Curriculum Vitae
Alexander Kiselev

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EDUCATION

B.S., Physics, December 1992
St. Petersburg State University, Russia
Ph.D., Mathematics, September 1996
California Institute of Technology

RESEARCH EXPERIENCE

2005 – current	Professor, University of Wisconsin, Madison
2002 – 2005	Associate Professor, University of Wisconsin, Madison
1999 – 2002	Assistant Professor, University of Chicago
1997 –1999	L.E. Dickson Instructor, University of Chicago
1996 – 1997	Postdoctoral Fellow, MSRI, Berkeley

SELECTED VISITING POSITIONS

February - April 2005, April - May 2009	University of Chicago, Chicago
January - May 2004	Institute for Advanced Study, Princeton
June 2001	Université des Sciences et Technologies de Lille, France
Summers 1997, 1999	California Institute of Technology
February 1996 – June 1997	IHES, Bures-sur-Yvette, France

AWARDS AND HONORS

Plenary Speaker at the AMS Meeting, Waco, TX	2009
NSF research grants DMS-9801530, 0102554, 0653813	1998–2004, 2008–
NSF CAREER research grant DMS-0129470	2002–2008
International Congress In Mathematical Physics, Invited Speaker, Rio	2006
Alfred P. Sloan Foundation Research Fellowship	2001–2006
W.P.Carey Prize in Mathematics, Caltech	1996
Alfred P. Sloan Foundation Dissertational Fellowship	1995–1996

RESEARCH INTERESTS

Analysis and Applied Mathematics. More particularly, Partial Differential Equations, Fluid Dynamics, Reaction-Diffusion Equations, Models of Combustion, Spectral and Dynamical Theory of Schrödinger Operators.

SELECTED INVITED PRESENTATIONS

Southern California Analysis and PDE Conference, November 2009
2009 Fall Central Section AMS Meeting, Invited Address, October 2009
Conference on Spectral Theory, Euler Institute, St. Petersburg, Russia, August 2009
Workshop on Mathematical Aspects of Hydrodynamics, Oberwolvach, July 2009
Workshop on Selected Topics in Spectral Theory, ESI, Vienna, Austria, July 2009
Workshop on New Connections between Dynamical Systems and Hamiltonian PDEs, Maiori, Italy, June 2009
Workshop on Euler and SQG equations, AIM, Palo Alto, April 2009
Conference on Spectral theory of Operators and Applications, Marseille, CIRM, October 2008
12th International Conference on Hyperbolic Problems, University of Maryland, plenary speaker, June 2008
SIAM Conference on Analysis of Partial Differential Equations, Phoenix, Arizona, Minisymposium speaker, December 2007
AMS meeting at De Paul University, Chicago, two special session talks, October 2007
Workshop on PDE in Fluid Dynamics, Warwick University, June 2007
Workshop on Analytical and Computational Challenges of Incompressible Flows at High Reynolds Number, University of Maryland, October 2006
International Congress in Mathematical Physics, Quantum Mechanics Section, Rio de Janeiro, August 2006
ICM Satellite Conference on Geometric Analysis with Applications to PDE, Seville, August 2006
Spectral Theory and Differential Operators Workshop, Newton Institute, Cambridge, July 2006
Workshop on reaction-diffusion and free boundary problems, Banff Research Center, March 2006
Mathematical Physics Conference devoted to Barry Simon 60th Birthday, Caltech, March 2006
Mathematical Physics Conference devoted to Stas Molchanov 60th Birthday, CRM Montreal, June 2005
Show Me Conference on PDE and Analysis, University of Missouri, May 2005
Workshop on Propagation of Fronts and Combustion Processes, CRM Montreal, January 2005
Workshop on Spectral Theory of Schrödinger operators, Oberwolvach, December 2004
AIM-SIAM Conference on PDE and Dynamical Systems, Cal Poly Pomona, June 2004
Riviére-Fabes Symposium, University of Minnesota, March 2004
Colloquium talks at Brown University, New Jersey Institute of Technology, Northwestern University, University of California-Irvine, University of Kentucky, University of Maryland, University of Missouri, University of Toronto and University of Wisconsin.
Seminar talks (some multiple) at Caltech, Cornell University, Courant Institute, Ecole Polytechnique (Palaiseau), IHES, Imperial College, Institute for Advanced Study, Institut Mittag-Leffler, KTH, King's College, Lille University, Michigan State University, MSRI, Princeton University, Stanford University, St. Petersburg Institute of Information Technologies, St. Petersburg Steklov Institute, University of California at Davis, Irvine, Los Angeles and San Diego, University of Edinburgh, University of Illinois at Urbana-Champagne, University of Michigan, University of Chicago, University of Geneva, University of Paris-Sud 11 (Orsay), University of Southern Cal-

ifornia, University of Sussex, University of Paris VI (Jussieu), University of Texas A&M and University of Toulouse.

TEACHING EXPERIENCE

Associate Professor, Professor, University of Wisconsin-Madison, 2002 – current
Calculus, Advanced calculus, Ordinary Differential Equations, Probability and Statistics, Partial Differential Equations (Graduate), First year Graduate Analysis. Special topics course on Navier-Stokes equations and advanced undergraduate Mathematical Biology course.
In 2004-2005, I participated in running Collaborative Undergraduate Research Laboratory on the topic of Mathematical Biology and Reaction-Diffusion equations.
Instructor and Assistant Professor, University of Chicago, 1997 – 2002
Mathematical Methods in Physical Sciences, Calculus, Analysis in R^n, Graduate Analysis
Teaching Assistant, Caltech, 1993– 1995
Probability and Statistics, Abstract algebra, Calculus

ADVISEES

Andrej Zlatos, Van Vleck Assistant Professor, 2003–2006 (currently Assistant Professor at the University of Chicago).
Roman Shterenberg, Van Vleck Assistant Professor, 2005–2007 (currently Assistant Professor at the University of Alabama, Birmingham).
Ahyoung Kim, graduate student, 2003–2007, PhD, 2007 (currently Assistant Professor at UW-Platteville)
Undergraduate research projects resulting in publication:
David Andrzejewski, 2004–2006 (currently graduate student in computer science, UW-Madison).
Raga Markely, 2005–2006 (currently graduate student in Bioengineering, MIT).
Erick Butzlaff, 2006–2008 (currently graduate student in aerospace engineering, University of Maryland).

OTHER PROFESSIONAL ACTIVITIES

Worked as a panelist and reviewer for the National Science Foundation, European Research Council, MathSciNet, and the following journals: Annales de l'Institut Henri Poincaré, Communications in Mathematical Physics, Communications in Mathematical Sciences, Communication in Partial Differential Equations, Compte Rendu de l'Académie des Sciences, Differential and Integral Equations, Duke Mathematical Journal, Indiana University Journal of Mathematics, Journal of Approximation Theory, Journal of the AMS, Journal of Differential Equations, Journal of Functional Analysis, Journal on Mathematical Physics, Journal of Mathematical Analysis and Applications, Journal of Nonlinear Analysis: Theory and Applications, Journal of Operator Theory, Letters in Mathematical Physics, Mathematical Physics, Analysis and Geometry, Mathematische Nachrichten, Nonlinearity, Osaka Mathematical Journal, Proceedings of the AMS, Proceedings of London Mathematical Society, The Royal Society of Edinburgh Proceedings A, Reviews in Mathematical Physics, Transactions of the AMS.

Service at University of Wisconsin, Madison: Hiring Committee, Graduate admissions committee, VIGRE committee, Math/Biology Liaison committee, Math/Business and Economics Liaison committee, Minors for non-math graduate students committee. In 2005–2007 I served as a faculty supervisor to Assistant Professor Sergey Denisov.
During 1999-2002, I was involved in Accelerated Strategic Computing Initiative (ASCI) Flash Project at the Astrophysics Department of the University of Chicago, on the subject of theoretical modeling of nuclear combustion processes.
Member of the AMS. US citizen.

PUBLICATIONS

1. A. A. Kiselev and B. S. Pavlov, *Eigenfrequences and eigenfunctions of the Laplacian with Neumann boundary conditions in a system of two coupled cavities,* Theor-math. **100** (1994), 1065–1074.
2. A. Kiselev and B. Simon, *Rank one perturbations in infinitesmal coupling,* J. Funct. Anal. **130(1)** (1995), 345–356.
3. A. Kiselev, *Absolutely continuous spectrum for one-dimensional Schrödinger operators and Jacobi matrices with slowly decreasing potentials,* Commun. Math. Phys. **179** (1996), 377–400.
4. A. Kiselev, *Some examples in one-dimensional "geometric" scattering on manifolds,* J. Math. Anal. Appl. **212** (1997), 263–280.
5. A. Kiselev, *Stability of the absolutely continuous spectrum of Schrödinger operators under slowly decaying perturbations and a.e. convergence of integral operators,* Duke Math. J. **94**(1998), 619–649.
6. A. Kiselev, *An interpolation theorem related to a.e. convergence of integral operators,* Proceedings of AMS **127** (1999), 1781–1788.
7. A. Kiselev, *Absolutely continuous spectrum of perturbed Stark operators,* Transactions of AMS, **352** (2000), 243–256.
8. A. Kiselev, Y. Last and B. Simon, *Modified Prüfer and EFGP transforms and the spectral analysis of one-dimensional Schrödinger operators,* Commun. Math. Phys. **194**(1998), 1–45.
9. M. Christ, A. Kiselev and C. Remling, *The absolutely continuous spectrum of one-dimensional Schrödinger operators with decaying potentials,* Math. Res. Lett. **4** (1997), 1-5.
10. M. Christ and A. Kiselev, *Absolutely continuous spectrum for one-dimensional Schrödinger operators with slowly decaying potentials: some optimal results,* Journal of AMS, **11**(1998), 771–797.
11. A. Kiselev, C. Remling and B. Simon, *Effective perturbation methods for one-dimensional Schrödinger operators,* J. Diff. Eq. **151** (1999), 290–312.
12. A. Kiselev and Y. Last, *Solutions, spectrum and dynamics of Schrödinger operators on infinite domains,* Duke Math. Journal **102** (2000), 125–150.
13. M. Christ, A. Kiselev and Y. Last, *Approximate eigenvectors and spectral theory,* Proceedings of UAB-GIT'99 International Conference on Differential Equations and Mathematical Physics.
14. P. Constantin, A. Kiselev, A. Oberman and L. Ryzhik, *Bulk burning rate in passive-reactive*

diffusion, Arch. Rat. Mech. Anal. **154** (2000), 53–91.
15. M. Christ and A. Kiselev, *Maximal functions associated to filtrations,* J. Funct. Anal. **179** (2001), 409–425.
16. M. Christ and A. Kiselev, *WKB asymptotics of generalized eigenfunctions of one-dimensional Schrödinger operators*, J. Funct. Anal. **179** (2001), 426–447.
17. A. Kiselev and L. Ryzhik, *Enhancement of the travelling front speeds in reaction-diffusion equations with advection*, Ann. Inst. H. Poincaré Anal. Non Linéaire **18** (2001), no. 3, 309–358.
18. M. Christ and A. Kiselev, *WKB and spectral analysis of one-dimensional Schrödinger operators with slowly varying potentials*, Commun. Math. Phys. **218** (2001), no. 2, 245–262.
19. P. Constantin, A. Kiselev and L. Ryzhik, *Quenching of flames by fluid advection*, Commun. Pure Appl. Math. **54** (2001), no. 11, 1320–1342
20. A. Kiselev and L. Ryzhik, *An upper bound for the bulk burning rate for systems*, Nonlinearity **14** (2001), 1297-1310.
21. M. Christ and A. Kiselev, *Absolutely continuous spectrum of Stark operators*, Arkiv för Matematik **41** (2003), 1–29.
22. M. Christ and A. Kiselev, *One-dimensional Schrodinger operators with slowly decaying potentials: spectra and asymptotics,* Lecture notes for an IPAM tutorial.
23. M. Christ and A. Kiselev, *Scattering and wave operators for one-dimensional Schrödinger operators with slowly decaying nonsmooth potentials*, GAFA **12** (2002), 1174–1234.
24. F. Gesztesy, A. Kiselev, and K. Makarov, *Uniqueness results for matrix-valued Schrödinger, Jacobi, and Dirac-type operators,* Math. Nachr. **239/240** (2002), 103–145.
25. A. Kiselev, Y. Last and B. Simon, *Stability of singular spectral types under decaying perturbations,* J. Funct. Anal. **198** (2003), 1–27.
26. R. Killip, A. Kiselev and Y. Last, *Dynamical upper bounds on wavepacket spreading,* Amer. J. Math. **125** (2003) 1165–1198.
27. N. Vladimirova, P. Constantin, A. Kiselev, O. Ruchayskiy and L. Ryzhik, *Flame enhancement and quenching in fluid flows,* Combustion Theory and Modelling, **7** (2003), 487–508.
28. P. Constantin, A. Kiselev and L. Ryzhik, *Fronts in reactive convection: bounds, stability and instability,* Commun. Pure Appl. Math. **61** (2003), 1781–1803.
29. A. Kiselev, *Imbedded singular continuous spectrum for Schrödinger operators,* Journal of the AMS, **18** (2005), 571–603.
30. F. Germinet, A. Kiselev and S. Tcheremshantsev, *Transfer matrices and transport for 1D Schrödinger operators with singular spectrum,* Annales de l'Institut Fourier, **54** (2004), 787–830.
31. H. Berestycki, F. Hamel, A. Kiselev and L. Ryzhik, *Quenching and propagation in KPP reaction-diffusion equations with a heat loss,* Arch. Rat. Mech. Anal. **178** (2005), 57–80.
32. A. Kiselev and A. Zlatos, *Quenching of combustion by shear flows,* Duke Math. J. **132** (2006), 49–72
33. A. Fannjiang, A. Kiselev and L. Ryzhik, *Quenching of reaction by cellular flows,* GAFA **16** (2006), 40–69.
34. A. Kiselev and A. Zlatos, *On discrete models of the Euler equation,* IMRN, **38** (2005), 2315–2339

35. L.R. Markely, D. Andrzejewski, E. Butzlaff and A. Kiselev, *Enhancement of combustion by drift in a coupled reaction-diffusion model,* Commun. Math. Sci. **4** (2006), 213–225.
36. S. Denisov and A. Kiselev, *Spectral properties of Schrödinger operators with decaying potentials,* Proc. Sympos. Pure Math., 76, Part 2, Amer. Math. Soc., Providence, RI, 2007
37. P. Constantin, A. Kiselev, L. Ryzhik and A. Zlatos, *Diffusion and mixing in fluid flow,* Annals of Math. **168** (2008), 211–240
38. A. Kiselev, F. Nazarov and A. Volberg, *Global well-posedness for the critical* $2D$ *dissipative quasi-geostrophic equation,* Inventiones Math. **167** (2007) 445–453
39. A. Kiselev, *Diffusion and mixing in fluid flow: a review,* to appear at Proceedings of ICMP 2006, Rio, 12 pages.
40. A. Kiselev, R. Shterenberg and A. Zlatos, *Relaxation Enhancement by Time-Periodic Flows,* Indiana University Math. Journal, **57** (2008), 2137–2152
41. A. Kiselev, F. Nazarov and R. Shterenberg, *On blow up and regularity in dissipative Burgers equation,* Dynamics of PDEs, **5** (2008), 211–240
42. A. Kim and A. Kiselev, *Absolutely continuous spectrum of discrete Schrödinger operators with slowly oscillating potentials,* Math. Nachrichten **282** (2009), 552–568
43. H. Berestycki, A. Kiselev, A. Novikov and L. Ryzhik, *The explosion problem in a flow,* to appear at J. d'Analyse Math.
44. A. Kiselev and F. Nazarov, *A variation on a theme of Caffarelli and Vasseur,* preprint
45. A. Kiselev and F. Nazarov, *Global regularity for the critical dispersive dissipative surface quali-geostrophic equation,* preprint

Recent preprints which have not yet appeared in print can be found at my personal web site http://www.math.wisc.edu/~kiselev.