topics: iron-based superconductors, magic-angle semimetals, spinor Bose gases

Department of Physics and Astronomy,
Rutgers University, Piscataway (NJ) USA
(supervisor: Piers Coleman)

Sep. 1st, 2015 – Feb. 20th, 2017

Research Associate

topics: anomalous quantum transport and optics

Physics Department, University of
Wisconsin-Madison, Madison (WI) USA
(supervisor: Alex Levchenko)

July 1st, 2011 – Aug. 31st, 2015

PhD student (later: research staff)

topics: Anderson localization, topological insulators, disordered superconductors

Institute for Condensed Matter Theory,
and Institute for Nanotechnology, Karlsruhe
Institute of Technology, Germany
(supervisor: Alexander D. Mirlin)

ACADEMIC EDUCATION

July 1st, 2011 – July 14th, 2014	PhD in physics Karlsruhe Institute of Technology (KIT), Germany <i>Supervisor:</i> Prof. Alexander D. Mirlin <i>Thesis title:</i> Interaction and disorder effects in topological insulators
Oct 1st, 2005 – June 14th, 2011	Diplom in physics Karlsruhe Institute of Technology (KIT), Germany <i>Thesis advisor:</i> Prof. Alexander D. Mirlin <i>Thesis title:</i> Metal-Insulator Transition in 2D Disordered Bipartite Systems
Apr. 1st, 2007 – Dec. 7th, 2010	Studium generale Karlsruhe Institute of Technology (KIT), Germany
Sep 1st, 2008 – Aug. 31st, 2009	Erasmus exchange student Università di Bologna, Italy

PUBLICATIONS

google scholar: [Elio König](#) (738 citations, h-index 15), ResearcherID: [N-1375-2018](#) (495 citations, h-index 14).

Preprints

46. “Topological quantum criticality from multiplicative topological phases”
R. Flores-Calderon, E.J. König, A.M. Cook
arXiv:2311.17799 (2023).
45. “Emulating moiré materials with quasiperiodic circuit quantum electrodynamics”
T. Herrig, C. Koliofoti, J. H. Pixley, E. J. König, R.-P. Riwar,
arXiv:2310.15103 (2023).
44. “Topological Quantum Computation on a Chiral Kondo Chain”
T. Ren, E.J. König, A.M. Tsvelik,
arXiv:2309.03010 (2023).
43. “ \mathbb{Z}_N lattice gauge theories with matter fields”
K. Roy, E.J. König,
arXiv:2308.13083 (2023).
42. “Type-II heavy Fermi liquids and the magnetic memory of 4Hb-TaS₂”
E.J. König
arXiv:2306.07871 (2023).
41. “Triplet pairing, orbital selectivity and correlations in Iron-based superconductors”
Y. Komijani, E.J. Koenig, P. Coleman,
arXiv:2302.09702 (2023).

Peer-reviewed publications

40. “Mott insulators with boundary zeros”
N. Wagner, L. Crippa, A. Amaricci, P. Hansmann, M. Klett, E.J. König,

- T. Schäfer, D. Di Sante, J. Cano, A. Millis, A. Georges, G. Sangiovanni, Nat. Comm. 14, 7531 (2023).
39. “Quasiperiodic circuit quantum electrodynamics.”
T. Herrig, J.H. Pixley, E.J. König, R.P. Riwar, npj Quantum Information 9, 116 (2023).
 38. “Lifshitz transition in the phase diagram of two-leg t-J ladder systems at low filling.”
S. Bollmann, A. Osterkorn, E. J. König, S. R. Manmana, Phys. Rev. B 108 (15), 155148 (2023).
 37. “Drag resistance mediated by quantum spin liquids.”
R. Mazzilli, A. Levchenko, E. J. König, Physical Review B 108 (1), 014425 (2023). [Editor’s suggestion]
 36. “Fluctuation-driven excess noise near superconducting phase transition”
J. Kwak, E. Pellett, E.J. König, A. Levchenko, Annals of Physics, 169307 (2023).
 35. “Exact solution of the topological symplectic Kondo problem.”
E.J. König, A.M. Tsvelik, Annals of Physics, 169231 (2023).
 34. “Topological symplectic Kondo effect.”
Guangjie Li, E.J. König*, J.I. Väyrynen*, Phys. Rev. B 107, L201401 (2023).
 33. “The low energy excitation spectrum of magic-angle semimetals.”
Jinjing Yi, E.J. König, J. H. Pixley, Physical Review B 106, 195123 (2022).
 32. “Interplay of charge and spin fluctuations in a Hund’s coupled impurity”
V. Drouin-Touchette, E. J. König, Y. Komijani, P. Coleman, Phys. Rev. Research 4, L042011 (2022).
 31. “Topologically enabled superconductivity.”
M. A Rampp, E. J. König, J. Schmalian, Phys. Rev. Lett. 129, 077001 (2022).
 30. “Interaction-induced velocity renormalization in magic-angle twisted multilayer graphene”
L. Classen, J. H. Pixley, E. J. König, 2D Materials 9 (3), 031001 (2022).
 29. “Berry curvature-induced local spin polarisation in gated graphene/WTe heterostructures.”
L. Powalla, J. Kiemle, E.J. König, A. P. Schnyder, J. Knolle, K. Kern, A. Holleitner, C. Kastl, M. Burghard, Nature Communications 13, 3152 (2022).
 28. “Triplet resonating valence bond theory and transition metal chalcogenides”
E. J. König, Y. Komijani, P. Coleman, Physical Review B 105, 075142 (2022).
 27. “Resistance of 2D superconducting films.”
E.J. König, I.V. Protopopov, A. Levchenko, I.V. Gornyi, A.D. Mirlin, Phys. Rev. B 104, L100507 (2021).
 26. “Frustrated Kondo impurity triad: A toy model of deconfinement.”
E.J. König, P. Coleman, Y. Komijani, Phys. Rev. B 104, 115103 (2021) [Editor’s suggestion].
 25. “Quantum kinetics of anomalous and nonlinear Hall effects in topological semimetals.”
E.J. König, A. Levchenko, Annals of Physics 435, 168492 (2021).
 24. “Emergent moments in a Hund’s impurity.”

- V. Drouin-Touchette, E.J. König, Y. Komijani, P. Coleman,
Physical Review B 103, 205147 (2021).
23. “Visualizing the multifractal wavefunctions of a disordered two-dimensional electron gas.”
B. Jäck, F. Zinser, E. J. König, S. N. P. Wissing, A. B. Schmidt, M. Donath,
K. Kern, C. R. Ast,
Phys. Rev. Research 3, 013022 (2021).
 22. “Tunneling spectroscopy of quantum spin liquids.”
E.J. König, M.T. Randeria, B. Jäck,
Phys. Rev. Lett. 125, 267206 (2020).
 21. “Spin magnetometry as a probe of stripe superconductivity in twisted bilayer graphene.”
E.J. König, P. Coleman, A.M. Tsvelik,
Phys. Rev. B 102, 104514 (2020).
 20. “Soluble limit and criticality of fermions in Z2 gauge theories.”
E.J. König, P. Coleman, A.M. Tsvelik,
Phys. Rev. B 102, 155143 (2020).
 19. “Magic-angle semimetals.”
Y. Fu*, E. J. König*, J. H. Wilson*, Y. Z. Chou, J. H. Pixley,
npj Quantum Materials 5, 71 (2020).
 18. “The triplet resonating valence bond state and superconductivity in Hund’s metals.”
P. Coleman*, Y. Komijani*, E. J. König*,
Phys. Rev. Lett. 125, 077001 (2020).
 17. “Magic-angle semimetals with Chiral Symmetry.”
Y. Z. Chou, Y. Fu, J. H. Wilson, E. J. König, J. H. Pixley,
Phys. Rev. B 101 (23), 235121 (2020) [Editor’s suggestion].
 16. “Strongly interacting spin-orbit coupled Bose-Einstein condensates in one dimension.”
S. Saha, E. J. König, J. Lee, J. H. Pixley,
Phys. Rev. Research 2, 013252 (2020).
 15. “Crystalline symmetry protected helical Majorana modes in the iron pnictides.”
E. J. König, P. Coleman,
Phys. Rev. Lett. 122, 207001 (2019).
 14. “Engineering Topological Superlattices and Phase Diagrams.”
P. P. Shibayev*, E. J. König*, M. Salehi, J. Moon, M. G. Han, S. Oh,
Nano Letters 19, 716-721 (2019).
 13. “Gyrotropic Hall effect in Berry-curved materials.”
E. J. König, M. Dzero, A. Levchenko and D. A. Pesin,
Phys. Rev. B 99, 155404 (2019).
 12. “The Coulomb problem in iron based superconductors.”
E. J. König and P. Coleman,
Phys. Rev. B 99, 144522 (2019).
 11. “Renormalization group analysis for the quasi-1D superconductor BaFe₂S₃.”
E. J. König, A. M. Tsvelik and P. Coleman,
Phys. Rev. B 98, 184517 (2018).
 10. “Quantum field theory of nematic transitions in spin orbit coupled spin-1 polar bosons.”
E. J. König and J. H. Pixley,
Phys. Rev. Lett. 121, 083402 (2018).
 9. “Photogalvanic effect in Weyl semimetals.”
E. J. König, H.-Y. Xie, D. A. Pesin, and A. Levchenko,
Phys. Rev. B 96, 075123 (2017).

8. “Kerr effect from diffractive skew-scattering in chiral $p_x \pm ip_y$ superconductors.”
E. J. König and A. Levchenko,
Phys. Rev. Lett. 118, 027001 (2017).
7. “Anomalous Hall Effect on the surface of topological Kondo insulators”
E. J. König, P. M. Ostrovsky, M. Dzero, A. Levchenko,
Phys. Rev. B 94, 041403 (R) (2016).
6. “Universal fidelity near quantum and topological phase transitions in finite 1D systems”
E. J. König, A. Levchenko, N. Sedlmayr,
Phys. Rev. B 93, 235160 (2016).
5. “Berezinskii-Kosterlitz-Thouless transition in homogeneously disordered superconducting films”
E. J. König, A. Levchenko, I. V. Protopopov, I. V. Gornyi, I. S. Burmistrov,
and A. D. Mirlin,
Phys. Rev. B 92, 214503 (2015) [Editor’s suggestion].
4. “Half-integer quantum Hall effect of disordered Dirac fermions at a topological insulator surface”
E. J. König, P. M. Ostrovsky, I. V. Protopopov, I. V. Gornyi, I. S. Burmistrov,
and A. D. Mirlin,
Phys. Rev. B 90, 165435 (2014).
3. “Density of states in a two-dimensional chiral metal with vacancies”
P. M. Ostrovsky, I. V. Protopopov, E.J. König, I. V. Gornyi, A. D. Mirlin,
and M. A. Skvortsov,
Phys. Rev. Lett. 113, 186803 (2014).
2. “Interaction and disorder effects in 3D topological insulator thin films”,
E. J. König, P. M. Ostrovsky, I. V. Protopopov, I. V. Gornyi, I. S. Burmistrov,
and A. D. Mirlin,
Phys. Rev. B 88, 035106 (2013).
1. “Metal-insulator transition in two-dimensional random fermion systems of chiral symmetry classes”
E. J. König, P. M. Ostrovsky, I. V. Protopopov, and A. D. Mirlin,
Phys. Rev. B 85, 195130 (2012).

Theses

- “Interaction and disorder effects in topological insulators”
E. J. König, PhD Thesis at KIT, Germany (2014).
Supervisor: A. D. Mirlin.
- “Metal-Insulator Transition in 2D Disordered Bipartite Systems”,
E. J. König, Diploma Thesis at KIT, Germany (2011).
Supervisor: A. D. Mirlin

[*equally contributing coauthors]

AWARDS, HONORS, SCHOLARSHIPS, GRANTS

2023	ICAM Support for workshop on strange metals, Bad Honnef (jointly organized with Q. Si, C. Pépin, \$10000)
2022	ICAM Support for theory conference at MPI FKF Stuttgart (jointly organized with L. Classen, Th. Schäfer, \$20000)
2021	ICAM Support for theory conference at MPI FKF Stuttgart (jointly organized with Th. Schäfer, \$20000)

2018 ICAM QuantEmX junior travel award (\$ 2500)
2014 PhD awarded *summa cum laude*
2012 Deutscher Akademischer Austauschdienst (short travel award, 2000 €)
2011 Diplom final grade *1.0 with distinction*
2008-2009 Erasmus (exchange student scholarship, 3000 €)
2004 Abitur final grade *1.0*

REFERENCES

Piers Coleman Materials Theory Group, Dept. of Physics and Astronomy
Rutgers University
136 Frelinghuysen Road
Piscataway, NJ 08854, USA
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5324 Chamberlin Hall
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1150 University Avenue
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Upton, NY 11973-5000, USA
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SERVICE TO THE SCIENTIFIC COMMUNITY

Conference Organization

2023	“Strange Metals in Quantum Materials and Quantum Emulators”, Physikzentrum Bad Honnef (Germany) (jointly with Q. Si and C. Pépin)
2023	“Condensed Matter in the City 2023”, UCL (student coordinator within larger organizing committee).
2023	“Correlations in Novel Quantum Materials 2023”, MPI FKF Stuttgart (jointly with L. Classen and Th. Schäfer).
2022	“Correlations in Novel Quantum Materials 2022”, MPI FKF Stuttgart (jointly with Th. Schäfer).
2021	“Correlations in Novel Quantum Materials 2021”, MPI FKF Stuttgart (on Zoom, jointly with Th. Schäfer).

Refereeing

2021-	Nature Physics
2021-	Science
2019-	Nature Communications
2017-	Physical Review Letters
2016-	Physical Review B

Grant Reviews

2023-	von Humboldt foundation
2023-	Isreal Science foundation
2023-	Department of Energy

SUPERVISION OF STUDENTS

2022-2023	Dhruv Tiwari [Master student, 1 joint paper in preparation]
2022-2023	Kaustubh Roy [Research intern, undergraduate student at IISc Bangalore, 1 preprint]
2021-	Steffen Bollmann [PhD student, 1 joint publication, 2 joint papers in preparation]
2021-	Raffaele Mazzilli [PhD student, 1 joint publication]

CO-SUPERVISION OF GRADUATE STUDENTS & PhD COMMITTEE WORK

2021-	Guangjie Li [w. J. Väyrynen, 1 joint preprint]
2021-2022	Michael Rampp [w J. Schmalian, 1 joint publication, official Master thesis co-supervisor]
2019-	Jinjing Yi [w J. Pixley, 1 joint preprint]
2018-2022	Victor Drouin-Touchette [w P. Coleman, 2 joint publications]
2018-2020	Yixing Fu [w J. Pixley, 2 joint publications]
2018-2019	Siddhartha Saha [w J. Pixley, 1 joint publication]
2023	Andrea Blason [External committee member, PhD defense @ SISSA, Trieste, Italy.]

TEACHING EXPERIENCE

Standard curriculum course

University Stuttgart

Spring term '23	Solid State Theory (together with Dr. Th. Schäfer)
Spring term '22	Solid State Theory (together with Dr. Th. Schäfer)

Specialized lecture courses

Max-Planck-Institute for Solid State Research

Spring '22	(Symmetry protected) topological order (<i>4 lectures</i>)
Spring term '21	Field Theories of Disordered Condensed Matter Systems (<i>10 lectures</i>)

Teaching of selected lectures within a course

University of Wisconsin-Madison

Spring term '16	Statistical Mechanics (in substitution of A. Levchenko)
Spring term '16	Classical Mechanics (in substitution of A. Levchenko)

Karlsruhe Institute of Technology

Summer semester '14	Condensed matter theory II (field theory) (in substitution of A.D. Mirlin)
Summer semester '13	Condensed matter theory II (field theory) (in substitution of A.D. Mirlin)

Organization of assignments and supervision of an exercise class (German "Übungsleiter")

Karlsruhe Institute of Technology

Winter semester '14/15	Condensed matter theory I (jointly with N. Kainaris and I.V. Gornyi)
Summer semester '13	Condensed matter theory II (jointly with U. Briskot and I.V. Protopopov)

Teaching assistant (German "Tutor")

Karlsruhe Institute of Technology

Winter semester '13/'14	Modern theoretical physics II (Quantum mechanics II)
Winter semester '12/'13	Classical theoretical physics III (Electromagnetism)
Winter semester '11/'12	Classical physics I (Solid state physics)
Winter semester '10/'11	Classical theoretical physics I (Analytical Mechanics I)

ADDITIONAL PROFESSIONAL EXPERIENCE

Extended research visits

2018	MPI CPfS Dresden (2 weeks)
2015-2016	Long term visitor at Michigan State University (East-Lansing) and University of Michigan (Ann Arbor)
2012	Landau Institute, Moscow, Russia (6 weeks)

Internship

2005	Institut für Meteorologie und Klimaforschung, Forschungszentrum Karlsruhe, Germany (1 month)
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Community Service

2004-2005	School for physically disabled children Langensteinbach, Germany
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INVITED SEMINAR, SUMMER SCHOOL & CONFERENCE TALKS

Dec 22nd, 2023	Condensed Matter Theory Seminar, Technical University Munich, Germany, “Sandwiches and Mille-Feuilles involving 2D quantum spin liquids: transport and correlation effects”
Nov 27th, 2023	Condensed Matter Theory Seminar, University of Göttingen, Germany, “Strong quantum fluctuations in triplet superconductors”,
Nov 15th, 2023	Ringberg Symposium “Exotic States Of Quantum Condensed Matter”, Ringberg, Germany, “Sandwiches and Mille-Feuilles involving 2D quantum spin liquids: transport and correlation effects”
Oct 31st, 2023	Condensed Matter Theory Seminar, Niels Bohr Institute, Copenhagen, Denmark, “Sandwiches and Mille-Feuilles involving 2D quantum spin liquids: transport and correlation effects”
Sep 12th, 2023	Korrelationstage 2023, Dresden, Germany, “Heterostructures of 2D quantum spin liquids: transport and correlation effects”
May 16th, 2023	Condensed Matter Theory Seminar, University Geneva, Switzerland, “Heterostructures of 2D quantum spin liquids: transport and correlation effects”
April 27th, 2023	Condensed Matter Theory Seminar, University Regensburg, Germany, “Strong quantum fluctuations in triplet superconductors”
April 19, 2023	Condensed Matter Theory Seminar, University of Cincinnati (OH), USA, “Symplectic Topological Kondo effect.”
March 23, 2023	Seminar at KITP visitor’s program, Santa Barbara (CA), USA, “Symplectic Topological Kondo effect.”
March 13, 2023	Condensed Matter Theory Seminar, Tel Aviv University, Israel, “Symplectic Topological Kondo effect.”
Feb. 7th, 2023	Colloquium, University of Houston (TX), USA, “Emergence of Quantum Order”
Feb. 2nd, 2023	Condensed Matter Theory Seminar, University of Wisconsin-Madison, USA, “Emergence of Quantum Order”
Dec. 15th, 2022	Condensed Matter Theory Seminar, Ruhr University Bochum, Germany, “Strong quantum fluctuations in triplet superconductors”
Dec. 8th, 2022	Scientific talk in occasion of the director’s board meeting, Max-Planck-Institute for Solid State Research, Stuttgart, Germany, “Emergence of Quantum Order”
Dec. 1st, 2022	Condensed Matter Theory Seminar, Max-Planck-Institute for the Physics of Complex Systems, Dresden, Germany, “Symplectic Topological Kondo effect.”
Nov. 18th, 2022	Internal conference of the Max-Planck-Institute for Solid State Research, Ringberg, Germany, “Symplectic Topological Kondo effect.”
Nov. 8th, 2022	Condensed Matter Theory seminar, University of Luxembourg,

Nov. 3rd, 2022 “Symplectic Topological Kondo effect.”
International conference on “frontiers in physics of disordered and interacting quantum systems”, Karlsruhe Germany,

July 18th, 2022 “Symplectic Topological Kondo effect.”
Seminar, Imperial College, London, UK,

July 11th, 2022 “Quantum Materials: Topology and Entanglement”
Condensed Matter Theory seminar, U Leipzig, Germany

June 13-17th, 2022 “Entanglement and topology in triplet superconductors”
International conference “Condensed Matter in the City 2022”, London, UK

June 7th, 2022 “Topological order and quantum materials”
“Entanglement and topology in triplet superconductors”
Summer school of SFB 1143 “Correlated Magnetism: From Frustration to Topology”, Klingenberg, Germany

May 12th, 2022 “Topological Order and Quantum Materials”
Asian-European workshop on “SU(N) physics in condensed matter and cold atoms” (Kyoto/Zoom)

May 6th, 2022 “Quantum order in SU(N) impurity models”
FruMag colloquium and Theoretical Physics Seminar, TU Dresden, Germany

Jan. 26th, 2022 “Detecting and destroying quantum spin liquids with metallic leads”
Theoretical Physics Seminar, University of Manchester, UK

Dec. 17th, 2021 “Topological (non-)linear transport and optics.”
Condensed Matter Theory Seminar, LMU Munich, Germany

Nov. 22nd, 2021 “Detecting and destroying quantum spin liquids with metallic leads”
Internal conference of the Max-Planck-Institute for Solid State Research, Ringberg, Germany

Oct. 7th, 2021 “Interaction induced velocity renormalization in magic-angle twisted trilayer graphene”
Young researchers workshop: Topology in modern condensed matter physics and beyond, TU Munich, Germany

Sep. 14th, 2021 “Topological non-linear transport and optics”
Summer School: Emergent Phenomena in Quantum Many-Body Systems, SPICE (University Mainz), Germany

Apr. 26th, 2021 “Topological Order and Quantum Materials”
Condensed matter theory seminar, TU Munich, Germany

Dec. 17th, 2020 “Frustration and superconductivity in three orbital models”
Condensed matter theory seminar, Karlsruhe Institute of Technology, Germany

Dec. 15th, 2020 “Soluble limit and criticality of fermions in Z2 gauge theories”
Condensed Matter Physics seminar, University Lublin, Poland

Apr. 10th, 2020 “Magic-angle Semimetals”
Landau Institute for Theoretical Physics, Chernogolovka, Russia

Feb. 21st, 2020 “Soluble limit and criticality of fermions in Z2 gauge theories”
Harvard Quantum Initiative Seminar, Harvard University, USA

Jan. 26th, 2020 “Magic-angle Semimetals”
Condensed Matter Seminar, Technion, Haifa, Israel

“Macroscopic entanglement in strongly correlated superconductors”

Jan. 22nd, 2020 Condensed Matter Seminar, Ben Gurion University, Be'er Sheva, Israel
“Macroscopic entanglement in strongly correlated superconductors”

Jan. 21st, 2020 Condensed Matter Seminar, Hebrew University, Jerusalem, Israel
“Macroscopic entanglement in strongly correlated superconductors”

Jan. 19th, 2020 Condensed Matter Seminar, Weizmann Institute, Rehovot, Israel
“Macroscopic entanglement in strongly correlated superconductors”

Jan. 16th, 2020 Condensed Matter Seminar, Tel Aviv University, Israel
“Macroscopic entanglement in strongly correlated superconductors”

Sep. 30th, 2019 Condensed Matter Seminar, Kent State University, USA
“Magic-angle Semimetals”

Sep. 26th, 2019 Symposium on “theory of novel materials”, MPI-FKF Stuttgart, Germany
“Magic-angle Semimetals”

Mar. 21st, 2019 Condensed matter theory seminar, Karlsruhe Institute of Technology, Germany
“Magic-angle semimetals”

Dec. 19th, 2018 Condensed matter theory seminar, ETH Zurich, Switzerland
“Magic-angle semimetals”

June 14th, 2018 Quantum optics and statistics theory seminar, University Freiburg, Germany
“Quantum field theory of nematic transitions in spin orbit coupled spin-1 polar bosons”

June 12th, 2018 Condensed matter theory seminar of the Max-Planck institute for solid state research, Stuttgart, Germany
“Anomalous transport in topological materials”

June 6th, 2018 Condensed matter theory seminar, Free University of Berlin, Germany
“Quantum field theory of nematic transitions in spin orbit coupled spin-1 polar bosons”

May 24th, 2018 Theory seminar of the BEC center, University of Trento, Italy
“Quantum field theory of nematic transitions in spin orbit coupled spin-1 polar bosons”

May 18th, 2018 Condensed matter theory seminar, University of Cologne, Germany
“Quantum field theory of nematic transitions in spin orbit coupled spin-1 polar bosons”

May 14th, 2018 Theory seminar, University of Wuerzburg, Germany
“Anomalous transport in topological materials”

May 4th, 2018 Special LASSP theory seminar, Cornell University, Ithaca, USA
“Quantum field theory of nematic transitions in spin orbit coupled spin-1 polar bosons”

Apr. 26th, 2018 R.G. Herb Condensed matter seminar, University of Wisconsin-Madison, USA
“Quantum field theory of nematic transitions in spin orbit coupled spin-1 polar bosons”

Mar. 2nd, 2017 Condensed matter seminar, University of Iowa, USA

- Nov. 9th 2016 “Vortices in dirty superconducting films”
Condensed matter theory seminar, University Leiden, Netherlands
“Anomalous Hall effect in topological insulators and superconductors”
- Sep. 20th, 2016 Condensed matter theory seminar, University Basel, Switzerland
“Anomalous Hall effect in topological insulators and superconductors”
- June 24th, 2016 Condensed matter theory seminar, University of Cologne, Germany
“Anomalous Hall effect in topological insulators and superconductors”
- Feb. 26th, 2016 Seminar of the computational condensed matter group, University of Michigan, USA
“Universal fidelity near quantum and topological phase transitions in finite 1D systems”
- Dec. 10th, 2014 Seminar in the department of Quantum Mesoscopics, Landau institute for theoretical physics, Chernogolovka, Russia
“Half-integer quantum Hall effect of disordered Dirac fermions at a topological insulator surface”
- July 2nd, 2014 Hard Condensed Matter Theory Seminar, University Mainz, Germany
“Disordered surfaces of 3D topological insulators: interactions and/or strong magnetic field”
- Nov 2013 Condensed matter seminar of CEA and CNRS, Grenoble, France
“Half-integer quantum Hall effect of a single disordered Dirac fermion”
- May 14th, 2013 Mesoscopic physics seminar, University Wuerzburg, Germany,
“Interaction and disorder effects in 3D topological insulators”
- July 25th, 2012 Condensed matter theory seminar of the Max-Planck institute for solid state research, Stuttgart, Germany
“Interaction and disorder effects in 3D topological insulator thin films”
- Oct. 8th, 2012 BMBF Workshop “Topological Materials for Nanoelectronics”, MPI-FKF Stuttgart
“Interaction and disorder effects in topological insulator thin films”
- June 7th, 2012 Condensed matter seminar of the Landau institute for theoretical physics held at the Kapitsa institute for physical problems, Moscow, “Interaction and disorder effects in 3D topological insulator thin films”
- Mar. 21st, 2012 Interdisciplinary Workshop on Topogical States of Matter, Freiburg
“Metal-insulator transition in 2D random fermion systems of chiral symmetry classes”
- Mar. 2nd, 2012 Seminar in the department of Quantum Mesoscopics, Landau institute for theoretical physics, Chernogolovka, Russia
“Metal-insulator transition in 2D random fermion systems of chiral symmetry classes”

CONFERENCE CONTRIBUTIONS

Talks

- Mar. 17th, 2022 APS March Meeting, Chicago (IL)
“Interaction induced velocity renormalization in magic-angle twisted trilayer graphene”
- Apr. 16th, 2021 Korrelationstage 2021, MPI PKS Dresden (*virtual conference*)
“Detecting and destroying quantum spin liquids with metallic leads”
- Mar. 15th, 2021 March meeting of the American Physical Society (*virtual conference*)
“Tunneling spectroscopy of quantum spin liquids”
- Aug. 16th, 2019 Workshop on “Quantum Criticality and Topology in Correlated Electron Systems” at MPI PKS Dresden, Germany.
“Spin-orbit coupled spin-1 polar bosons”
- Aug. 6th, 2019 Workshop on “Quantum Criticality and Topology in Correlated Electron Systems” at MPI PKS Dresden, Germany.
“Crystalline symmetry protected helical Majorana modes in the iron pnictides”
- Mar. 6th, 2019 March meeting of the American Physical Society, Boston, USA.
“Mixed phase of iron based Dirac superconductors.”
- Mar. 5th, 2018 March meeting of the American Physical Society, Los Angeles, USA.
“L.S pairing for the iron based superconductors.”
- Mar. 13th, 2017 March meeting of the American Physical Society, New Orleans, USA.
“Kerr effect from diffractive skew scattering in chiral px+ipy superconductors”
- Mar. 15th, 2016 March meeting of the American Physical Society, Baltimore, USA.
“Anomalous Hall Effect on the surface of topological Kondo insulators”
- Mar. 28th, 2012 Spring meeting of the German Physical Society, Berlin, Germany.
“Interaction and disorder effects in 3D topological insulator thin films”
- Mar. 17th, 2011 Spring meeting of the German Physical Society, Dresden, Germany.
“Metal-insulator transition in 2D disordered bipartite systems”

Posters

- Dec. 4th-8th, 2023 ICTP workshop on fractionalization and gauge theories
“Interplay of Gauge Fields and Matter”, Trieste, Italy.
- Aug. 6th-10th, 2018 ICTP workshop on correlations in Electron systems
“Orbital physics in low-dimensional Fe-based superconductors”, Trieste, Italy.
- Jan. 14th-20th, 2018 Aspen winter conference “High temperature superconductivity”, USA.
“Orbital physics in low-dimensional Fe-based superconductors”
- July, 17th-21th, 2017 SCES 2017 Prague, Czech Republic.
“Orbital physics in low-dimensional Fe-based superconductors”
- Feb. 15th-21st, 2016 Aspen winter conference “Topological Quantum Matter”, USA
“Universal fidelity near quantum and topological phase transitions in finite 1D systems”, and “Anomalous Hall Effect on the surface of topological Kondo insulators”

- Jan. 12th-15th, 2015 International Workshop on “Non-equilibrium Dynamics of Low-dimensional Electronic Systems”, Leipzig, Germany.
“Disordered surfaces of 3D topological insulators: interactions and/or strong magnetic field”
- Mar. 11th-14th, 2013 International Workshop on “Recent Progress and Perspectives in Scaling, Multifractality, Interactions, and Topological Effects Near Anderson Transitions”, Dresden, Germany.
“Disordered surfaces of 3D topological insulators: interactions and/or strong magnetic field”
- Sep. 16th-20th, 2013 International Workshop on “Topology and Nonequilibrium in Low-Dimensional Electronic Systems”, Dresden, Germany.
“Interaction and disorder effects in 3D topological insulator thin films”
- July 8th -Aug. 2nd, 2013 “Boulder summer school”, Boulder, USA.
“Interaction and disorder effects in 3D topological insulator thin films”
- June 23rd-29th, 2012 “NanoPeter”, St. Petersburg, Russia.
“Interaction and disorder effects in 3D topological insulator thin films”
- June 17th-23rd, 2012 “Meso2012”, Chernogolovka, Russia.
“Interaction and disorder effects in 3D topological insulator thin films”
- Mar. 31st-Apr.3rd, 2012 “Electronic correlations and disorder in quantum matter”, Karlsruhe, Germany.
“Interaction and disorder effects in 3D topological insulator thin films”
- Sep. 11th-14th, 2011 “CFN summer school on Nanoelectronics”, Bad Herrenalb, Germany.
“Metal-insulator transition in 2D disordered bipartite systems”