

CURRICULUM VITAE

Name: Maxim M. KORSHUNOV

Personal:

Birth date: 19.11.1979

Family Status: married, daughter

Positions held:

Leading Researcher, Kirensky Institute of Physics, Federal Research Center KSC SB RAS,
Physics of Magnetic Phenomena Laboratory (Theoretical group)

Address: Kirensky Institute of Physics, 660036, Krasnoyarsk, RUSSIA

Office: 3-57

Phone: +7 (391) 2494556

Fax: +7 (391) 2438923

Homepage: <http://kirensky.ru/ru/institute/staff/cv/kmm/kmm>

E-mail: mkor@iph.krasn.ru

Professor, Siberian Federal University

Address: 79 Svobodny Prospect, 660041 Krasnoyarsk, RUSSIA

Office: 14-09

Phone: +7 (391) 2062117

Additional information:

Languages: Russian (native), English (fluent), German (basics)

Experience in computer programming: C/C++, Fortran, Maple, Matlab, Mathematica

Education:

1996-2001 – Krasnoyarsk State University, Krasnoyarsk, Russia,
graduated from Physics Department with the specialty “Theoretical Physics”

Degree:

2015 – Dr. Sci. in Condensed Matter Physics, Kirensky Institute of Physics.

Thesis title: “Investigation of the relation between magnetism and unconventional superconductivity in multiorbital models for layered transition metal compounds”

2004 – Ph.D. in Condensed Matter Physics, Kirensky Institute of Physics.

Thesis title: “Properties of the Normal and Superconducting Phases in the Singlet-Triplet Model for Copper Oxides”,

Scientific adviser: Prof. Dr. of Sci. S.G. Ovchinnikov

Professional career:

2016-present – Leading Researcher, Kirensky Institute of Physics, Federal Research Center KSC SB RAS, Physics of Magnetic Phenomena Laboratory, Krasnoyarsk, 660036, Russia

2015-present – Professor, Siberian Federal University, Krasnoyarsk, 660041, Russia

2012-2016 – Senior Researcher, L.V. Kirensky Institute of Physics Siberian Branch of RAS, Physics of Magnetic Phenomena Laboratory, Krasnoyarsk, 660036, Russia

2011-2015 – Associate Professor, Siberian Federal University, Krasnoyarsk, 660041, Russia

- 2011-2012 – Researcher, L.V. Kirensky Institute of Physics Siberian Branch of RAS, Physics of Magnetic Phenomena Laboratory, Krasnoyarsk, 660036, Russia
- 2009-2011 – Postdoctoral Associate, University of Florida, Department of Physics, Gainesville, FL 32611, USA
- 2006-2009 – Postdoc, Max-Planck-Institut für Physik Komplexer Systeme (MPI PKS), Division Electronic Correlations, Nöthnitzer Straße 38, D-01187, Dresden, Germany
- 2005-2006 – Researcher, L.V. Kirensky Institute of Physics Siberian Branch of RAS, Physics of Magnetic Phenomena Laboratory, Krasnoyarsk, 660036, Russia
- 2003-2005 – Junior Researcher, L.V. Kirensky Institute of Physics Siberian Branch of RAS, Physics of Magnetic Phenomena Laboratory, Krasnoyarsk, 660036, Russia
- 2001-2003 – Engineer, L.V. Kirensky Institute of Physics Siberian Branch of RAS, Physics of Magnetic Phenomena Laboratory, Krasnoyarsk, 660036, Russia

Research interests:

- theory of strongly correlated electron systems
- unconventional and high- T_c superconductivity
- quantum theory of magnetism
- frustrated systems

Research experience:

- 2016 – Fe-based superconductors: spin-resonance peak in systems with unequal gaps.
- 2015 – Fe-based superconductors: spin-resonance peak in the presence of the nonmagnetic disorder.
- 2014 – Fe-based superconductors: scattering on magnetic impurities.
- 2013 – Fe-based superconductors: theory for the spin-orbit coupling in the magnetic response within the normal and superconducting states.
- 2012 – Fe-based superconductors: theory for the spin-fluctuation mediated superconductivity within the leading angular harmonics approximation, role of the spin-orbit coupling in the magnetic response within the normal and superconducting states.
- 2011 – lamellar sodium cobaltates: magnetic response in $\text{Na}_{0.41}\text{CoO}_2 \cdot 0.6\text{H}_2\text{O}$; Fe-based superconductors: formulation of the leading angular harmonics approximation for the superconducting vertex, analysis of the resistivity temperature dependence under a pressure in $\text{NdFeAsO}_{0.88}\text{F}_{0.12}$.
- 2010 – multiorbital effects in Fe-based superconductors: transport properties (conductivity, Raman initial slope, Hall coefficient) due to the electron-electron scattering on the itinerant spin-fluctuations, effect on T_c by various kinds of impurities (intra- and inter-band, unitary and Born limits); high- T_c cuprates: thermodynamics in the vicinity of a quantum phase transition.
- 2009 – novel Fe-based superconductors: non-analytic corrections in the 2D Fermi liquid and their relation to the linear temperature dependence of the uniform spin susceptibility, resonance mode in the electronic Raman scattering; electron-doped high- T_c cuprates: Fermi surface evolution and its topological changes with doping in $\text{Sm}_{2-x}\text{Ce}_x\text{CuO}_4$.
- 2008 – novel Fe-based superconductors: theory for magnetic excitations, their doping-dependent evolution, and the spin response in superconducting state, role of impurities in the power-law temperature dependence of the NMR spin-lattice relaxation rate below T_c .
- 2007 – lamellar sodium cobaltates: theory for dynamical magnetic response in superconducting phase and relation to the NMR experiments, electron-phonon interaction and renormalization of the phonon frequency by the scattering on

- electrons; high- T_c cuprates: doping-dependent Fermi surface evolution and quantum phase transitions.
- 2006 – lamellar sodium cobaltates: theory for itinerant magnetism; high- T_c superconductors: theory for a spin-liquid phase in underdoped cuprates.
- 2004-2005 – theory of strongly correlated electron systems, high- T_c cuprates: development of the LDA+GTB (Local Density Approximation+Generalized Tight-Binding) method for the electronic structure calculations of strongly correlated systems.
- 2002-2004 – high- T_c cuprates: spin-fluctuation and spin-exciton mechanisms of superconducting pairing, in-gap states and spin-polaron effect in the antiferromagnetic phase.
- 2001-2002 – theory of strongly correlated electron systems: generalization of Luttinger theorem for strongly correlated electron systems, spin-fluctuations study.
- 1998-1999 – general relativity: theory of Schwarzschild interior solution.

Teaching experience:

- 2015-2016 – Lectures on "Quantum Theory of Solid State" ([Siberian Federal University](#), 1 semester).
- 2014-2016 – Lectures on "Methods of Quantum Field Theory at Finite Temperature" ([Siberian Federal University](#), 1 semester).
- 2014-2016 – Lectures on "Methods of Quantum Field Theory in Statistical Physics" ([Siberian Federal University](#), 1 semester).
- 2011-2014 – Lectures on "Methods of Field Theory in Statistical Physics" ([Siberian Federal University](#), 2 semesters).
- 2011-2016 – Lectures on "Thermodynamics, Statistical Physics, and Kinetics" ([Siberian Federal University](#), 2 semesters).

Seminars:

- 2016 – June 13th, Max-Planck-Institut FKF, Stuttgart, Germany
- 2016 – June 1st, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2015 – December 7th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2015 – January 30th, Lebedev Physical Institute RAS, Moscow, Russia
- 2014 – December 17th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2014 – November 18th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2014 – October 13th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2014 – September 8th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2014 – January 29th, [Scientific session on "Superconductivity in Iron-based compounds" of Branch of Physical Sciences of Russian Academy of Sciences](#), Lebedev Physical Institute RAS, Moscow, Russia
- 2013 – April 18th, Lebedev Physical Institute RAS, Moscow, Russia
- 2013 – April 18th, Landau Institute for Theoretical Physics RAS theoretical seminar in the Kapitza Institute for Physical Problems RAS, Moscow, Russia
- 2013 – April 2nd, Naval Research Laboratory, Washington DC, USA
- 2013 – January 29th, Institute of Electrophysics Ural Division RAS, Ekaterinburg, Russia
- 2012 – March 5th, Naval Research Laboratory, Washington DC, USA
- 2012 – January 11th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2011 – November 8th, Institute of Electrophysics Ural Division RAS, Ekaterinburg, Russia
- 2010 – June 25th, Naval Research Laboratory, Washington DC, USA
- 2009 – February 5th, Max-Planck-Institut PKS, Dresden, Germany
- 2008 – May 29th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2008 – July 29th, University of Würzburg, Würzburg, Germany
- 2008 – April 17th, Max-Planck-Institut PKS, Dresden, Germany
- 2007 – May 28th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia

- 2006 – October 26th, Max-Planck-Institut PKS, Dresden, Germany
- 2006 – September 18th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2006 – May 12th, Technische Universität Braunschweig, Braunschweig, Germany
- 2006 – April 27th, Max-Planck-Institut PKS, Dresden, Germany
- 2005 – May 26th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2005 – April 6th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2004 – February 16th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia
- 2003 – November 24th, L.V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russia

Scientific visits:

- 2016 – Prof. B. Keimer department at Max-Planck-Institut FKF, Stuttgart, Germany, June 11-23
- 2013 – Prof. P.J. Hirschfeld group at University of Florida, Gainesville, Florida, USA, March 24-30
- 2012 – Prof. P.J. Hirschfeld group at University of Florida, Gainesville, Florida, USA, February 18-26
- 2011 – Prof. T.P. Devereaux group at Stanford University, Stanford, California, USA, February 27-March 3
- 2003 – Prof. K.-H. Benneman group at Institut fuer Theoretische Physik, Freie Universitaet Berlin, Berlin, Germany, June 16-August 3

Plenary talks at the international conferences:

- 2014 – International Winter School of Theoretical Physicists "Kourovka XXXV", Verhnaya Sysert, Russia, February 23-March 1

Invited talks at the international conferences:

- 2016 – VI Euro-Asian Symposium "Trends in MAGnetism" (EASTMAG-2016), Krasnoyarsk, Russia, August 15-19
- 2016 – Superstripes 2016 – Quantum in Complex Matter: Superconductivity, Magnetism and Ferroelectricity, Ischia (Naples), Italy, June 23-29
- 2013 – Trilateral Workshop on Hot Topics in HTSC: Fe-Based Superconductors, Zvenigorod, Russia, September 29-October 2
- 2013 – V Euro-Asian Symposium "Trends in MAGnetism": Nanomagnetism (EASTMAG), Valdivostok, Russia, September 15-21
- 2013 – Superstripes 2013 – Quantum in Complex Matter: Superconductivity, Magnetism and Ferroelectricity, Ischia, Italy, May 27-June 1
- 2013 – Electronic Structure and Electron Spectroscopies (ES&ES), Institute of Metal Physics, Kyiv, Ukraine, May 20-23
- 2012 – Superstripes 2012 – Phase Separation and Superstripes in High Temperature Superconductors and Related Materials, Erice-Sicily, Italy, July 11-17
- 2011 – KITP Miniprogram: Iron-Based Superconductors, Santa Barbara, California, USA, January 10-21
- 2007 – 5th International Conference on Magnetic and Superconducting Materials (MSM07), Khiva, Uzbekistan, September 25-30
- 2007 – 6th International Conference on New Theories, Discoveries and Applications of Superconductors and Related Materials (New3SC-6), Sydney, Australia, January 9-11

Contributed talks at the international conferences:

- 2015 – 5th International Conference "Fundamental Problems of High-Temperature Superconductivity" (FPS'15), Moscow, Russia, October 5-9

- 2015 – XXXVII Meeting on Low Temperature Physics (MLT-37), Kazan, Russia, June 29-July 3
- 2014 – Workshop on Probing and Understanding Exotic Superconductors and Superfluids, Trieste, ICTP, Italy, October 27-31
- 2013 – APS March Meeting 2013, Baltimore, Maryland, USA, March 18-22
- 2012 – APS March Meeting 2012, Boston, Massachusetts, USA, February 27-March 2
- 2011 – 4th International Conference "Fundamental Problems of High Temperature Superconductivity" (FPS'11), Moscow, Russia, October 3-7
- 2011 – APS March Meeting 2011, Dallas, Texas, USA, March 21-25
- 2010 – APS March Meeting 2010, Portland, Oregon, USA, March 15-19
- 2009 – Korrelationstage 2009 (KORREL09), Dresden, Germany, March 2-6
- 2008 – 3rd International Conference "Fundamental Problems of High Temperature Superconductivity" (FPS'08), Moscow-Zvenigorod, Russia, October 13-17
- 2008 – Competing Orders, Pairing Fluctuations, and Spin Orbit Effects in Novel Unconventional Superconductors (COFUS08), Dresden, Germany, June 30-July 11
- 2008 – Annual Meeting of the Deutsche Physikalische Gesellschaft and DPG Spring meeting of the Condensed Matter Division, Berlin, Germany, February 25-29
- 2008 – 23. Workshop on "Novel Materials and Superconductors", Planneralp, Austria, February 23-March 1
- 2007 – Euro-Asian Symposium "Magnetism on a Nanoscale" (EASTMAG-2007), Kazan, Russia, August 23-26
- 2007 – Annual Meeting of the Deutsche Physikalische Gesellschaft and DPG-spring meeting of the Division Condensed Matter, Regensburg, Germany, March 26-30
- 2006 – 2nd International Conference "Fundamental Problems of High Temperature Superconductivity" (FPS'06), Moscow-Zvenigorod, Russia, October 9-13
- 2004 – NATO Advanced Research Workshop (NATO ARW), Krasnoyarsk, Russia, August 29- September 1
- 2004 – 2nd Euro-Asian Symposium "Trends in Magnetism" (EASTMAG-2004), Krasnoyarsk, Russia, August 24-27
- 2004 – XXX International Winter School of Theoretical Physicists (*Kourovka-2004*) Yekaterinburg-Chelyabinsk, Russia, February 22-28

Participation in the international conferences:

- 2016 – Spectroscopies in Novel Superconductors (SNS-2016), Stuttgart/Ludwigsburg, Germany, June 19-24
- 2013 – Zlatko Tesanovic Memorial Symposium, Baltimore, Maryland, USA, March 23
- 2010 – Physical Phenomena at High Magnetic Fields (PPHMF-VII), Tallahassee, Florida, USA, December 4-8
- 2010 – 50 Years of the Gor'kov Equation: A celebration of the Distinguished Career of Dr. Lev Gor'kov, Tallahassee, Florida, USA, December 2-3
- 2009 – KITP Conference: Critical Issues Related to Higher Temperature Superconductors, Santa Barbara, California, USA, June 22-26
- 2008 – International Conference on Highly Frustrated Magnetism (HFM2008), Braunschweig, Germany, September 7-12
- 2008 – Unconventional Phases and Phase Transitions in Strongly Correlated Electron Systems (UPPT08), Dresden, Germany, June 2-27
- 2006 – First International workshop on the physical properties of lamellar cobaltates, LPS University of Paris-Sud, Orsay, France, July 16-20
- 2006 – 8th International Conference on Materials and Mechanisms of Superconductivity and High Temperature Superconductors (M2S-HTSC VIII), Dresden, Germany, July 9-14
- 2005 – The International Conference on Strongly Correlated Electron Systems (SCES'05), Vienna, Austria, July 26-30

- 2005 – Summer School on Particle Physics, Trieste, Italy, June 13-24
- 2004 – The International Conference on Strongly Correlated Electron Systems (*SCES'04*), Karlsruhe, Germany, July 26-30
- 2004 – Second International Symposium on Physics of Solids Under High Pressure Using Nuclear Probes (*HPNP'04*), Cologne, Germany, July 20-24
- 2003 – International Conference on Magnetism *ICM-2003* (incorporating *SCES-2003*), Rome, Italy, July 27- August 1
- 2002 – The International Conference on Strongly Correlated Electron Systems (*SCES'02*), Cracow, Poland, July 10-13
- 2002 – XXIX International Winter School of Theoretical Physicists (*Kourovka-2002*), Yekaterinburg, Russia, February 24-March 2

Conferences organization:

- 2016 – *Program Committee*, EASTMAG-2016 – VI Euro-Asian Symposium «Trends in Magnetism», Krasnoyarsk, Russia, August 15-19
- 2013 – *Scientific Committee*, Superstripes 2013 – Quantum in Complex Matter: Superconductivity, Magnetism and Ferroelectricity, Ischia, Italy, May 27-June 1
- 2008 – *Abstract Committee*, International Conference on Highly Frustrated Magnetism (*HFM2008*), Braunschweig, Germany, September 7-12

Grants held (past and present):

1. Russian Foundation For Basic Research (**RFBR**) grant 16-02-00098 [2016-2018] (*Principal Investigator*)
2. Russian Foundation For Basic Research (**RFBR**) grant 13-02-01395 [2013-2015] (*Principal Investigator*)
3. Russian Foundation For Basic Research (**RFBR**) grant 12-02-31534 [2012-2013] (*Principal Investigator*)
4. **FCP Scientific and Research-and-Educational Personnel of Innovative Russia for 2009-2013** (GK 16.740.12.0731) [2011-2013] (*Principal Investigator*)
5. **FCP Scientific and Research-and-Educational Personnel of Innovative Russia for 2009-2013** (GK P891) [2010-2012]
6. President Grant for Government Support of the Leading Scientific Schools of the Russian Federation (NSh-2886.2014.2) [2014-2015]
7. President Grant for Government Support of the Leading Scientific Schools of the Russian Federation (NSh-1044.2012.2) [2012-2013]
8. Siberian Federal University (Theme #F-11) [2012-2013]
9. **President of Russia Grant for Young Scientists** MK-1683.2010.2 [2010-2011]
10. Russian Foundation For Basic Research (**RFBR**) grants 09-02-00127 [2009-present]
11. Presidium of RAS program “Quantum physics of condensed matter” N5.7 [2009-present]
12. Presidium of RAS program “Quantum physics of condensed matter” N5.7 [2009-present]
13. Integration Grant of Siberian Branch of RAS – Ural Branch of RAS N 40 [2009-present]
14. INTAS Fellowship Grant for Young Scientists in the category Post Doctoral Fellowship, grant 05-109-4891 [2006-2008] (*Principal Investigator*)
15. Russian Foundation For Basic Research (**RFBR**) grant 06-02-16100 [2006-2007]
16. Russian Foundation For Basic Research (**RFBR**) grant 06-02-90537-BNTS [2006-2007]
17. Program of Physical Branch of Russian Academy of Science “Strongly correlated electron systems” [2004-2006]
18. Russian Foundation For Basic Research (**RFBR**) grant 03-02-16124 [2003-2005]
19. Siberian Branch of RAS (Lavrent'yev Contest for Young Scientists) [2003-2004, 2006-2007]

20. Joint Integration Program of Siberian and Ural Branches of Russian Academy of Science [2003-2005, 2006-2007]
21. Russian Academy of Science Program "Quantum Macrophysics" [2003-2006]
22. Russian Federal Program "Integratsia" grant B0017 [2003, 2004-2005]
23. Russian Foundation For Basic Research (RFBR) and the Krasnoyarsk Science Foundation program "Enisey" 02-02-97705 [2002]
24. Krasnoyarsk Regional Science Foundation, grant 10F003C [2002]
25. Russian Federal Program "Integratsia" grant A0019 [2001, 2002]
26. INTAS grant 01-0654 [2001-2004]

Awards and prizes:

- 2012 – L.V. Kirensky Prize of the Siberian Branch of Russian Academy of Sciences for "Description of the properties of unconventional superconductors within the spin-fluctuation theories"
- 2012 – State Prize of the Krasnoyarsk Territory in the Field of Professional Education
- 2012-2014 – "The Dynasty Foundation and the International Center for Fundamental Physics in Moscow" individual award for Researches
- 2011 - Award for the best contributed talk at the 4th International Conference "Fundamental Problems of High Temperature Superconductivity" (FPS'11), Moscow, Russia, October 3-7
- 2008 - Award for the best contributed talk at the 3rd International Conference "Fundamental Problems of High Temperature Superconductivity" (FPS'08), Moscow, Russia, October 13-17
- 2006-2008 – Award of the personal "INTAS Fellowship Grant for Young Scientists" in the category "Post Doctoral Fellowship", 05-109-4891
- 2004 – "The Dynasty Foundation and the International Center for Fundamental Physics in Moscow" individual award for Ph.D. students
- 2003 – Winner of the "L.V. Kirensky Institute of Physics Young Scientists Competition"