

CURRICULUM VITAE (December 19, 2008)

Tatyana Sorokina
Towson University
Department of Mathematics
8000 York Road
Towson, MD 21252

phone: (410)-704-3308
e-mail: tsorokina@towson.edu
web page: www.pages.towson.edu/tsorokin

EDUCATION

1. Diplom Mathematics, Kazakh State University, Almaty, Kazakhstan, June 1991

Supervisor: Prof. A. Zhensykbaev, Director of the Institute of Mathematics, 125 Pushkin St., Institute of Mathematics, Almaty 480100, Kazakhstan

Thesis: Multivariate approximation by box-splines

2. M.S. Environmental Engineering, University of Alaska Fairbanks, May 1999

Advisors: Prof. L.D. Hinzman, Department of Civil and Environmental Engineering, Water and Environmental Research Center, University of Alaska Fairbanks, P.O. Box 755099 Fairbanks, AK 99775-5900; Prof. A. Rybkin, Department of Mathematical Sciences, University of Alaska Fairbanks, P.O. Box 756660 Fairbanks, AK 99775-6660

Thesis: Multivariate kernel-spline approximation technique for environmental modeling

3. Ph. D. Mathematics, Vanderbilt University, August 2004

Advisor: Larry L. Schumaker, Stevenson Professor, Department of Mathematics, Vanderbilt University, 1326 Stevenson Center, Nashville, TN 37240-0001

Thesis: Multivariate C^1 macro-elements

PRESENT POSITION

Assistant Professor, Towson University, 2007 –

PREVIOUS POSITIONS

Acting Director for the Applied and Industrial Mathematics Graduate Program,
Towson University, Spring 2008

Visiting Assistant Professor, The University of Utah, Fall 2006

VIGRE Postdoctoral Associate, University of Georgia Athens, 2004 – 2006

RESEARCH INTERESTS

Multivariate Approximation, Numerical Analysis, Bivariate and Trivariate Polynomial Spline and Superspline Spaces, Multivariate Macro-Elements and Quasi-interpolation Operators, Vertex Splines, Computer Aided Geometric Design

FELLOWSHIPS and AWARDS

1. Research Fellowship, Kazakh State University, 1991 – 1993
2. Open Society Institute/ Soros Foundation Graduate Fellowship, 1996 – 1999
3. Teaching Fellowship, Vanderbilt University, 2000 – 2004
4. Graduate Student Travel Grant, Vanderbilt University, Spring 2003
5. SIAM Student Travel Award, 2003
6. Graduate Student Travel Grant, Vanderbilt University, Fall 2003
7. Dissertation Enhancement Grant, Vanderbilt University, 2003
8. Bjarni Jónsson Prize for Research, Vanderbilt University, 2004
9. VIGRE Postdoctoral Fellowship, NSF, 2004 – 2006
10. SIAM Post-doc/Early Career Travel Award, 2007
11. Fisher Foundation Award to organize the First International Workshop on Algebraic Geometry and Approximation Theory, April 11–12, 2008
12. Fisher Foundation Award to organize the Second International Workshop on Algebraic Geometry and Approximation Theory, April 9–11, 2009

PUBLICATIONS

1. Approximation order of bivariate kernel-splines, A. Amanov Memorial Conference Proceedings, Kazakh State University Press (1993), 139–141
2. C^1 quintic splines on type-4 tetrahedral partitions, with Larry L. Schumaker, *Advances in Comp. Math.* 21 (2004), 421–444
3. A C^1 cross polytope macro-element in four variables, in *Approximation Theory XI: Gatlinburg 2004*, Charles K. Chui, Marian Neamtu and Larry L. Schumaker (eds.), Nashboro Press, Brentwood, TN, 2004, 405–422

4. Optimal quasi-interpolation by quadratic C^1 splines on type-2 triangulations, with F. Zeilfelder, in Approximation Theory XI: Gatlinburg 2004, Charles K. Chui, Marian Neamtu and Larry L. Schumaker (eds.), Nashboro Press, Brentwood, TN, 2004, 423–438
5. A trivariate box macro-element, with Larry L. Schumaker, Constructive Approximation, Volume 21, Number 3 (2005), 413–431
6. Smooth macro-elements on Powell-Sabin-12 splits, with Larry L. Schumaker, Comp. Math., Volume 75, Number 254 (2006), 711–726
7. An octahedral C^2 macro-element, with M.-J. Lai and A. Le Méhauté, GAGD, Volume 23 (2006), 640–654
8. Local quasi-interpolation by trivariate cubic C^1 splines on type-6 tetrahedral partitions, with F. Zeilfelder, IMA J. Numer. Anal., Volume 27 (2007), 74–101
9. A multivariate Powell-Sabin interpolant, with A.J. Worsey, Advances in Comp. Math., Volume 29, Number 1 (2008), 71–89
10. An explicit quasi-interpolation scheme based on C^1 quartic splines on type-1 triangulations, with F. Zeilfelder, CAGD, Volume 25 (2008), 1–13
11. A C^1 multivariate Clough-Tocher interpolant, Constructive Approximation, Volume 29, Issue 1 (2009), 41–59
12. A C^1 quadratic trivariate macro-element space defined over arbitrary tetrahedral partitions, with L. L. Schumaker and A. J. Worsey, Journal of Approximation Theory, to appear, DOI:10.1016/j.jat.2008.04.014
13. Two tetrahedral C^1 cubic macro elements, with P. Alfeld, Journal of Approximation Theory, to appear, DOI: 10.1016/j.jat.2008.07.001
14. Two condensed macro-elements with full approximation power, with P. Alfeld and L. L. Schumaker, Advances in Comp. Math., to appear, DOI: 10.1007/s10444-008-9110-7

TEACHING EXPERIENCE

1. Precalculus, Kazakh-American University, Almaty, Kazakhstan (Summer 98)
2. Math 202 Calculus III, University of Alaska Fairbanks (Summer 2000, Summer 2001, Summer 2002, Summer 2003)
3. Math 150A Calculus I, Vanderbilt University (Fall 2000, Fall 2001, Spring 2004)
4. Math 155A Accelerated Calculus I for Engineers, Vanderbilt University (Fall 2002)
5. Math 150B Calculus II, Vanderbilt University (Fall 2003)
6. Math 2200 Calculus I, University of Georgia Athens (Fall 2004, Spring 2005)

7. Trivariate Macro-elements, VIGRE Seminar, University of Georgia Athens (Fall 2004)
8. Research Experience for Undergraduates (REU), University of Georgia Athens (Summer 2005)
9. Math 2700 Elementary Differential Equations, University of Georgia Athens (Fall 2005)
10. Individual Research Experience for Undergraduates(REU), University of Georgia Athens (Fall 2005)
11. Math 3100 Sequences and Series, University of Georgia Athens (Spring 2006)
12. Math 2500 Multivariate Calculus, University of Georgia Athens (Summer 2006)
13. Math 150 College Algebra, University of Utah (Fall 2006)
14. Math 273 Calculus I, Towson University (Spring 2007, Summer 2007, Summer 2008)
15. Math 374/574 Differential Equations, Towson University (Spring 2007)
16. Math 274 Calculus II, Towson University (Fall 2007, Fall 2008)
17. Math 435/535 Numerical Analysis I, Towson University (Summer 2007, Fall 2007)
18. Math 275 Calculus III, Towson University (Spring 2008)
19. Math 635 Applied Numerical Analysis, Towson University (Summer 2008)
20. Math 473/576 Real Analysis, Towson University (Summer 2008, Fall 2008)

OTHER EXPERIENCES

1. Research assistant, Kazakh State University, 1991 – 1993
2. School teacher of mathematics, grades 6, 7, 11, Almaty, Kazakhstan, 1994 – 1996
3. Webmaster assistant, Vanderbilt University, Spring 2002
4. Participant of the MAA PREP Workshop on Wavelets and Applications: A Multidisciplinary Undergraduate Course with an Emphasis on Scientific Computing, June 4–7, 2008

CONFERENCE ORGANIZATION

Twelfth International Conference on Approximation Theory, San Antonio, TX, March 4–7, 2007. *Mini-symposium on multivariate splines.*

First International Workshop on Algebraic Geometry and Approximation Theory, Towson, MD, April 11–12, 2008

Second International Workshop on Algebraic Geometry and Approximation Theory, Towson, MD, April 9–11, 2009

CONFERENCE LECTURES

1. Tenth Southeast Approximation Conference, Athens, GA, March 23–24, 2002. C^1 quintic splines on type-4 tetrahedral partitions.
2. Multivariate Approximation, Cancun, Mexico, April 24–29, 2003. A trivariate box macro-element.
3. Advances in Constructive approximation, Nashville, TN, May 14–17, 2003. A trivariate box macro-element.
4. SIAM Conference on Geometric Design and Computing, Seattle, WA, Nov. 10–13, 2003. A trivariate box macro-element.
5. Workshop on Computer Graphics and Visualization, Heidelberg, Germany, Nov. 26–28, 2003. A trivariate box macro-element.
6. International Conference on the Interactions between Wavelets and Splines, Athens, GA, May 16–19, 2005. An octahedral C^2 macro-element.
7. SIAM Conference on Geometric Design and Computing, Phoenix, AZ, Oct. 31–Nov. 3, 2005. Optimal quasi-interpolation by quadratic C^1 splines on type-2 triangulations.
8. Curves and Surfaces, Avignon, France, June 29–July 5, 2006. Suboptimal quasi-interpolation by quartic C^1 splines on type-1 triangulations.
9. Twelfth International Conference on Approximation Theory, San Antonio, TX, March 4–7, 2007. A new family of multivariate macro-elements: How geometry determines the structure of spline spaces.
10. Second Workshop on Constructive Function Theory, Huntsville, TX, Oct. 26–27, 2007. Geometric constraints: why they arise and how to deal with them.
11. SIAM Conference on Geometric Design and Computing, San Antonio, TX, Nov. 4–8, 2007. Geometric constraints for multivariate macro-elements.

COLLOQUIUM, SEMINAR and INVITED LECTURES

1996

- Moscow State University, Russia. Approximation order of bivariate kernel-splines.

2003

- University of Mannheim, Germany. A trivariate box macro-element.

2004

- University of Mannheim, Germany. Multivariate Powell-Sabin macro-element.
- University of Georgia Athens. Trivariate C^1 and C^2 macro-elements.

2005

- Vanderbilt University. An octahedral C^2 macro-element.
- University of Mannheim, Germany. An octahedral C^2 macro-element.

2006

- University of Houston Downtown. Multivariate polynomial splines.
- University of South Florida. Approximation by polynomial splines.
- Towson University. Multivariate polynomial splines.
- University of South Carolina Upstate. Multivariate polynomial splines.

2007

- Vanderbilt University. A new family of multivariate macro-elements: How geometry determines the structure of spline spaces.

2008

- Middle Tennessee State University. Geometric Constraints on Multivariate Polynomial Splines.

PROFESSIONAL SERVICE

1. Reviewer for Mathematical Reviews

PROFESSIONAL SOCIETIES

1. American Mathematical Society