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On topological Properties of Superconducting Nanowires

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List of Publications

1. *Penetration of hot electrons through a cold disordered wire*, A. S. Ioselevich and D. I. Pikulin, JETP Letters, **92**, 537 (2010).
2. *Topological properties of superconducting junctions*, D. I. Pikulin and Yu. V. Nazarov, JETP Letters, **94**, 693 (2011) [Chapter 2].
3. *Nernst effect beyond the relaxation-time approximation*, D. I. Pikulin, Chang-Yu Hou, and C. W. J. Beenakker, Phys. Rev. B **84**, 035133 (2011) [Chapter 7].
4. *Phenomenology and dynamics of a Majorana Josephson junction*, D. I. Pikulin and Yu. V. Nazarov, Phys. Rev. B **86**, 140504(R) (2012) [Chapter 5].
5. *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, New J. Phys. **14**, 125011 (2012) [Chapter 4].
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, Phys. Rev. Lett. **110**, 017003 (2013) [Chapter 6].
7. *Two types of topological transitions in finite Majorana wires*, D. I. Pikulin and Yu. V. Nazarov, Phys. Rev. B **87**, 235421 (2013) [Chapter 3].
8. *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, Phys. Rev. B **87**, 125406 (2013).

9. *Proposal for the detection and braiding of Majorana fermions in a quantum spin Hall insulator*, Shuo Mi, D. I. Pikulin, M. Wimmer, and C. W. J. Beenakker, *Phys. Rev. B* **87**, 241405(R) (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, Shuo Mi, and M. Wimmer, *Phys. Rev. Lett.* **111**, 037001 (2013).

Curriculum Vitæ

I was born in Arsamas-16, USSR on 10th of August 1987. I have completed my primary, secondary and high school education there. During my studies I participated in mathematics and physics Olympiads, winning the 2nd diploma in the National Physics Olympiad in 2004.

For my undergraduate studies I chose the Department of General and Applied Physics at the Moscow Institute of Physics and Technology in Dolgoprudniy. During my studies I was awarded scholarships from the funds "Dynasty" and "Charitable Foundation for the Development of Natural Science Innovation Education". My bachelor thesis "Non-equilibrium electron in a 1D disordered chain" and master thesis "Penetration of a non-equilibrium electron through a disordered system" were written under the encouraging supervision of Prof. Dr. Alexei Ioselevich.

After my graduation, I decided to continue my research in solid state physics and took the opportunity to join the group of Prof. Dr. Carlo Beenakker. I moved to the Netherlands and became a PhD student at the Instituut Lorentz, employed by the Foundation for Fundamental Research on Matter (FOM). I benefited a lot from the interactive environment in the group. I had a second supervisor Prof. Dr. Yuli Nazarov from the Technische Universiteit Delft who shared a very personal approach to physics with me.

During my PhD years, I was a teaching assistant for the course "Quantum Theory" of Dr. Peter Denteneer. I attended many schools, workshops and conferences and presented my work in Italy, Russia, Israel, France, USA, Vietnam, and the Netherlands.