

Personal Information

Work address: Department of Mathematics, Statistics, and Computer Science
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 Visa status: H-1B
 Citizenship: Russia
 Date of birth: August 12, 1982, Moscow, Russia

Research interests

Differential Algebra, Symbolic Computation

Education

May 2007 Ph.D. in Mathematics at **North Carolina State University**,
 “*Tannakian Categories and Linear Differential Algebraic Groups*,”
 advisor Professor M.F. Singer

May 2008 Ph.D. in Mathematics at **Moscow State University**,
 “*Algorithmic Methods in Differential Ideal Theory*,”
 advisor Professor E.V. Pankratiev

December 2005 M.S. in Mathematics at North Carolina State University,
 advisor Professor M.F. Singer

June 2004 Specialist Degree (covers B.S.) with honors in Mathematics
 and Applied Mathematics, Moscow State University,
 Department of Mechanics and Mathematics, Russia
 Final year thesis paper: “*Sections of a Differential Spectrum and
 Factorization-free Computations*,” advisor Professor E.V. Pankratiev

Professional history

Aug 2007 – Now Research Assistant Professor, Department of Mathematics
 University of Illinois at Chicago

Aug 2006 – May 2007 Graduate Teaching Assistant, Department of Mathematics
 North Carolina State University

Jun 2006 – Jul 2006 Graduate Research Assistant, Department of Mathematics
 North Carolina State University

Jan 2006 – May 2006 Graduate Teaching Assistant, Department of Mathematics
 North Carolina State University

Aug 2004 – Dec 2005 Graduate Research Assistant, Department of Mathematics
 North Carolina State University

Sep 1999 – May 2001 Volunteer teaching for high-school students,
 Department of Mechanics and Mathematics Moscow State University

Publications

In journals

- 2009
 1. A. Ovchinnikov, *Tannakian Categories, Linear Differential Algebraic Groups, and Parameterized Linear Differential Equations*, Transformation Groups **14** (1) (2009), doi:10.1007/s00031-008-9042-9, to appear, 29 pages.
 2. O. Golubitsky, M.V. Kondratieva, and A. Ovchinnikov, *Algebraic Transformation of Differential Characteristic Decompositions from One Ranking to Another*, Journal of Symbolic Computation **44** (2009), doi:10.1016/j.jsc.2008.07.002, to appear, 25 pages.
- 2008
 1. A. Ovchinnikov, *Tannakian Approach to Linear Differential Algebraic Groups*, Transformation Groups **13** (2) (2008) 413–446.
 2. O. Golubitsky, M.V. Kondratieva, M. Moreno Maza, and A. Ovchinnikov, *A Bound for Rosenfeld-Gröbner Algorithm*, Journal of Symbolic Computation **43** (8) (2008) 582–610.
 3. O. Golubitsky, M.V. Kondratieva, and A. Ovchinnikov, *Canonical Characteristic Sets of Characterizable Differential Ideals*, Moscow University Mathematics Bulletin **63** (2) (2008) 79–81.
 4. A. Ovchinnikov, *Orders of derivatives in decompositions of radical differential ideals*, Russian Mathematical Surveys **63** (2) (2008) 383–385.
- 2006
 1. A. Ovchinnikov, *Sections of a Differential Spectrum and Factorization Free Computations*, Journal of Mathematical Sciences (New York) **135** (5) (2006) 3355–3362.
- 2005
 1. M.V. Kondratieva and A. Ovchinnikov, *Characteristic Sets of Ordinary Differential Equations*, Programming and Computer Software **31** (2) (2005) 91–96.
- 2004
 1. A. Ovchinnikov, *Characterizable Radical Differential Ideals and Some Properties of Characteristic Sets*, Programming and Computer Software **30** (3) (2004) 141–149.

Preprints (available at <http://www.math.uic.edu/~aiovchin/papers.html>)

- 2008
 1. O. Golubitsky, M.V. Kondratieva, A. Ovchinnikov, and A. Szanto, *A Bound for Orders in Differential Nullstellensatz*, submitted for publication to the Journal of Algebra, 25 pages.
 2. A. Ovchinnikov, *Differential Tannakian Categories*, submitted for publication to the Journal of Algebra, 19 pages.
 3. O. Golubitsky, M.V. Kondratieva, A. Ovchinnikov, *On the generalised Ritt problem as a computational problem*, submitted for publication, 9 pages.

In proceedings of conferences

- 2008
 1. O. Golubitsky, M.V. Kondratieva, A. Ovchinnikov, and A. Szanto, *Orders in effective differential Nullstellensatz*, *Le Matematiche*, volume LXIII (2008), 67–69.
- 2006
 1. O. Golubitsky, M. Kondratieva, M. Moreno Maza, A. Ovchinnikov, *Bounds and algebraic algorithms in differential algebra: the ordinary case*, Proceedings of the 9th International Conference on Intelligent Systems and Computer Science, Department of Mechanics and Mathematics, Moscow, 2006, 7–11
- 2004
 1. M.V. Kondratieva and A. Ovchinnikov, *On Computing Characteristic Sets of Arbitrary Radical Differential Ideals*, Proceedings of the conference Applications of Computer Algebra (ACA) 2004, 38–48
 2. A. Ovchinnikov, *Computation of Characteristic Sets of Radical Differential Ideals*, Proceedings of the conference Computer Algebra in Scientific Computing (CASC) 2004, 371–378
 3. A. Ovchinnikov, *On Characterizable Ideals and Characteristic Sets*, Contributions to General Algebra 14, 91–108, 2004
- 2002
 1. A. Ovchinnikov and A. Zobnin, *Classification and Applications of Monomial Orderings and the Properties of Differential Term-Ordering*, Proceedings of the conference Computer Algebra in Scientific Computing (CASC) 2002, 237–252
 2. A. Ovchinnikov and A. Zobnin, *A New Approach to Classification of Monomial Orderings*, Proceedings of the Workshop on Under- and Overdetermined Systems of Algebraic or Differential Equations, March 18–19, 2002, Karlsruhe, Germany, 129–140
 3. V. Mityunin, A. Ovchinnikov, A. Semyonov, A. Zobnin, *Involutive and Classical Gröbner Bases Construction from the Computational Viewpoint*, Computer Algebra and its Application to Physics, Proceedings of the International workshop (Dubna, June 28–30, 2001), Dubna: JINR, 2002, 221–230

Posters

- 2006
 1. O. Golubitsky, M.V. Kondratieva, M. Moreno Maza, and A. Ovchinnikov, *Bounds and algorithms for differential characteristic sets*, International Symposium on Symbolic and Algebraic Computation (ISSAC) 2006, Genova, Italy
- 2005
 1. O. Golubitsky, M.V. Kondratieva, and A. Ovchinnikov *Canonical Characteristic Sets of Radical Differential Ideals*, East Coast Computer Algebra Day (ECCAD) 2005, Ashland, Ohio

Teaching experience

- **University of Illinois at Chicago:**
 1. 2009:
 - (a) Spring: MCS 320, *Introduction to Symbolic Computation*
 2. 2008:
 - (a) Fall: MATH 320, *Linear Algebra*
 - (b) Spring: MATH 210, *Calculus III*
 3. 2007
 - (a) Fall: MATH 310, *Applied Linear Algebra*
- **North Carolina State University:**
 1. 2007:
 - (a) Spring:
 - i. MA-437, *Applications of Algebra*, Preparing the Professoriate program, teaching the course (<http://www7.acs.ncsu.edu/grad/ptp/>)
 - ii. Mathematics tutorial center instructor
 2. 2006:
 - (a) Fall:
 - i. MA-131, *Calculus I*, lecturer assistant and recitation session instructor (3 sections)
 - ii. “The problem of a month” challenge (for undergraduates) coordinator at the Mathematics Department
 - iii. MA-437, *Applications of Algebra*, Preparing the Professoriate program, observing the course taught by Prof. Michael F. Singer
 - iv. Attending seminars of the Preparing the Professoriate program (http://www7.acs.ncsu.edu/grad/ptp/current_program_syllabus.htm)
 - v. Mathematics tutorial center instructor
 - (b) Spring:
 - i. MA-131, *Calculus I*, lecturer assistant and recitation session instructor (3 sections)
- **Moscow State University:**
 1. 2006:
 - (a) Oral *entrance exam* in Math at Moscow State University: member of the committee
 2. 2005:
 - (a) Written *entrance exam* in Math at Moscow State University: grading
 - (b) *Computer Algebra* course for Juniors: grading
 3. 2004:
 - (a) *Differential Algebra* course for Juniors: seminar teaching
 - (b) *Programming* for freshmen: grading
 4. 2003
 - (a) *Programming* for freshmen: grading

Talks at conferences and seminars

- 2009:
 1. AMS Spring Southeastern Sectional Meeting, Recent Advances in Symbolic Algebra and Analysis, invited talk, Raleigh, NC; April 4–5.
 2. AMS Joint Mathematics Meeting, Special Session on Computational Algebra and Convexity, invited talk, *Estimates of orders of derivatives in differential Nullstellensatz*, Washington, DC; January 5–8.
- 2008:
 1. Moscow State University, Algebra Seminar, *Zariski closures of linear differential algebraic groups*, Moscow, Russia; December 15.
 2. Differential Algebra and Related Topics Workshop, *Differential elimination and bounding orders in effective differential Nullstellensatz*, Rutgers University, Newark, NJ; November 13–16.
 3. University of Illinois at Chicago, Logic Seminar, *Difference elimination and perfect difference ideals*; October 14.
 4. Mathematics Research Communities: Computational Algebra and Convexity Workshop, *Differential Algebra*, Snowbird, Utah; June 21–27.
 5. University of Waterloo, Logic Seminar, *Bounds on derivatives in differential Nullstellensatz*, Waterloo, Canada; June 17.
 6. International Algebraic Conference on the occasion of 100th anniversary of A. G. Kurosh, *Effective Differential Nullstellensatz and Differential Elimination*, Moscow State University, Russia; May 28–June 3.
 7. 12th Workshop on Computer Algebra in Dubna, *An upper bound for Differential Nullstellensatz*, JINR, Dubna, Russia; May 14–16.
- 2007:
 1. Moscow State University, Algebra Seminar, *Algorithmic Methods in Differential Ideal Theory*, Moscow, Russia; December 17.
 2. University of Illinois at Chicago, Algebra Seminar, *Differential Hopf Algebras and Tannakian Categories*, Chicago, Illinois; November 5.
 3. University of Illinois at Chicago, Algebraic Geometry Seminar, *Representations of differential algebraic groups*, Chicago, Illinois; November 1.
 4. University of Waterloo, Logic Seminar, *Differential elimination and effective differential Nullstellensatz*, Waterloo, Canada; October 17.
 5. University of Illinois at Chicago, Logic Seminar, *Bounds in differential elimination*, Chicago, Illinois; October 9.
 6. University of Illinois at Chicago, Logic Seminar, *Introduction to differential elimination*, Chicago Illinois; October 2.
 7. Université de Limoges, Non-linear Analysis and Optimization Seminar, *Bounds for orders in constructive differential algebra*, Limoges, France; June 28.
 8. Institut de Mathématiques de Jussieu, Groupe de travail différentiel, *Tannakian categories and representations of linear differential algebraic groups*, Paris, France; June 26.

9. Université Paul Sabatier, q-Difference Equations Seminar, *Tannakian categories and parameterized linear differential equations*, Toulouse, France; June 22.
 10. Université de Lille 1, Computer Algebra Workgroup, *Bounding canonical characteristic sets and the Rosenfeld-Gröbner algorithm*, Villeneuve d'Ascq, France; June 21
 11. Université de Lille 1, Differential Galois Theory Seminar, *Recovering a linear differential algebraic group from its representations*, Villeneuve d'Ascq, France; June 18.
 12. 11th Workshop on Computer Algebra in Dubna, *A bound for the Rosenfeld-Groebner algorithm with an arbitrary reduction algorithm*, JINR, Dubna, Russia; May 24–25.
 13. Kolchin Seminar at AMS Meeting, *Tannakian Formalism for Linear Differential Algebraic Groups*, Hoboken, NJ; April 14–15.
 14. Second NCSU-China Symbolic Computation Collaboration Workshop, *Bounds in Constructive Theory of Differential Ideals*, Hangzhou, China; March 5–9.
 15. AMS Annual Meeting, *Bounding Orders in Rosenfeld-Gröbner algorithm*; New Orleans, Louisiana; January 5–8.
- 2006:
 1. NCSU Algebra Seminar, *Representations of linear differential algebraic groups*, Raleigh, North Carolina; October 20.
 2. Algebraic Theory of Differential Equations, *Characteristic sets for ordinary algebraic differential equations*; Edinburgh, Scotland; July 31–August 11.
 3. ISSAC 2006 Poster session, *Bounds and algebraic algorithms for ordinary differential characteristic sets*; Genova, Italy; July 9–12.
 4. 10th Workshop on Computer Algebra in Dubna, *Bounding orders in Rosenfeld-Groebner algorithm*; JINR, Dubna, Russia; May 23–24.
 5. Special Semester on Gröbner Bases, *Bounds for algorithms in differential algebra*; Linz, Austria; May 8–17.
 - 2005
 1. A.N. Parshin's Seminar on Algebraic Geometry, *On Tannakian Categories for Parametric Differential Equations*, Moscow, Russia; December 21.
 2. Kolchin Seminar on Differential Algebra, *Tannakian Categories approach for Differential Algebraic Groups*; New York City; December 17.
 3. ORCCA Seminar, University of Western Ontario, *Computation of Canonical Characteristic Sets*, London, Canada; September 30.
 4. Symbolic Calculations and Exact Methods in Mathematical Physics (SCEMMP 2005), *On Computation of Canonical Characteristic Sets in Differential Algebra*; Kiev, Ukraine; June 20–26.
 5. East Coast Computer Algebra Day (ECCAD 2005), *Canonical Characteristic Sets of Characterizable Differential Ideals* (poster); Ashland, Ohio; March 12.
 - 2004
 1. Kolchin Seminar on Differential Algebra, *Sections of a differential spectrum*; New York City; December 11.
 2. Applications of Computer Algebra (ACA 2004), *On Computing Characteristic Sets of Arbitrary Radical Differential Ideals*; Beaumont, Texas; July 21–23.

3. Computer Algebra in Scientific Computing (CASC 2004), *Computation of Characteristic Sets of Radical Differential Ideals*; Saint Petersburg, Russia; July 12–19.
 4. International Algebraic Conference (IAC 2004), *Different Approaches to Differential Spectrum*; Moscow, Russia; May 26–June 2.
 5. Computer Algebra Seminar; JINR, Dubna, Russia; May
- 2003
 1. Applications of Computer Algebra (ACA 2003), *Characterizable Radical Differential Ideals and Characteristic Sets*; Raleigh, North Carolina; July 28–31
 2. Computer Algebra Seminar; JINR, Dubna, Russia; May
 3. Conference for Young Algebraists (CYA 18, AAA 65), *The Description of Characterizable Radical Differential Ideals and Construction of Characteristic Sets*; Potsdam, Germany; March 21–23.
 - 2002
 1. Computer Algebra in Scientific Computing (CASC 2002), *Classification and Applications of Monomial orderings and the Properties of Differential Term-Orderings*; Yalta, Ukraine; September 22–27.
 2. Summer school on Cryptology; Grenoble, France; June 17–July 5
 3. Conference for Young Algebraists (CYA 17, AAA 63), *A new approach to classification of monomial orderings*; Kaiserslautern, Germany; February 22–24.
 - 2001
 1. Computer Algebra and its Application to Physics (CAAP 2001), *Involutive and Classical Gröbner Bases Construction from the Computational Viewpoint*; Dubna, Russia; June 28–30.

Research Grants

- 2005–2007 Russian Foundation for Basis Research group grant 05-01-00671, Eugeny Pankratiev, *Computer and Differential Algebra*
- 2002–2004 Russian Foundation for Basis Research group grant 02-01-01033, Eugeny Pankratiev, *Constructive Methods in Commutative and Differential Algebra*

Invited visits

1. Collaboration with Agnes Szanto, North Carolina State University, Raleigh:
 - (a) November 30 – December 4, 2007
2. Collaboration with Moshe Kamensky and Rahim Moosa, University of Waterloo, Canada:
 - (a) June 12–18, 2008
 - (b) October 16–19, 2007
3. Collaboration with Marc Moreno Maza and Oleg Golubitsky at the University of Western Ontario, Canada:
 - (a) October 12–15, 2007
 - (b) October 11–15, 2006

- (c) November 21–28, 2005
 - (d) September 23 – October 2, 2005
4. Kolchin Seminar on Differential Algebra, New York City:
- (a) December 17–18, 2005
 - (b) December 10–11, 2004

In Ph.D. committees

- for Liqing Wang, *The Constructibility Theorem for Differential Modules*, University of Illinois at Chicago, Spring 2008

Reviewing and refereeing

1. referee reports on computer and differential algebra papers for the *Journal of Symbolic Computation* and for *Programming and Computer Software*
2. eleven reviews for the AMS Reviews

Translation

1. For the Journal of Mathematical Sciences, Gerko A. A., *Homological Dimensions and Semidualizing Complexes*, (Contemporary Mathematics and its Applications) from Russian into English
2. For the Journal of Mathematical Sciences, Levin A. B., *Multivariable Difference Dimension Polynomials*, from English into Russian

References

- Michael Singer, Department of Mathematics, North Carolina State University
- David Marker, Department of Mathematics, Stat., and CS, University of Illinois at Chicago
- Henri Gillet, Department of Mathematics, Stat., and CS, University of Illinois at Chicago
- Jan Verschelde, Department of Mathematics, Stat., and CS, University of Illinois at Chicago
- William Sit, Department of Mathematics, City University of New York
- Daniel Bertrand, Institut de Mathématiques, Université Pierre et Marie Curie
- Alexander Levin, Department of Mathematics, Catholic University of America
- Christian Haesemeyer, Department of Mathematics, University of California at Los Angeles