

Curriculum Vitae

ANTON VORONTSOV

Born: 25 April 1975, Kostroma, Russia
Citizenship: USA

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EDUCATION

- Ph.D., 2004, Northwestern University, Evanston, Illinois, USA (GPA 4.0/4.0)
Thesis: *Theoretical investigations of superfluid ^3He films* (advisor: James Sauls)
 - M.Sc. in Physics, *with honors*, 1998, Nizhny Novgorod State University, Nizhny Novgorod, Russia
 - B.Sc. in Physics, 1996, Nizhny Novgorod State University, Nizhny Novgorod, Russia
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PROFESSIONAL EXPERIENCE

- Associate Professor, 2015-present, Dept. of Physics, Montana State University, Bozeman
 - Assistant Professor, 2009-2015, Dept. of Physics, Montana State University, Bozeman
 - Postdoctoral associate, 2007-2008, Dept. of Physics, University of Wisconsin-Madison (advisor: Maxim Vavilov and Andrey Chubukov)
 - Postdoctoral associate, 2004-2007, Dept. of Physics and Astronomy, Louisiana State University (advisor: Ilya Vekhter)
 - Graduate Research Assistant summer position 2004, Los Alamos National Laboratory, T-CNLS/T-11, Los Alamos, NM
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AWARDS

- Cottrell Scholar, 2013 (Research Corporation for Science Advancement)
 - National Science Foundation CAREER Award, 2010
 - KITP Scholar, 2010-2012 (Kavli Institute for Theoretical Physics)
 - International ICAM Junior Exchange Fellowship Track II, for study of superconductors without inversion symmetry, 2006
 - I2CAM Junior Scientist Travel Awards, 2006, 2007, 2008
 - Named Khariton Fellowship, 1997-1998, Nizhny Novgorod State University
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PROFESSIONAL AFFILIATIONS

- American Physical Society (APS), since 2002
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RESEARCH TOPICS AND INTERESTS

- New phases and their properties in strongly confined unconventional superfluids and superconductors
 - Magnetically active superconductors and materials without inversion center
 - Inhomogeneous states in superfluids and superconductors, Fulde-Ferrell-Larkin-Ovchinnikov state
 - Topological properties of surface states in unconventional superfluids
 - Non-equilibrium and strong-coupling effects in superfluid ^3He
 - Superconductivity in magnetic field: Thermodynamic and transport properties in the vortex state
 - Superconductivity and magnetism in Fe-pnictides
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ANTON VORONTSOV

Publication List

in reverse chronological order. Student lead authors appear in *italic*.

- 47 [Tuning pair-breaking at the surface of topological superfluid \$^3\text{He}\$](#) [[arXiv:](#)]
P. J. Heikkinen, A. Casey, L. V. Levitin, X. Rojas, [A. B. Vorontsov](#), P. Sharma, N. Zhelev, J. M. Parpia and J. Saunders
- 46 [Phase crystals](#) [[arXiv:1906.04793](#)]
P. Holmvall, M. Fogelström, T. Löfwander, [A. B. Vorontsov](#)
- 45 [Spontaneous symmetry breaking at surfaces of \$d\$ -wave superconductors: Influence of geometry and surface ruggedness](#) *Phys. Rev. B* **99**, 184511 (2019) [[arXiv:1902.07530](#)]
P. Holmvall, [A. B. Vorontsov](#), M. Fogelström, T. Löfwander
- 44 [Broken translational symmetry at edges of high-temperature superconductors](#) *Nature Communications* **9**, 2190 (2018) [[arXiv:1711.07946](#)]
P. Holmvall, [A. B. Vorontsov](#), M. Fogelström, T. Löfwander
- 43 [Andreev Bound States in Superconducting Films and Confined Superfluid \$^3\text{He}\$ -3](#) *Philosophical Transactions of the Royal Society A* **376**, 20150144 (2018) [[arXiv:1602.06917](#)]
[A. B. Vorontsov](#)
- 42 [Spin susceptibility of Andreev bound states](#) *Phys. Rev. B* **94**, 144501 (2016) [[arXiv:1606.08497](#)]
B. Rosemeyer, [A. B. Vorontsov](#)
- 41 [Heat transport in nonuniform superconductors](#) *Phys. Rev. B* **94**, 064502 (2016) [[arXiv:1605.01634](#)]
C. Richard, [A. B. Vorontsov](#)
- 40 [Bound collective modes in nonuniform superconductors](#) *Phys. Rev. B* **93**, 014503 (2016) [[arXiv:1602.06900](#)]
A. R. Hammer, [A. B. Vorontsov](#)
- 39 [Nodal gap structure and order parameter symmetry of the unconventional superconductor \$\text{UPt}_3\$](#) *New Journ. of Physics* **17**, 023041 (2015) [[arXiv:1302.4144](#)]
W.J. Gannon, W.P. Halperin, C. Rastovski, K.J. Schlesinger, J. Hlevyack, M.R. Eskildsen, [A. B. Vorontsov](#), J. Gavilano, U. Gasser and G. Nagy
- 38 [Enhancement of electronic spin susceptibility in Pauli-limited unconventional superconductors](#) *Phys. Rev. B* **89**, 220501(R) (2014) [[arXiv:1401.7268](#)]
B. Rosemeyer, [A. B. Vorontsov](#)
- 37 [Doping evolution of the quasiparticle excitations in heavily hole-doped \$\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2\$: A possible superconducting gap with sign-reversal between hole pockets](#) *Phys. Rev. B* **89**, 115112 (2014) [[arXiv:1307.3408](#)]
D. Watanabe, T. Yamashita, Y. Kawamoto, S. Kurata, Y. Mizukami, T. Ohta, S. Kasahara, M. Yamashita, T. Saito, H. Fukazawa, Y. Kohori, S. Ishida, K. Kihou, C. H. Lee, A. Iyo, H. Eisaki, [A. B. Vorontsov](#), T. Shibauchi, and Y. Matsuda
- 36 [Field-angle-resolved anisotropy in superconducting \$\text{CeCoIn}_5\$ using realistic Fermi surfaces](#) *Phys. Rev. B* **87**, 174514 (2013) [[arXiv:1303.6258](#)]
Tanmoy Das, [Anton Vorontsov](#), Ilya Vekhter, and Matthias J. Graf
- 35 [Role of the Fermi-Surface Anisotropy in Angle-Dependent Magnetic-Field Oscillations for Identifying the Energy-Gap Anisotropy of \$A_y\text{Fe}_2\text{Se}_2\$ Superconductors](#) *Phys. Rev. Lett.* **109**, 187006 (2012) [[arXiv:1104.5037](#)]
Tanmoy Das, [Anton Vorontsov](#), Ilya Vekhter, and Matthias J. Graf

- 34 **Jump in specific heat at superconducting transition in the presence of Spin-Density-Wave in iron-pnictides.** *Phys. Rev. B* **84**, 140502(R) (2011) [[arXiv:1203.2211](#)]
M. G. Vavilov, A. V. Chubukov, A. B. Vorontsov
- 33 **Nodal gap structure of $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$ determined by the angle resolved thermal conductivity.** *Phys. Rev. B* **84**, 060507(R) (2011) [[arXiv:1103.0885](#)]
M. Yamashita, Y. Senshu, T. Shibauchi, S. Kasahara, K. Hashimoto, D. Watanabe, H. Ikeda, T. Terashima, I. Vekhter, A. B. Vorontsov, Y. Matsuda
- 32 **^{75}As NMR of $\text{Ba}(\text{Fe}_{0.93}\text{Co}_{0.07})_2\text{As}_2$ in High Magnetic Fields** *Phys. Rev. B* **83**, 214501 (2011) [[arXiv:1101.1021](#)]
Sangwon Oh, A. M. Mounce, S. Mukhopadhyay, W. P. Halperin, A. B. Vorontsov, N. Ni, S. L. Bud'ko, P.C. Canfield, Y. Furukawa, A. P. Reyes, P. L. Kuhns
- 31 **Effect of annealing on the specific heat of $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$** *Phys. Rev. B* **83**, 064513 (2011) [[arXiv:1009.1091](#)]
K. Gofryk, A.B. Vorontsov, I. Vekhter, A.S. Sefat, M.A. McGuire, B.C. Sales, D. Mandrus, E.D. Bauer, J.D. Thompson, and F. Ronning
- 30 **Calorimetric Evidence for Nodes in the Overdoped $\text{Ba}(\text{Fe}_{0.9}\text{Co}_{0.1})_2\text{As}_2$.** *New Journ. of Physics* **13**, 023036 (2011) [[arXiv:1011.4808](#)]
Dong-Jin Jang, A. B. Vorontsov, I. Vekhter, K. Gofryk, Z. Yang, S. Ju, J. B. Hong, J. H. Han, Y. S. Kwon, F. Ronning, J. D. Thompson, Tuson Park
- 29 **Nodes versus Minima in the Energy Gap of Iron Pnictide Superconductors from Field-Induced Anisotropy** *Phys. Rev. Lett.* **105**, 187004 (2010) [[arXiv:1006.0738](#)]
A.B. Vorontsov, I. Vekhter
- 28 **London penetration depth in $\text{Ba}(\text{Fe}_{1-x}\text{T}_x)_2\text{As}_2$ (T=Co, Ni) superconductors irradiated with heavy ions.** *Phys. Rev. B* **82**, 060518(R) (2010) [[arXiv:1003.2959](#)]
H. Kim, R. T. Gordon, M. A. Tanatar, J. Hua, U. Welp, W. K. Kwok, N. Ni, S. L. Bud'ko, P. C. Canfield, A.B.Vorontsov and R. Prozorov
- 27 **Superconductivity and spin-density-waves in multy-band metals** *Phys. Rev. B* **81**, 174538 (2010) [[arXiv:1003.2389](#)]
A.B.Vorontsov, M.G.Vavilov, A.V.Chubukov
- 26 **Pauli-limited superconductivity with classical magnetic fluctuations** *Phys. Rev. B* **81**, 224501 (2010) [[arXiv:1003.6126](#)]
R. Beaird, A.B.Vorontsov, I.Vekhter
- 25 **Coexistence between superconducting and spin density wave states in iron-based superconductors: Ginzburg-Landau analysis** *Supercond. Sci. Technol.* **23**, 054011 (2010) [[arXiv:0912.3556](#)]
M.G.Vavilov, A.V.Chubukov, A.B.Vorontsov
- 24 **Vortex state in *d*-wave superconductors with strong paramagnetism: transport and specific heat anisotropy** *Phys. Rev. B* **81**, 094527 (2010) [[arXiv:1002.0330](#)]
A.B. Vorontsov, I. Vekhter
- 23 **Reduced effect of impurities on the universal pairing scale in the cuprates.** *Phys. Rev. B* **81**, 012508 (2010) [[arXiv:0909.4580](#)]
A.B.Vorontsov, A.V.Chubukov, M.G.Vavilov, A.Abanov
- 22 **Theory of thermal conductivity in extended-*s* state superconductors: application to ferropnictides** *Phys. Rev. B* **80**, 224525 (2009). [[arXiv:0907.4657](#)]
V. Mishra, A.B. Vorontsov, P.J. Hirschfeld, I. Vekhter
- 21 **Momentum dependence and nodes of the superconducting gap in iron-pnictides** *Phys. Rev. B* **80**, 140515(R) (2009). [[arXiv:0903.5547](#)]
A.V.Chubukov, M.G.Vavilov, A.B.Vorontsov

- 20 **Nonexponential London penetration depth of external magnetic field in superconducting $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$ single crystals.** *Phys. Rev. B* **80**, 020501(R) (2009) [[arXiv:0902.1804](#)]
C. Martin, R.T. Gordon, M. A. Tanatar, H. Kim, N. Ni, S. L. Bud'ko, P. C. Canfield, H. Luo, H. H. Wen, Z. Wang, [A. B. Vorontsov](#), V. G. Kogan, R. Prozorov
- 19 **Broken translational and time-reversal symmetry in unconventional superconducting films.** *Phys. Rev. Lett.* **102**, 177001 (2009) [[arXiv:0903.5102](#)]
[A.B. Vorontsov](#)
- 18 **Superfluid density and penetration depth in Fe-pnictides.** *Phys. Rev. B* **79**, 140507(R) (2009) [[arXiv:0901.0719](#)]
[A.B.Vorontsov](#), A.G.Vavilov, A.V.Chubukov
- 17 **Inversion of specific heat oscillations with in-plane magnetic field angle in 2D d -wave superconductors.** *Phys. Rev. B* **79**, 064525 (2009) [[arXiv:0810.2772](#)]
G.R.Boyd, P.J.Hirschfeld, I.Vekhter, [A.B.Vorontsov](#)
- 16 **Interplay between magnetism and superconductivity in Fe-pnictides.** *Phys. Rev. B* **79**, 060508(R) (2009) [[arXiv:0812.2469](#)]
[A.B.Vorontsov](#), A.G.Vavilov, A.V.Chubukov
- 15 **Spin relaxation in quantum dots due to electron exchange with leads.** *Phys. Rev. Lett.* **101**, 226805 (2008) [[arXiv:0810.4546](#)]
[A.B. Vorontsov](#), M.G. Vavilov
- 14 **Pauli-limited upper critical field in dirty d -wave superconductors.** *Phys. Rev. B* **78**, 180505(R) (2008) [[arXiv:0806.2445](#)]
[A.B. Vorontsov](#), I. Vekhter, M.J. Graf
- 13 **Surface bound states and spin currents in noncentrosymmetric superconductors.** *Phys. Rev. Lett.* **101**, 127003 (2008) [[arXiv:0804.2464](#)]
[A.B. Vorontsov](#), I. Vekhter, M. Eschrig
- 12 **Anomalous Attenuation of Transverse Sound in ^3He .** *Phys. Rev. Lett.* **101**, 085301 (2008) [[arXiv:0807.2221](#)]
J.P. Davis, J. Pollanen, H. Choi, J.A. Sauls and W.P. Halperin, and [A.B. Vorontsov](#)
- 11 **Unconventional superconductors under rotating magnetic field II: thermal transport.** *Phys. Rev. B* **75**, 224502 (2007) [[cond-mat/0702226](#)]
[A.B. Vorontsov](#), I. Vekhter
- 10 **Unconventional superconductors under rotating magnetic field I: the density of states and specific heat.** *Phys. Rev. B* **75**, 224501 (2007) [[cond-mat/0702225](#)]
[A. B. Vorontsov](#), I. Vekhter
- 9 **Interplane and intraplane heat transport in quasi 2D nodal superconductors.** *Phys. Rev. B* **75**, 094512 (2007) [[cond-mat/0612094](#)]
I. Vekhter, [A. Vorontsov](#)
- 8 **Crystalline order in superfluid ^3He films.** *Phys. Rev. Lett.* **98**, 045301 (2007) [[cond-mat/0601565](#)]
[A.B.Vorontsov](#) and J.A.Sauls,
- 7 **Microscopic evidence for field-induced magnetism in CeCoIn_5 .** *Phys. Rev. Lett.* **98**, 036402 (2007) [[cond-mat/0608040](#)]
B.-L. Young, R. R. Urbano, N. J. Curro, J. D. Thompson, J. L. Sarrao, [A. B. Vorontsov](#), M. J. Graf
- 6 **Fermi-liquid effects in the FFLO state of 2D d -wave superconductors.** *Phys. Rev. B* **74**, 172504 (2006) [[cond-mat/0606572](#)]
[A.B. Vorontsov](#), M.J. Graf

- 5 **Nodal structure of quasi-2D superconductors probed by magnetic field.** *Phys. Rev. Lett.* **96**, 237001 (2006) [[cond-mat/0601126](#)]
A. Vorontsov, I. Vekhter
- 4 **Phase Diagram and Spectroscopy of Fulde-Ferrell-Larkin-Ovchinnikov states of two-dimensional d -wave superconductors.** *Phys. Rev. B* **72**, 184501 (2005) [[cond-mat/0506257](#)]
A.B. Vorontsov, J.A. Sauls and M.J. Graf
- 3 **Domain walls in superfluid $^3\text{He-B}$.** *Journ. of Low Temp. Physics* **138**, 283 (2005) [[cond-mat/0408465](#)]
A.Vorontsov and J.A.Sauls
- 2 **Spectrum of third sound cavity modes on superfluid ^3He film.** *Journ. of Low Temp. Physics* **134**, 1001 (2004) [[cond-mat/0309599](#)]
A.Vorontsov and J.A.Sauls
- 1 **Thermodynamic properties of thin films of superfluid $^3\text{He-A}$.** *Phys. Rev. B* **68**, 064508 (2003) [[cond-mat/0304054](#)]
A.Vorontsov and J.A.Sauls

CONFERENCE PROCEEDINGS (peer-reviewed)

- 6 **Surface states in superconductors with no inversion symmetry.** *J. Phys. Soc. Japan* **77** (**Supplement A**), 165-171 (2008)
A. B. Vorontsov, I. Vekhter, M. Eschrig
 - 5 **Searching for zeroes: Unconventional superconductors in a magnetic field.** *Physica B* **403**, 958-962 (2008) [[arXiv:0803.0583](#)]
I. Vekhter, A. B. Vorontsov
 - 4 **Pauli-limited superconductors with fluctuating magnetic moments.** *Physica B* **403**, 1083-1085 (2008)
R. Beird, A. B. Vorontsov, I. Vekhter
 - 3 **Andreev bound states in non-centrosymmetric superconductors.** *Physica B* **403**, 1095-1097 (2008)
A. B. Vorontsov, I. Vekhter, M. Eschrig
 - 2 **Anisotropy of heat capacity in Pauli limited unconventional superconductors.** *Physica C* **460-462**, 742-743 (2007) [[cond-mat/0606390](#)]
A. B. Vorontsov, I. Vekhter
 - 1 **Knight shift in the FFLO state of a two-dimensional d -wave superconductors.** *Journ. of Low Temp. Physics* **850**, 729 (2006) [[cond-mat/0507479](#)]
A.B. Vorontsov and M.J. Graf
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ANTON VORONTSOV

Talks & Conferences

CONFERENCES: Invited Presentations

- 2015 NSF-sponsored workshop "Grand challenges in quantum fluids and solids" University at Buffalo, NY, August 7-9
Invited talk: [Superfluids and superconductors in confinement](#)
- 2014 Symposium "Topological States of Matter" Chalmers University, Gothenburg, Sweden, June 9-13
Invited talk: [Localized quasiparticle states in superconducting and \$^3\text{He}\$ superfluid films](#)
- 2013 Quantum Fluids and Solids International Conference, Matsue, Japan
Invited talk: [Flow-induced phase transitions in superfluid \$^3\text{He}\$ films](#)
- 2011 International Workshop on Topological Quantum Phenomena in Condensed Matter, LaForet Biwako, Shiga, Japan, November 1-5
Invited talk: [Broken symmetries and bound quasiparticle states in superfluid \$^3\text{He}\$ films](#)
- 2011 New Generation SCES, Santiago de Compostela, Spain, July 3-8
Invited talk: [Superconductivity and magnetism in pnictides: co-existence or competition?](#)
- 2011 CALCON International conference, Oahu, Hawaii, June 12-17
Invited talk: [Probing superconducting states with rotated magnetic field](#)
- 2011 APS March Meeting, Dallas, TX
Invited talk: [Superconductivity and magnetism in pnictides: co-existence or competition?](#)
- 2010 APS Northwestern section meeting, October 1-2, Walla Walla, WA
Invited talk: [Superconductivity and magnetism in pnictides](#)
- 2010, July 1, International Conference on Strongly Correlated Electron Systems, Santa Fe, NM
Invited talk: [Superconductivity and magnetism in pnictides](#)
- 2009 Quantum Fluids and Solids International Conference, Evanston, IL
Invited talk: [Competing orders, broken spatial and temporal symmetries in superfluid \$^3\text{He}\$ and novel superconductors](#)
- 2008, August 9, LT-25, Amsterdam, the Netherlands
Invited talk: [Stripe order in superfluid \$^3\text{He}\$ and superconducting films](#)
- 2008, July 14, Workshop SPINS 08, Karlsruhe, Germany
Invited talk: [Surface bound states and spin currents in non-centrosymmetric superconductors](#)

CONFERENCES: contributed presentations

- 2019 August 12, Quantum Fluids and Solids International Conference, Edmonton, Canada
Contributed talk: [Phase crystallisation near surfaces of unconventional superconductors](#)
- 2019 March 10, APS March Meeting, Boston, USA
Oral Presentation: [Phase crystallisation near surfaces of unconventional superconductors](#)
- 2018 APS March Meeting, Los Angeles, USA
Oral Presentation: [Magnetically-active Boundaries in Topological Superfluid \$^3\text{He}\$ -B](#)
- 2016 APS March Meeting, Baltimore, USA
Oral Presentation: [Collective modes in non-uniform superconductors](#)
- 2015 APS March Meeting, San Antonio, USA
Oral Presentation: [Heat transport along domain walls and surfaces of superconductors](#)

- 2014 August 6-13, International Conference on Low Temperature Physics LT-27, Buenos Aires, Argentina
Poster Presentation: Surface roughness effects on interface states and non-uniform phases in spatially-confined condensates
- 2014 APS March Meeting, Denver, USA
Oral Presentation: Effects of surface roughness on non-uniform phases of superfluid ^3He and spin-triplet models for Sr_2RuO_4
- 2013 Cottrell Scholar Conference, Tuscon, AZ
Oral Presentation: Mathematics, Physics and Magic
- 2013 APS March Meeting, Baltimore, USA
Oral Presentation: Phase Transitions and Critical Current in Superfluid ^3He Films
- 2011 APS March Meeting, Dallas, USA
Oral Presentation: Signatures of Crystalline Phases and Domain Walls in Superfluid ^3He Thin Films
- 2011 Jan, KITP miniworkshop on Fe-based materials
- 2009 APS March Meeting, Pittsburgh, USA
Oral Presentation: Competition of SDW and SC in two-band metals: pnictides
- 2008, August 12, LT-25, Amsterdam, the Netherlands
Poster presentation: Spin relaxation in quantum dots due to electron exchange with the leads
- 2008 APS March Meeting, New Orleans, USA
Oral Presentation: Spin-Triplet relaxation through leads in double quantum dots
- 2007, July 16-28, International Summer School *From BCS to Exotic superconductivity*, Cargèse, France
- 2007, May 13-18, SCES International Conference, Houston, USA
Poster Presentation: Andreev bound states in non-centrosymmetric superconductors
- 2007 APS March Meeting, Denver, USA
Oral Presentation: Andreev bound states in non-centrosymmetric superconductors
- 2006, August 14-25, Miniworkshop on New States of Stable and Unstable Quantum Matter, Trieste, Italy
Talk + poster: Anisotropy of heat conductivity and specific heat in CeCoIn_5 : nodal structure
- 2006, July, M2S-HTSC 8th International Conference, Dresden, Germany
Poster Presentation: Nodal structure of superconductors probed by magnetic field
- 2006 APS March Meeting, Baltimore, USA
Oral Presentation: Anisotropic properties of unconventional superconductors in magnetic field: testing the nodal structure
- 2005, QPT program, KITP, Santa Barbara, CA
- 2005 APS March Meeting, Los Angeles, USA
Oral Presentation: FFLO state in 2D d -wave superconductors
- 2004 Quantum Fluids and Solids International Conference, Trento, Italy
Contributed talk: "Striped order" in superfluid ^3He films
- 2003 Quantum Fluids and Solids International Conference, Albuquerque, USA
Poster Presentation: Thermodynamic Properties of Thin Films of Superfluid $^3\text{He-A}$
- 2002 APS March Meeting, Indianapolis, USA
Oral Presentation: Surface Modes of Superfluid Films of ^3He
- 2000 International Summer School on Superconductivity, University of Colorado, Boulder, USA

CONFERENCES: co-author

- 2019 QFS conference, Edmonton, Canada; *Poster Presentation: Suppression of superfluidity by magnetic boundary scattering in confined superfluid $^3\text{He-A}$*
P. J. Heikkinen, A. Casey, L. V. Levitin, X. Rojas, A. Vorontsov, P. Sharma, N. Zhelev, J. M. Parpia, and J. Saunders
- 2018 APS March meeting, Los Angeles; *Oral Presentation: Pair breaking at the surface of the unconventional superfluid*
Petri Heikkinen, Andrew Casey, Lev Levitin, Xavier Rojas, John Saunders, Anton Vorontsov, Nik Zhelev, Jeevak Parpia
- 2015 Quantum Fluids and Solids International Conference, Niagara Falls, NY
Invited talk: Thermal conductivity in non-uniform superconductors
Caroline Richard, Anton B. Vorontsov
- 2015 APS March meeting; *Oral Presentation: Heat Transport in non-uniform superconductors*
Caroline Richard, A.B.Vorontsov
- 2014 APS March meeting; *Oral Presentation: Temperature Dependence of the London Penetration Depth and Nodal Gap Structure of UPt_3 from Small Angle Neutron Scattering*
W.P. Halperin, W.J. Gannon, C. Rastovski, K.J. Schlessinger, C. Steiner, M.R. Eskildsen, A.B.Vorontsov, J. Hlevyack, J. Gavilano, U. Gasser, G. Nagy
- 2012 APS March Meeting; *Oral Presentation: Gap structure probed by field-angle resolved thermal oscillations in CeCoIn_5 superconductor*
Matthias J. Graf, Tanmoy Das, Anton B. Vorontsov, Ilya Vekhter
- 2012 APS March Meeting; *Oral Presentation: Jump in specific heat at the superconducting transition in iron pnictides*
Maxim G. Vavilov, Andrey V. Chubukov, Anton B. Vorontsov
- 2011 APS March Meeting; *Oral Presentation: Effect of annealing on the gap structure of $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$: low temperature specific heat studies*
K.Gofryk, F.Ronning, E.D.Bauer, J.D.Thompson, A.B.Vorontsov, I.Vekhter, A.S.Sefat, T.Imai

CONFERENCES: presentations by students

- 2014 Symposium "Topological States of matter" Gothenburg, Sweden; *Poster Presentation: Collective modes in non-uniform superconductors*
Andrew Hammer, Anton Vorontsov
- 2013 APS March meeting; *Oral Presentation: Spin Susceptibility Enhancement in Superconductors*
Benjamin Rosemeyer, Anton Vorontsov
- 2013 APS March meeting; *Oral Presentation: Sign-changing nodal s-wave gap in heavily over doped $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$ evidenced from thermal-transport measurement*
Daiki Watanabe, Shigeru Kasahara, Takuya Yamashita, Takumi Ota, Takasada Shibauchi, Yuji Matsuda, Minoru Yamashita, Hideto Fukazawa, Taku Saito, Yoh Kohori, Shigeyuki Ishida, Kunihiro Kiho, Chul-Ho Lee, Akira Iyo, Hiroshi Eisaki, Anton Vorontsov
- 2011 APS March Meeting; *Oral Presentation: Critical current in disordered iron-pnictide superconducting wires*
Dushko Kuzmanovski, Maxim Vavilov, Anton Vorontsov

SEMINARS, COLLOQUIA, PUBLIC LECTURES

- 2019 June 9, Chalmers University, Sweden
Seminar: Quasiclassical approach to heat transport
- 2019 May 23, Royal Holloway University of London, UK
Seminar: Andreev Bound States and quasiclassical boundary conditions
- 2017 Nov 17, Montana State University, Bozeman MT
Colloquium: Superfluid ^3He in tight spaces
- 2017 Oct 5, Montana State University, Bozeman MT
Interdisciplinary seminar: Art and physics: condensed matter and superconductivity
- 2017 Sept 28, Northwestern University, Evanston IL
Seminar: Heat transport in nonuniform superconductors
- 2017 Sept 25, Idaho State University, Pocatello ID
Colloquium: Superconductivity and Superfluidity
- 2017 June 12, Oxford University, UK
Seminar: Heat transport in nonuniform superconductors
- 2017 March 14, Rutherford Lab, UK
Seminar: Superconductivity and Magnetism: iron-pnictides and CeCoIn_5
- 2017 Mar 8, Chalmers University, Sweden
Seminar: Heat transport in domain walls of unconventional superconductors
- 2017 Jan 18, Royal Holloway University of London, UK
Seminar: Superconductivity and Magnetism: iron-pnictides and CeCoIn_5
- 2015 Oct 29, University of Florida, Gainesville, FL
Colloquium: Superconductivity, the Universe, and Everything
- 2015 Sept 21, Montana State University, Bozeman, MT
Seminar: Thermal Hall effect
- 2015 June 4, Northwestern University, Evanston, IL
Seminar: Collective modes in non-uniform superconductors
- 2015 Mar 20, Montana State University, Bozeman, MT
Colloquium: Superconductivity, the Universe, and Everything
- 2013 Nov 21, McGill University, Quebec, Canada
Seminar: Non-uniform Phases in Superconducting and Superfluid He-3 Films
- 2013 Sept 3, Workshop on Multi-Component Many-Body Systems, Aspen, CO
Blackboard talk: Non-uniform ground states in superfluid ^3He and unconventional superconductors
- 2012 May 31, Department of Physics and Astronomy, Northwestern University, Evanston, IL
Seminar: Superconductivity and magnetism in iron-pnictides
- 2011 Dec 1, Applied Math Department, Montana State University
Seminar: Physics, Symmetry and Topology of Superfluid ^3He
- 2011 July 1, Physics Department, George Mason University, Fairfax, Virginia
Seminar: Superconductivity and magnetism in iron-based materials: co-existence or competition?
- 2011 Feb 4, Physics Department, U. of Alberta, Edmonton, Canada
Colloquium: Superconductivity and magnetism in iron-based materials
- 2011 Feb 3, Condensed Matter Seminar, U. of Alberta, Edmonton, Canada
Seminar: Superconductivity in narrow places
- 2010, May 27, Northwestern University
Seminar: Superconducting gap structure in iron-based materials

- 2009, Nov 18, Texas A & M University,
Seminar: Inhomogeneous states in superconductors and superfluids: competing orders and broken symmetries
 - 2009, March 30, Montana State University,
Seminar: Superconductivity and magnetism in FeAs-materials
 - 2009, February 23, University of Florida,
Seminar: Inhomogeneous states in unconventional superconductors and superfluid Helium-3
 - 2009, February 20, Louisiana State University,
Seminar: Superconductivity and magnetism in FeAs-materials
 - 2008, March 24, Montana State University
Colloquium: Inhomogeneous superconductivity and surface Andreev states
 - 2007, November 6, University of Karlsruhe, Germany
Seminar: Anisotropic properties of Unconventional superconductors in magnetic field: testing the nodal structure
 - 2007, April 11, University of Wisconsin-Madison,
Seminar: Inhomogeneous states in films of superfluid ^3He and superconducting wires
 - 2007, February 23, Naval Research Lab,
Seminar: Inhomogeneous states in 2D d -wave superconductors: FFLO state
 - 2006, September 28, University of Karlsruhe, Germany
Seminar: Inhomogeneous states in 2D d -wave superconductors: FFLO state
 - 2005, May 2, T-11/LANL
Seminar: Superfluid ^3He films: an analogue of the FFLO state
 - 2005, January 18, Louisiana State University
Seminar: Physics of superfluid ^3He in thin films
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ANTON VORONTSOV

Funding and Grant Activity

AWARDED GRANTS

- 2010 CAREER grant, National Science Foundation, \$420,000
DMR-0954342 “Theory and modeling of non-uniform superconductors and superfluids”
- 2013 Cottrell Scholar Award, Research Corporation for Science Advancement, \$75,000
“Superconductivity and Magnetism in New Materials and New Environments”
- 2013 Instructional innovation grant, Montana State University, \$5,000
“Physics, Mathematics and Magic”

SUBMITTED PROPOSALS

- Dept. of Energy CAREER “Inhomogeneous States in Novel Superconductors” 2009, Role: PI (declined)
 - Sloan Foundation Fellowship “Inhomogeneous superconducting states in novel complex materials” 2009, Role: PI (declined)
 - Sloan Foundation Fellowship “Superconductivity and Magnetism in New Environments” 2010, Role: PI (declined)
 - Pre-Proposal for AFOSR FY2010 “Theory Network on Nanoscale Superconducting, Magnetic and Semiconducting Materials and Interfaces: From Basic Physics to Simulation, Modeling and Device Design” 2010, Role: CO-PI (declined)
 - NSF-MRI pre-proposal “Extreme Computational Theoretical Physics” 2013, Role: CO-PI (declined)
 - Silicon Mechanics Research Cluster grant proposal “Extreme Computational Theoretical Physics” 2014, Role: CO-PI (declined)
 - National Science Foundation “Theory for detection and manipulation of interface states in realistic superconductors”, 2016 Role: PI (declined)
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ANTON VORONTSOV

Teaching & Outreach

TEACHING EXPERIENCE AND AWARDS

- Cottrell Scholar Award, 2013
 - Instructional Innovation Grant, MSU 2013
 - Participation in a number of workshops on teaching methodology organized by American Association of Physics Teachers, MSU Center for Faculty Excellence, Research Corporation for Science Advancement
 - Seminar lecture course (advanced graduate)
"Introduction to Green's functions in Many-Body physics" (2011)
 - Graduate courses:
Quantum Field Theory, Condensed Matter 2: Quantum Fluids, Statistical mechanics,
Classical mechanics, Electrodynamics-I, Electrodynamics-II
 - Undergraduate courses:
Introduction to Theoretical Physics
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SPECIAL LECTURES, PHYSICS SCHOOLS

- Dirac Equation, Workshop on Particle Physics for MSU SPS, June 25-27, 2018
 - Unconventional superconductivity, Linnaeus summer school in quantum engineering, Aspenäs Hergrård, June 26-29 2017, Sweden
 - Free Energy functional in Quasiclassical theory of superconductivity, Chalmers University, Sweden, March 6 2017
 - Superfluid phases of ^3He in bulk and films, Northwestern University, 22 April 2008
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MENTORING

- graduate student Benjamin Rosemeyer, 2011-2016
 - graduate student Andrew Hammer, 2013-2015
 - graduate student Sourav Sen Choudhory, 2015-present
 - Postdoctoral associate Caroline Richard, 2014-2016
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OUTREACH ACTIVITIES

- Lectures "Introduction to Superconductivity", "Quantum Life of a Liquid" to middle- and high-school students from Livingston, MT, visiting MSU as a part of STEM mentoring program
 - Consultant for "Superconducting levitating train" project for high school students from Whitefish High School, MT (2012)
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