

MAXIM DZERO

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EDUCATION**Florida State University**

Ph.D., Department of Physics (2003)
Thesis: "Physical properties of novel magnetic heterostructures"
Director: Lev P. Gorkov

Moscow State University, Russia

M.S., Department of Physics (1996)

PROFESSIONAL EMPLOYMENT

1996-1998 Research assistant at Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia
1999-2003 Research assistant at Condensed Matter Theory Group, National High Magnetic Field Laboratory, Tallahassee, FL
2003-2006 Postdoctoral Research Associate, U.S. Department of Energy Ames Laboratory. Advisor: Prof. Joerg Schmalian
2006-2009 Postdoctoral Research Associate, Department of Physics, Columbia University and at the Center for Materials Theory, Rutgers University. Advisors: Prof. Piers Coleman, Prof. Emil Yuzbashyan and Prof. Boris Altshuler
2009-2010 Postdoctoral Research Associate, Department of Physics, University of Maryland, Advisor: Prof. Victor Galitski
2010-current Assistant Professor, Department of Physics, Kent State University

EDITORIAL ACTIVITIES

Referee for Physical Review Letters (~ 3/year), Physical Review **B** (~ 5/year), Journal of Physics **A** (~2/year).

TEACHING EXPERIENCE

Florida State University
1998-2000 Teaching assistant at Department of Physics

Iowa State University
2004-2005 Graduate Seminar on Many-Body Physics

Kent State University
2010-2011 Graduate level course on Classical Mechanics

AWARDS AND HONORS

Institute for Complex and Adaptive Matter Postdoctoral Fellow (2004-2006)
Dirac-Hellman Award in Theoretical Physics (awarded by the Department of Physics, FSU 2002)
Soros Foundation Fellowship (1993)

INVITED TALKS

- “*Composite pairing and heavy-fermion superconductivity*”, American Physics Society March Meeting, Pittsburgh (March 2009)
- “*How more is different: correlated quantum matter away from equilibrium*”, Department of Physics, University of West Virginia (February 2009).
- “*Cooper pair turbulence in atomic traps*”, Department of Physics, University of Wisconsin-Madison (May 2008)
- “*Exploring the Superfluid Universe: theory of non-adiabatic pairing in fermionic condensates*”, Department of Physics, University of Florida (September 2007)
- “*Symplectic large-N and superconductivity in PuCoGa5*”, Aspen Center for Physics (August 2007)
- “*Kondo lattice phenomena in Ce-based heavy fermion compounds*”, Brookhaven National Laboratory (April 2007)
- “*How more is different: correlated quantum matter*”, Department of Physics and Astronomy, Louisiana State University (January 2007)
- “*Non-equilibrium superconductivity in trapped Fermi gases*”, Department of Physics and Astronomy, Iowa State University (May 2006)
- “*Superconductivity and valence fluctuations in charge Kondo systems*”, Argonne National Laboratory (March 2006)
- “*Theory for activation barriers in structural glasses*”, Aspen Center for Physics (August 2005)
- “*Superconductivity in charge Kondo systems*”, Department of Physics and Astronomy, Rutgers University (May 2005)
- “*Superconductivity in charge Kondo systems*”, Physics Department, Princeton University (October 2004)
- “*Superconductivity in charge Kondo systems*”, Department of Physics and Astronomy, Iowa State University (September 2004)
- “*Breakup of a Stoner model for the 2D ferromagnetic quantum critical point*”, Los Alamos National Laboratory (November 2003)
- “*On superconducting transition near a ferromagnetic quantum critical point*”, Department of Physics, University of Florida (April 2003)

- “*New effects in magnetoresistance of ferromagnetic domain walls*”, Ames Laboratory, Iowa State University (January 2003)
- “*New effects in magnetoresistance of ferromagnetic domain walls*”, Theoretical Physics Institute, University of Minnesota (December 2002)
- “*Excitons and polarons in 2D quantum wells*”, Bogoliubov Laboratory for Theoretical Physics, Joint Institute for Nuclear Research, Dubna (May 1998)

SELECTED PUBLICATIONS

- Maxim Dzero, Kai Sun, Victor Galitski and Piers Coleman, “*Topological Kondo Insulators*”, Physical Review Letters **104**, 106408 (2010)
- Marianna Maltseva, M. Dzero and P. Coleman, “*Electron Cotunneling into a Kondo Lattice*”, Physical Review Letters **103**, 206402 (2009)
- M. Dzero, E. A. Yuzbashyan and B. L. Altshuler, “*Cooper pair turbulence in atomic Fermi gases*”, Europhysics Letters **85**, 20004 (2008).
- R. Flint, M. Dzero and P. Coleman, “*Heavy electrons and the symplectic symmetry of spin*”, Nature Physics **4**, 643 (2008)
- M. Dzero, E. A. Yuzbahsyan, B. L. Altshuler and P. Coleman, “*Spectroscopic signatures of nonequilibrium superfluidity in atomic Fermi gases*”, Physical Review Letters **99**, 160402 (2007)
- E. A. Yuzbashyan and M. Dzero, “*Dynamical vanishing of the order parameter in a fermionic condensate*”, Physical Review Letters **96**, 230404 (2006)
- M. Dzero, J. Schmalian and P. Wolynes, “*Activated events in glasses: the structure of entropic droplets*”, Physical Review **B72** (Rapid Communication) 100201 (2005)
- M. Dzero, J. Schmalian, “*Superconductivity in charge Kondo systems*”, Physical Review Letters **94**, 157003 (2005)
- M. Dzero, L. P. Gor'kov, “*Breakup of a Stoner model for the 2D ferromagnetic quantum critical point*”, Physical Review **B69**, 092501 (2004)

RESEARCH INTERESTS

My research activities are in theoretical condensed matter physics. My main interest is the investigation of strongly correlated quantum mechanical many body systems, particularly their new collective behavior emerging due to competing interactions. Employing the tools of quantum statistical mechanics of many body systems, I am analyzing analytically and numerically phenomena such as superconductivity, quantum phase transitions, magnetism, disordered systems and non-equilibrium dynamics of glassy systems.