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EMPLOYMENT

2019-*now* Microsoft Station Q
Senior Researcher

2018-2019 Microsoft Station Q
Researcher

2016-2018 Microsoft Station Q
Postdoctoral Researcher

2014-2016 University of British Columbia
UBC-Max Planck Postdoctoral Fellow

EDUCATION

2010-2014 Leiden University
PhD in Theoretical Physics Lorentz Institute for Theoretical Physics
Thesis (2013): *On topological properties of superconducting nanowires*
Advisors: Carlo W. J. Beenakker and Yuly V. Nazarov

2004-2010 Moscow Institute of Physics and Technology
Bachelor and Master of Applied Mathematics and Physics Chair at Landau Institute for Theoretical Physics
Thesis: *Penetration of a hot electron through a cold wire*
Advisor: Alexey S. Ioselevich
GPA: 4.9 out of 5.0

PUBLICATIONS

- [arXiv:2004.01264](#) 46. "Quasiparticle poisoning of Majorana qubits"
T. Karzig, W. S. Cole, **D. I. Pikulin**
- [arXiv:2003.05316](#) 45. "Pseudo-field effects in type II semimetals: new probes for over-tilted Weyl cones"
D. Sabsovich, T. Meng, **D. I. Pikulin**, R. Queiroz, R. Ilan
- Phys. Rev. Lett.* 44. "Controlled DC Monitoring of a Superconducting Qubit"
124, 056801 (2020)
A. Kringhøj, T. W. Larsen, B. van Heck, D. Sabonis, O. Erlandsson, I. Petkovic, **D. I. Pikulin**, P. Krogstrup, K. D. Petersson, C. M. Marcus

43. "Zero Bias Conductance Peak in Dirac Semimetal-Superconductor Devices"
W. Yu, R. Haenel, M. A. Rodriguez, S. R. Lee, F. Zhang, M. Franz, **D. I. Pikulin**, W. Pan
- Phys. Rev. Lett.*
123, 237002
(2019)
42. "Geometric and Conventional Contribution to the Superfluid Weight in Twisted Bilayer Graphene"
X. Hu, T. Hyart, **D. I. Pikulin**, and E. Rossi
- Phys. Rev. Lett.*
123, 196401
(2019)
41. "Topological phases without crystalline counterparts"
D. Varjas, A. Lau, K. Pöyhönen, A. R. Akhmerov, **D. I. Pikulin**, I. C. Fulga
- Nature Reviews Physics* **2**, 29
(2020)
40. "Pseudo-electromagnetic fields in topological semimetals"
R. Ilan, A. G. Grushin, **D. I. Pikulin**
- Phys. Rev. B* **100**, 165307 (2019)
39. "Suppressing quasiparticle poisoning with a voltage-controlled filter"
G. C. Ménard, F. K. Malinowski, D. Puglia, **D. I. Pikulin**, T. Karzig, B. Bauer, P. Krogstrup, C. M. Marcus
- Nature Physics*, **16**, 663 (2020)
38. "Photon Assisted Tunneling of Zero Modes in a Majorana Wire"
D. M. T. van Zanten, D. Sabonis, J. Suter, J. I. Väyrynen, T. Karzig, **D. I. Pikulin**, E. C. T. O'Farrell, D. Razmadze, K. D. Petersson, P. Krogstrup, C. M. Marcus
- Phys. Rev. B* **99**, 085110 (2019)
37. "Majorana-Hubbard Ladders"
A. Rahmani, **D. I. Pikulin**, and I. Affleck
- Phys. Rev. Lett.*
122, 016801
(2019)
36. "Coulomb blockade of a nearly-open Majorana island"
D. I. Pikulin, K. Flensberg, L. I. Glazman, M. Houzet, and R. M. Lutchyn
- Quantum* **2**, 88
(2018)
35. "Modeling noise and error correction for Majorana-based quantum computing"
C. Knapp, M. Beverland, **D. I. Pikulin**, and T. Karzig
- Phys. Rev. B* **98**, 174502 (2018)
34. "Observation of 2e-periodic supercurrents in nanowire single-Cooper-pair transistors"
J. van Veen, A. Proutski, T. Karzig, **D. I. Pikulin**, R. M. Lutchyn, J. Nygård, P. Krogstrup, A. Geresdi, L. P. Kouwenhoven, and J. D. Watson
- Phys. Rev. Lett.*
121, 106601
(2018)
33. "Noise-induced backscattering in a quantum-spin-Hall edge"
J. I. Väyrynen, **D. I. Pikulin**, and J. Alicea
Editor's suggestion
- Phys. Rev. Lett.*
121, 036403
(2018)
32. "Quantum holography in a graphene flake with an irregular boundary"
A. Chen, R. Ilan, F. de Juan, **D. I. Pikulin**, and M. Franz
Editor's suggestion
- Nature Physics*, **14**, 334 (2018)
(News&Views)
31. "Quantized, finally"
M. Franz and **D. I. Pikulin**

- New J. Phys.* **22**, 013035 (2020)
30. “Bulk-boundary quantum oscillations in inhomogeneous Weyl semimetals”
D. I. Pikulin and R. Ilan
- Nat. Comm.* **10**, 245 (2019)
29. “Observation of the 4π -periodic Josephson effect in InAs nanowires”
D. Laroche, D. Bouman, D. J. van Woerkom, A. Proutski, C. Murthy, **D. I. Pikulin**, C. Nayak, R. J. J. van Gulik, J. Nygård, P. Krogstrup, L. P. Kouwenhoven, and A. Geresdi
- Phys. Rev. B* **98**, 201404(R) (2018)
28. “Robust helical edge transport in quantum spin Hall quantum wells”
R. Skolasinski, **D. I. Pikulin**, J. Alicea, and M. Wimmer
- Phys. Rev. B* **96**, 125121 (2017); **97**, 039901(E) (2018)
27. “The Majorana-Hubbard model on the square lattice”
I. Affleck, A. Rahmani, and **D. I. Pikulin**
- Phys. Rev. Lett.* **119**, 187704 (2017)
26. “Supercurrent interference in few-mode nanowire Josephson junctions”
K. Zuo, V. Mourik, D. B. Szombati, B. Nijholt, D. J. van Woerkom, A. Geresdi, J. Chen, V. P. Ostroukh, A. R. Akhmerov, S. R. Plissard, D. Car, E. P. A. M. Bakkers, **D. I. Pikulin**, L. P. Kouwenhoven, and S. M. Frolov
- Phys. Rev. X* **7**, 031006 (2017)
25. “Black hole on a chip: proposal for a physical realization of the SYK model in a solid-state system”
D. I. Pikulin and M. Franz
- Phys. Rev. B* **95**, 174505 (2017)
24. “Josephson current signatures of the Majorana flat bands on the surface of time-reversal-invariant Weyl and Dirac semimetals”
A. Chen, **D. I. Pikulin**, and M. Franz
- Phys. Rev. B* **95**, 041201(R) (2017)
23. “Quantum oscillations without magnetic field”
T. Liu, **D. I. Pikulin**, and M. Franz
Editor’s suggestion
- Phys. Rev. X* **6**, 041021 (2016)
22. “Chiral anomaly from strain-induced gauge fields in Dirac and Weyl semimetals”
D. I. Pikulin, A. Chen, and M. Franz
- Phys. Rev. B* **93**, 205430 (2016)
21. “Luttinger liquid in contact with a Kramers pair of Majorana bound states”
D. I. Pikulin, Y. Komijani, and I. Affleck
- Phys. Rev. Lett.* **116**, 257002 (2016)
20. “Aperiodic weak topological superconductors”
I. C. Fulga, **D. I. Pikulin**, and T. A. Loring
- Phys. Rev. B* **92**, 075438 (2015)
19. “Interaction-enabled topological phases in topological insulator-superconductor heterostructures”
D. I. Pikulin, Ching-Kai Chiu, Xiaoyu Zhu, and M. Franz
- Nat. Comm.* **7**, 10462 (2016)
18. “Confinement-deconfinement transition due to spontaneous symmetry breaking in quantum Hall bilayers”
D. I. Pikulin, P. G. Silvestrov, and T. Hyart
- Phys. Rev. B* **92**, 241115 (2015)
17. “Practical new platform for interaction-enabled topological phases”
Ching-Kai Chiu, **D. I. Pikulin**, and M. Franz

- New J. Phys.* **17**, 043014 (2015)
16. "Extended topological group structure due to average reflection symmetry"
M. Diez, **D. I. Pikulin**, I. C. Fulga, and J. Tworzydło
- Phys. Rev. B* **91**, 165402 (2015)
15. "Strongly interacting Majorana fermions"
Ching-Kai Chiu, **D. I. Pikulin**, and M. Franz
- JETP* **119**, 1018 (2014)
14. "X-shaped and Y-shaped Andreev resonance profiles in a superconducting quantum dot"
Shuo Mi, **D. I. Pikulin**, M. Marciani, and C. W. J. Beenakker
- New J. Phys.* **16**, 063049 (2014)
13. "Bimodal conductance distribution of Kitaev edge modes in topological superconductors"
M. Diez, I. C. Fulga, **D. I. Pikulin**, J. Tworzydło, and C. W. J. Beenakker
- Phys. Rev. B* **89**, 161403(R) (2014); **89**, 199901(E) (2014)
12. "Disorder and magnetic-field induced breakdown of helical edge conduction in an inverted electron-hole bilayer"
D. I. Pikulin, T. Hyart, S. Mi, J. Tworzydło, M. Wimmer, and C. W. J. Beenakker
Editor's suggestion
- Phys. Rev. Lett.* **112**, 176403 (2014)
11. "Interplay of exciton condensation and quantum spin Hall effect in InAs/GaSb bilayers"
D. I. Pikulin and T. Hyart
- Phys. Rev. Lett.* **111**, 037001 (2013)
10. "Wigner-Poisson statistics of topological transitions in a Josephson junction"
C. W. J. Beenakker, J. M. Edge, J. P. Dahlhaus, **D. I. Pikulin**, S. Mi, and M. Wimmer
- Phys. Rev. B* **87**, 241405(R) (2013)
9. "Proposal for the detection and braiding of Majorana fermions in a quantum spin Hall insulator"
S. Mi, **D. I. Pikulin**, M. Wimmer, and C. W. J. Beenakker
Editor's suggestion
- Phys. Rev. B* **87**, 235421 (2013)
8. "Two types of topological transitions in finite Majorana wires"
D. I. Pikulin and Yu. V. Nazarov
- Phys. Rev. B* **87**, 125406 (2013)
7. "Phase-locked magnetoconductance oscillations as a probe of Majorana edge states"
M. Diez, I. C. Fulga, **D. I. Pikulin**, M. Wimmer, A. R. Akhmerov, and C. W. J. Beenakker
Editor's suggestion
- Phys. Rev. Lett.* **110**, 017003 (2013)
6. "Fermion-parity anomaly of the critical supercurrent in the quantum spin-Hall effect "
C. W. J. Beenakker, **D. I. Pikulin**, T. Hyart, H. Schomerus, and J. P. Dahlhaus
- New J. Phys.* **14**, 125011 (2012)
5. "A zero-voltage conductance peak from weak antilocalization in a Majorana nanowire"
D. I. Pikulin, J. P. Dahlhaus, M. Wimmer, H. Schomerus, and C. W. J. Beenakker

- Phys. Rev. B* **86**, 140504(R) (2012) 4. "Phenomenology and dynamics of a Majorana Josephson junction"
D. I. Pikulin and Yu. V. Nazarov
- Phys. Rev. B* **84**, 035133 (2011) 3. "Nernst effect beyond the relaxation-time approximation"
D. I. Pikulin, C.-Y. Hou, and C. W. J. Beenakker
- JETP Lett.* **94**, 9, 693 (2011) 2. "Topological properties of superconducting junctions"
D. I. Pikulin and Yu. V. Nazarov
- JETP Lett.* **92**, 8, 537 (2010) 1. "Penetration of hot electrons through a cold disordered wire"
A. S. Ioselevich and **D. I. Pikulin**

INVITED TALKS AND SEMINARS

- April 2018 Affleck 65 symposium, Vancouver, Canada
Material Research Society meeting (invited talk and tutorial),
Phoenix, Arizona, USA
- February 2018 Relativistic fermions and nodal semimetals from topology
workshop, Banff, Canada
- May 2017 TopoDiscussion, TU Delft, The Netherlands
- March 2017 Topological states of matter workshop, Natal, Brazil
- January 2017 Q seminar, Santa Barbara, USA
- December 2016 Hawaii workshop on frontiers in topological superconductivity,
Kona, USA
- December 2015 Special condensed matter seminar, Yale, New Haven, USA
- October 2015 Q seminar, Santa Barbara, USA
- September 2015 Strongly interacting topological phases workshop, Banff, Canada
Physics of interfaces and layered structures workshop, Nordita,
Stockholm, Sweden
- March 2015 March meeting of American Physical Society, San Antonio, USA
- November 2014 Condensed matter seminar, Jyväskylä University, Finland
- April 2014 Fysica, Leiden, The Netherlands
- February 2014 Special condensed matter seminar, Yale, New Haven, USA
- December 2013 Condensed matter theory seminar, Radboud University, Nijmegen,
the Netherlands
- May 2013 Condensed matter physics seminar, Stanford, USA
Condensed matter seminar, UC Riverside, USA
- April 2013 Condensed matter theory seminar, MIT, Cambridge, USA

- January 2013* Low temperature physics seminar, Institute of Solid State Physics, Chernogolovka, Russia
- January 2012* Mesoscopic physics seminar, Landau Institute, Chernogolovka, Russia
- 2011-now* Multiple contributed talks and posters at conferences in USA, Europe, and Asia

RESEARCH VISITS

- April-May 2013* Short research stay at Caltech, USA

TEACHING EXPERIENCE

- 2012-now* Help coaching PhD students in Leiden University (Mathias Diez, Shuo Mi), UBC (Anffany Chen, Rafael Haenel), and UCSB (Aleksei Khindanov)
- 2011-2013* Teaching assistant, “Quantum theory” course of Dr. P. Denteneer, Leiden University, the Netherlands

GRANTS AND FELLOWSHIPS

- 2014-2016* Max-Planck-UBC postdoctoral fellowship
- 2009-2010* Student scholarship of Dmitry Zimin fund “Dynasty” for excellence in theoretical physics
- 2005-2007* Scholarship of “Charitable Foundation for the Development of Natural Science Innovation Education” for excellence in undergraduate studies

COMMITTEES

- May 2015* Member of Organizing committee, CIFAR Quantum Materials Summer School 2015, Vancouver, Canada

OTHER INFORMATION

- Refereeing* Nature Physics, Nature Communications, Physical Review X, Physical Review Letters, Physical Review B, Physical Review Applied, New Journal of Physics, Scientific Reports, and JETP
- Research skills* L. D. Landau theoretical minima in Statistical Physics, Quantum Mechanics, Classical Field Theory, and Classical Mechanics
- Computer skills* Proficient in Python, C, Mathematica, Kwant, \LaTeX
- Languages* Native Russian, fluent English, and lower-intermediate Dutch
Translated from Russian into English an unpublished article “[On the question of the geometry of curved space](#)” by A. Friedmann