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Research Appointments

2017 – present Assistant Professor, *Institute of Science and Technology (IST) Austria*
2014 – 2017 Betty and Gordon Moore Postdoctoral Fellow, *University of California, Berkeley*
2009 – 2014 Research Assistant, Condensed Matter Theory Group, *Massachusetts Institute of Technology*
2007 – 2009 Research Assistant, *Landau Institute for Theoretical Physics*, Chernogolovka, Russia

Education

2009 – 2014 *Ph.D. in Physics*, September 2014
Massachusetts Institute of Technology (MIT), Cambridge, MA
Thesis: *Quantum Spin Liquids: Mean Field and Beyond* (advisor Prof. P. A. Lee)
2007 – 2009 *M.S. in Physics* with the Highest Honors, June 2009
Moscow Institute of Physics and Technology (MIPT), Moscow, Russia
Thesis: *Fluctuation Nernst Effect in Superconductors* (advisor Dr. M. Skvortsov)
2003 – 2007 *B.S. in Physics* with the Highest Honors, June 2007
Moscow Institute of Physics and Technology (MIPT), Moscow, Russia

Awards

2013 Andrew Lockett III Memorial Fund Award, Massachusetts Institute of Technology
2009 – 2010 Praecis Presidential Graduate Fellowship, Massachusetts Institute of Technology
2007 Russian Jewish Congress Prize “For the First Successes in Science”
2005 – 2006 “Enrico Fermi” Junior Grant, Erice, Italy

Professional Activities

2015 – present Referee for *Science*, *Physical Review X*, and *Journal of Statistical Mechanics*
2013 – present Referee for *Physical Review Letters*, *Physical Review B*, and *Scientific Reports* journals
2013 Organizer of Condensed Matter Theory seminar at MIT

Teaching Experience

2019 *Physics Core Course*, IST Austria (joint with Prof. M. Lemeshko)
2018 *Condensed Matter Physics*, introductory semester course, IST Austria
2013 *8.512 Physics of Solids II*, Teaching Assistant, Department of Physics, MIT
2012 *8.06 Quantum Physics III*, Writing Teaching Assistant, Department of Physics, MIT
2010 *8.511 Physics of Solids I*, Teaching Assistant, Department of Physics, MIT

Publications**Published papers**

1. Philipp T. Dumitrescu, Anna Goremykina, Siddharth A. Parameswaran, Maksym Serbyn, Romain Vasseur, *Kosterlitz-Thouless scaling at many-body localization phase transitions*, Phys. Rev. B 99, 094205 (2019)
2. A. Goremykina, R. Vasseur, M. Serbyn, *Analytically solvable renormalization group for the many-body localization transition*, Phys. Rev. Lett. 122, 040601 (2019)
3. Kenneth Gotlieb, Chiu-Yun Lin, Maksym Serbyn, Wentao Zhang, Christopher L. Smallwood, Christopher Jozwiak, Hiroshi Eisaki, Zahid Hussain, Ashvin Vishwanath, Alessandra Lanzara, *Revealing hidden spin-momentum locking in a high-temperature cuprate superconductor*, Science 14 Dec 2018: Vol. 362, Issue 6420, pp. 1271-1275
4. C. Turner, A. Michailidis, D. A. Abanin, M. Serbyn, Z. Papic, *Quantum scarred eigenstates in a Rydberg atom chain: entanglement, breakdown of thermalization, and stability to perturbations*, Phys. Rev. B 98, 155134 (2018)
5. A. A. Zibrov, R. Peng, C. Kometter, J.I.A. Li, C. R. Dean, T. Taniguchi, K. Watanabe, M. Serbyn, A. F. Young, *Emergent Dirac gullies and gully nematic quantum Hall states in ABA trilayer graphene*, Phys. Rev. Lett. 121, 167601 (2018)
6. C. Turner, A. Michailidis, D. A. Abanin, M. Serbyn, Z. Papic, *Weak ergodicity breaking from quantum many-body scars*, Nature Physics 14, 745-749 (2018)
7. Maksym Serbyn, Z. Papic, Dmitry A. Abanin *Thouless energy and multifractality across the many-body localization transition* , Phys. Rev. B 96, 104201 (2017)
8. Daniel Hetterich, Maksym Serbyn, Fernando Dominguez, Frank Pollmann, Bjorn Trauzettel, *Non-interacting central site model: localization and logarithmic entanglement growth*, Phys. Rev. B 96, 104203 (2017)
9. Maksym Serbyn, Dmitry A. Abanin, *Loschmidt Echo in Many-Body Localized Phase* , Phys. Rev. B 96, 014202 (2017)
10. M. Serbyn, A. A. Michailidis, D. A. Abanin, Z. Papic, *Power-Law Entanglement Spectrum in Many-Body Localized Phases*, Phys. Rev. Lett. 117, 160601 (2016)
11. P. Dumitrescu, M. Serbyn, R. Scalettar, A. Vishwanath, *Superconductivity and Nematic Fluctuations in a model of FeSe monolayers: A Determinant Quantum Monte Carlo Study*, Phys. Rev. B 94, 155127 (2016)
12. L. C. Campos, T. Taychatanapat, M. Serbyn, K. Surakitbovorn, K. Watanabe, T. Taniguchi, D. A. Abanin, P. Jarillo-Herrero, *Landau level splittings, phase transitions, and non-uniform charge distribution in trilayer graphene*, Phys. Rev. Lett. 117, 066601
13. A. C. Potter, M. Serbyn, A. Vishwanath, *Thermoelectric transport signatures of Dirac composite fermions in the half-filled Landau level*, Phys. Rev. X 6, 031026 (2016)

14. Maksym Serbyn, Joel E. Moore, *Spectral statistics across the many-body localization transition*, Phys. Rev. B 93, 041424 (2016)
15. Maksym Serbyn, Z. Papić, Dmitry A. Abanin, *Criterion for Many-Body Localization-Delocalization Phase Transition*, Phys. Rev. X 5, 041047 (2015)
16. Maksym Serbyn, Z. Papić, Dmitry A. Abanin, *Quantum quenches in the many-body localized phase*, Phys. Rev. B 90, 174302 (2014) [10 pages]
17. Maksym Serbyn, Liang Fu, *Symmetry breaking and Landau quantization in topological crystalline insulators*, Phys. Rev. B 90, 035402 (2014) [10 pages]
18. I. Zeljkovic, Y. Okada, M. Serbyn, R. Sankar, D. Walkup, W. Zhou, J. Liu, G. Chang, Y. J. Wang, Z. Hasan, F. Chou, H. Lin, A. Bansil, L. Fu, V. Madhavan, *Dirac mass generation from crystal symmetry breaking on the surfaces of topological crystalline insulators*, Nature Materials 14, 318 (2015) [7 pages]
19. M. Serbyn, M. Knap, S. Gopalakrishnan, Z. Papić, N. Y. Yao, C. R. Laumann, D. A. Abanin, M. D. Lukin, E. A. Demler, *Interferometric probes of many-body localization*, Phys. Rev. Lett. 113, 147204 (2014) [5 pages]
20. I. Zeljkovic, Y. Okada, C.-Y. Huang, R. Sankar, D. Walkup, W. Zhou, M. Serbyn, F. Chou, W.-F. Tsai, H. Lin, A. Bansil, L. Fu, M. Z. Hasan, V. Madhavan, *Mapping the unconventional orbital texture in topological crystalline insulators*, Nature Physics 10, 572-577 (2014) [12 pages]
21. Yoshinori Okada, Maksym Serbyn, Hsin Lin, D. Walkup, W. Zhou, C. Dhital, Madhab Neupane, S. Xu, Y. J. Wang, R. Sankar, F. Chou, A. Bansil, M. Zahid Hasan, Stephen D. Wilson, Liang Fu, Vidya Madhavan, *Observation of Dirac Node Formation and Mass Acquisition in a Topological Crystalline Insulator*, Science 27 September 2013: 341 (6153), 1496-1499 [4 pages]
22. Maksym Serbyn, Z. Papić, Dmitry A. Abanin, *Local conservation laws and the structure of the many-body localized states*, Phys. Rev. Lett. 111, 127201 (2013) [5 pages]
23. Maksym Serbyn, Z. Papić, Dmitry A. Abanin, *Universal slow growth of entanglement in interacting strongly disordered systems*, Phys. Rev. Lett. 110, 260601 (2013) [5 pages]
24. Maksym Serbyn, T. Senthil, Patrick A. Lee, *Overscreened Kondo fixed point in $S=1$ spin liquid*, Phys. Rev. B 88, 024419 (2013) [9 pages]
25. Maksym Serbyn, Patrick A. Lee, *Spinon-Phonon Interaction in Algebraic Spin Liquids*, Phys. Rev. B 87, 174424 (2013) [16 pages] [Editor's suggestion]
26. Maksym Serbyn, Dmitry A. Abanin, *New Dirac points and multiple Landau level crossings in biased trilayer graphene*, Phys. Rev. B. 87, 115422 (2013) [10 pages] [Editor's suggestion]
27. Maksym Serbyn, Mikhail A. Skvortsov, *Onset of superconductivity in a voltage-biased NSN micro-bridge*, Phys. Rev. B. 87, 020501 (R) (2013) [4 pages]
28. Samuel Bieri, Maksym Serbyn, T. Senthil, Patrick A. Lee, *Paired chiral spin liquid with a Fermi surface in $S=1$ model on the triangular lattice*, Phys. Rev. B. 86, 224409 (2012) [16 pages]

29. Maksym Serbyn, T. Senthil and Patrick A. Lee, *Exotic $S=1$ spin liquid state with fermionic excitations on triangular lattice*, Phys. Rev. B **84**, 180403(R) (2011) [4 pages]
30. M. Serbyn, M. Skvortsov, A. Varlamov, V. Galitski, *Reply to Comment by A. Sergeev, M. Reizer, and V. Mitin on Giant Nernst Effect due to Fluctuating Cooper Pairs in Superconductors*, Phys. Rev. Lett. **106**, 139702 (2011) [1 page]
31. Maksym Serbyn and Patrick A. Lee, *Isotope effect on the superfluid density in conventional and high-temperature superconductors*, Phys. Rev. B **83**, 024506 (2011) [8 pages]
32. M. Serbyn, M. Skvortsov, A. Varlamov, V. Galitski, *Giant Nernst Effect due to Fluctuating Cooper Pairs in Superconductors*, Phys. Rev. Lett. **102**, 067001 (2009) [4 pages]
33. A. Morozov, M. Serbyn, *Nonlinear algebra and Bogoliubovs recursion*, **Theor. Math. Phys.** **154**: 270-293 (2008) [24 pages]

Presentations

- 2018 International Workshop Anderson Localization and Interactions, Dresden,
“Analytically solvable renormalization group for the many-body localization transition”
- 2018 KITP Program: The Dynamics of Quantum Information, Santa-Barbara
“Discussion: Quantum Scars”
- 2018 KITP Conference: Novel Approaches to Quantum Dynamics, Santa-Barbara
“Weak ergodicity breaking from quantum many-body scars”
- 2018 Young Research Leaders Group Workshop 2018, Mainz, Germany,
“Weak ergodicity breaking from quantum many-body scars”
- 2018 Mini-Conference “Non-ergodicity & integrability” at ESI workshop “Quantum Paths”,
Vienna, Austria
“Probing ergodicity breaking with matrix elements”
- 2017 SFB FOQUS Meeting, Vienna, Austria
“Universal Dynamics across a Many-Body Localization Transition”
- 2017 Conference on Many-Body-Localization: Advances in the Theory and Experimental
Progress, ICTP Trieste, Italy
Invited talk “Dynamics across Many-Body Localization Transition”
- 2016 KITP Conference “Designer Quantum Systems Out of Equilibrium”
Invited talk “Many-body Localized Phase: Dynamics and Efficient Numerical Simulation”
- 2016 21st conference Claude Itzykson - Dynamics, Disorder and Localization in Interacting
Quantum Many Body Systems, Orsay, France
Invited talk “Probing many-body localized phase and delocalization transition with
matrix elements”
- 2016 International conference on localization, interactions and superconductivity, Landau
Institute, Chernogolovka, Russia
Invited talk “A criterion for many-body localization transition”
- 2016 APS March Meeting 2016, Baltimore, MD, USA
Invited talk “Universal dynamics across many-body localization phase transition”
- 2016 Cornell University, NY, USA
Physics Department Special Seminar “Emergence of Dirac fermions from band structure,
topology, and interactions”
- 2016 Rutgers University, New Brunswick, NJ, USA
Condensed Matter Seminar “Thermalization and many-body localization in disordered
quantum systems”
- 2016 Yale University, New Haven, CT, USA
Condensed Matter Seminar “Thermalization and many-body localization in disordered
quantum systems”
- 2016 Institute of Science and Technology, Klosterneuburg, Austria

- Seminar “Thermalization and many-body localization in disordered quantum systems”
- 2016 Northwestern University, Evanston, IL, USA
Condensed Matter Seminar “Thermalization and many-body localization in disordered quantum systems”
- 2016 Boston University, Boston, MA, USA
Condensed Matter Theory seminar “Thermalization and many-body localization in disordered quantum systems”
- 2016 Cornell University, NY, USA
LASSP and A&EP SEMINAR “Thermalization and many-body localization in disordered quantum systems”
- 2015 KITP program “Many-body Localization”, Santa Barbara, CA, USA
Talk “Level statistics discussion”
- 2015 Workshop “Many-body dynamics out of equilibrium”, Dresden, Germany
Invited Talk: “Probing the MBL transition with matrix elements of local operators”
- 2015 APS March Meeting 2015, San Antonio, TX, USA
“Probing the MBL transition with matrix elements of local operators”
- 2014 APS March Meeting 2014, Denver, CO, USA
“Universal slow growth of entanglement in interacting strongly disordered systems”
- 2012 Landau Days 2012, Chernogolovka, Russia
Invited talk: “ $S = 1$ spin liquid with fermionic excitations on triangular lattice”
- 2012 Advanced research workshop Meso 2012, Chernogolovka, Russia
Invited talk: “Onset of superconductivity in a voltage-biased NSN junction”
- 2012 APS March Meeting 2012, Boston, Massachusetts, USA
“ $S = 1$ spin liquid with fermionic excitations on triangular lattice”