

Curriculum Vitae

Dr. Yuriy Yerin

Laboratory of theory of mesoscopic systems,
Department for physics of superconductivity
of the Institute for Physics of Microstructures of the Russian Academy of Sciences

Personal information

First name: Yuriy Last
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Department of Superconducting and Mesoscopic Structures of B. Verkin Institute for Low Temperature Physics and Engineering,
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Education

Graduated cum laude from the Department of Theoretical Physics, Physics faculty, V.N. Karazin Kharkov National University in 2004,
MSc Thesis: *Non-stationary Ginzburg-Landau equations for a two-band superconductor*.

PhD at the B.Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine in 2013,
PhD thesis: *Coherent current states in two-band superconductors*, Advisor: Prof. Dr. A.N. Omelyanchouk.

Research expertise

Solid state and condensed matter physics, nano- and mesoscale phenomena in superconductors.
Professional skills in C++, Matlab, Comsol Multiphysics and Maple.
Scientific popularization (in russian) of the last achievements
in physics elementy.ru/news?theme=3150219

Current appointment

Researcher at the laboratory of theory of mesoscopic systems, department for physics of superconductivity of the Institute for Physics of Microstructures of the Russian Academy of Sciences

Awards

President Prize for Young Scientist, 2003, 2004

Prize for the best oral talk at the III International Conference for Young Scientists “Low Temperature Physics” (ICYS–LTP–2012)

Scholarship award of the National Academy of Sciences of Ukraine for 2014-2015

Languages

English: fluent

Russian: native

Ukrainian: native

Conferences

1. “Condensed Matter: Theory & Applications”, Kharkov, Ukraine, 2006.
2. “Physical Phenomena in Solids”, Kharkov, Ukraine, 2007.
3. “Physical properties of nanosystems”, NATO workshop, Yalta, Ukraine, 2009.
4. “International Conference on Superconductivity and Magnetism”, Antalya, Turkey, 2530 April 2010.
5. Invited speaker with the review report “*Type 1.5 superconductivity*” on II International Conference for Young Scientists “Low Temperature Physics” (ICYS–LTP–2011), Kharkov, Ukraine, 6 - 10 June 2011.
6. “International Conference on Superconductivity and Magnetism”, Istanbul, Turkey, 29 April - 4 May 2012.
7. III International Conference for Young Scientists “Low Temperature Physics” (ICYS–LTP–2012), Kharkov, Ukraine, 14 - 18 May 2012.
8. Trilateral (Russia-Ukraine-Germany) workshop on Hot Topics in HTSC: Fe-Based Superconductors, Zvenigorod, Ukraine, September 29 – October 2 2013
9. “International Conference on Superconductivity and Magnetism”, Antalya, Turkey, 27 April - 2 May 2014.
10. XX Symposium “Nanophysics & Nanoelectronics”, Nizhniy Novgorod, Russia, March 14-18, 2016.
11. “International Conference on Superconductivity and Magnetism”, Dalaman, Turkey, 24 April - 30 April 2016.
12. XXI Symposium “Nanophysics & Nanoelectronics”, Nizhniy Novgorod, Russia, March 13-17, 2017.
13. DPG Frühjahrstagung (Spring Meeting) of the Condensed Matter Section, Dresden, Germany, 19 - 24 March 2017.
14. The Workshop “Synthesis, theoretical examination and experimental investigation of emergent materials”, Moscow, Russia, 14-16 June, 2017.

Grants

Joint research project of RFBR-NAS of Ukraine "Quantum dynamic phenomena in superconducting qubits" for 2009-2010.

Research project of young scientists of the National Academy of Sciences Ukraine "Theoretical and experimental investigation of the superconducting properties of oxypnictides and iron chalcogenides and structures based on them" for 2011-2012.

Joint Ukrainian-German project of Humboldt Foundation "Synthesis and study of new iron- based high-temperature superconductors" for 2012-2015.

Joint Ukrainian-German research project "Quantum effects in a qubit systems based on singleband and multiband superconductors" for 2013-2015.

Research project of Russian Science Foundation "Transport and electrodynamic properties of hybrid structures for superconducting cryoelectronics and spintronics" for 2015-2017.

List of publications

1. Y. S. Yerin and A. N. Omelyanchouk, *Coherent current states in a two-band superconductor*, Low Temp. Phys. 33, 401 (2007).
2. Y. S. Yerin, S. V. Kuplevakhskii, and A. N. Omelyanchuk, *Little–Parks effect for twoband superconductors*, Low Temp. Phys. 34, 891 (2008).
3. A.N. Omelyanchouk, Y. S. Yerin, *Josephson effect in point contacts between two-band superconductors*, arXiv:0910.1429, proceedings of NATO advanced research workshop "Physical properties of nanosystems (PPN-2009)".
4. Y. S. Yerin, A. N. Omelyanchouk, *Josephson currents in point contacts between dirty two-band superconductors*, Low Temp. Phys. 36, 969 (2010).
5. Y.S. Yerin, S. V. Kuplevakhskiy, and A. N. Omelyanchouk, *Soliton states in mesoscopic two-band-superconducting cylinders*, Low Temp. Phys. 37, 667 (2011).
6. V. N. Fenchenko, Y. S. Yerin, *Phase slip centers in a two-band superconducting filament: application to MgB₂*, Physica C: Superconductivity, 480, 129 (2012).
7. Y.S. Yerin, V.N. Fenchenko and E.V. Il'ichev, *Phase diagram of the resistive state of a narrow superconducting channel in the voltage-driven regime*, Low Temp. Phys. 39, 125 (2013).
8. Y. Yerin, S.-L. Drechsler, G. Fuchs, *Ginzburg-Landau analysis of the critical temperature and the upper critical field for three-band superconductors*, J. of Low Temp. Phys. 173, 247 (2013).
9. Y. S. Yerin, V. N. Fenchenko, *Dynamics of the resistive state of a narrow superconducting channel in the ac voltage driven regime*, Low Temp. Phys. 39, 1023 (2013).
10. Y.S. Yerin and A. N. Omelyanchouk, *Frustration phenomena in Josephson point contacts between single-band and three-band superconductors*, Low Temp. Phys. 40, 943 (2014).
11. Y.S. Yerin, A.N. Omelyanchouk, E. Il'ichev, *Dc SQUID based on a three-band superconductor with broken time-reversal symmetry*, Supercond. Sci. Technol. 28, 095006 (2015).

12. Y.S. Yerin, A.S. Kiyko, A.N. Omelyanchouk and E. Il'ichev, *Josephson systems based on ballistic point contacts between single-band and multi-band superconductors*, Low Temp. Phys. 41, 885 (2015).
13. Y. Yerin, A. Omelyanchouk, S.-L. Drechsler, D.V. Efremov and Jeroen van den Brink, *Anomalous diamagnetic response in multi-band superconductors with time-reversal broken symmetry*, submitted to Phys. Rev. B.
14. Y. Yerin, A.N. Omelyanchouk, *Josephson effect in multi-band superconductors (review)*, submitted to Low Temp. Phys.