

CURRICULUM VITÆ

Marianne K. Korten

May 2013

EDUCATION:

PhD in Mathematics, Facultad de Ciencias Exactas y Naturales, University of Buenos Aires, 1993. Dissertation: *Soluciones generalizadas localmente integrables de la ecuación $u_t = \Delta(u - 1)_+$* . Advisor: Julio E. Bouillet.

EXPERIENCE:

- **Professor**, Department of Mathematics, Kansas State University, since Fall 2009.
- **Associate Professor**, Department of Mathematics, Kansas State University, Fall 2006 - Fall 2009.
- **Assistant Professor**, Department of Mathematics, Kansas State University, Fall 2000 - Spring 2006.
- **Visiting Assistant Professor**, Department of Mathematics, University of Louisville, 1999-2000.
- **Maître de Conférences Associé**, Équipe de Mathématiques, Faculté de Sciences, Université de Franche-Comté, Spring 1999.
- **Visiting Scholar**, Department of Mathematics, Zanvyl Krieger School of Arts and Sciences, Johns Hopkins University, Fall 1997 and Spring 1998.
- **Visiting Scholar**, Instytut Matematyki, Uniwersytet Warszawski, Fall 1996 and Spring 1997.
- **Visiting Scholar**, Departamento de Matemática, Facultad de Ciencias, Universidad Autónoma de Madrid, 9/5/96 to 11/5/96, under a research cooperation exchange of the University of Buenos Aires and the Universidad Autónoma de Madrid.

PUBLICATIONS:

1. *Remarks on some particular solutions to generalized diffusion equations*, M. K. Korten, Semesterbericht Funktionalanalysis, Sommersemester 1987, U. Tübingen.
2. *Self-similar solutions of generalized diffusion-conduction equations*, M. K. Korten, (Spanish) Third Seminar on Free Boundary Value Problems and their Applications (Rosario, 1988),

- 45–53, Cuadern. Inst. Mat. Beppo Levi, 17, Univ. Nac. Rosario, Rosario, 1989, D. A. Tarzia (ed.).
3. *Generalized self-similar diffusion in \mathbb{R}^n* , M. K. Korten, in *Free Boundary Problems: Theory and applications*, Proc. Int. Colloc., Irsee/Ger.1987, Vol. II, Pitman Res. Notes Math. Ser.186, 888-892 (1990).
 4. *Initial traces of solutions to a one-phase Stefan problem in an infinite strip*, D. Andreucci, M. K. Korten, Rev. Mat. Iberoamericana, Vol. 9, No. 2 (1993), 315-332.
 5. *Free boundaries in solutions of the equation $u_t = \Delta(u - 1)_+$* , M. K. Korten, (Spanish) Fourth Seminar on Free Boundary Value Problems and their Applications, Vol. 1 (Spanish) (Rosario, 1992), 35-37, Cuadern. Inst. Mat. Beppo Levi, 23, Univ. Nac. Rosario, Rosario, 1993, D. A. Tarzia (ed.).
 6. *The equation $u_t = \Delta(u - 1)_+$: regularity and uniqueness for the Cauchy problem*, M. K. Korten, Nonlinear Analysis, Theory, Methods & Applications, Vol. 27, No. 5 (1996), 589-603.
 7. *Singular limits and the “Mesa” problem*, J. E. Bouillet, M. K. Korten, V. Márquez, Revista de la Unión Matemática Argentina Vol. 41, No. 1, 27-40 (1998).
 8. *Uniqueness for the Cauchy problem with measures as data for $u_t = \Delta(u - 1)_+$ under optimal conditions of regularity and growth*, M. K. Korten, in *Free Boundary Problems, theory and applications*, Proceedings of the Zakopane Congress '95, Pitman Res. Notes Math. Ser. 363, 231-242 (1996), M. Niezgódka y P. Strzelecki, (eds.).
 9. *On a structure theorem for some free boundary problems for the heat equation*, M. K. Korten, in *Free Boundary Problems: theory and applications*, I. Athanasopoulos, G. Makrakis, J. F. Rodrigues (eds.), Chapman & Hall/CRC Research Notes in Mathematics, 155-163 (1999).
 10. *A Fatou theorem for the equation $u_t = \Delta(u - 1)_+$* , M. K. Korten, Proc. Am. Math. Soc. , Vol. 128, No. 2, 439-444 (2000).
 11. *On the rectifiability of the free boundary of the one phase Stefan problem*, M. K. Korten, Comm. in Analysis and Geometry, Vol. 13, No. 2, 263-368 (2005).
 12. *On the pointwise jump condition at the free boundary of the one-phase Stefan problem*, D. Danielli, M. K. Korten, Comm. in Pure and Appl. Analysis, Vol. 4, No. 2, 359-368 (2005).
 13. *Existence, uniqueness and regularity of the free boundary in the Hele-Shaw problem with a degenerate phase*, I. A. Blank, M. K. Korten, C. N. Moore, in Contemporary Mathematics, Vol. 428, AMS (2007), pp. 33-42.

14. *Harmonic analysis, partial differential equations and related topics*, (Proceedings of the fifth Prairie Analysis Seminar), E. Gavosto, M. K. Korten, C. N. Moore, R. H. Torres (eds.), Contemporary Mathematics Vol. 428, AMS (2007).
15. *The Cauchy problem for the two-phase Stefan problem*, M. K. Korten, C. N. Moore, in Communications in Applied Analysis 11, no. 1 (2007), pp. 43-52.
16. *Regularity for Solutions of the two-phase Stefan problem*, M. K. Korten, C. N. Moore, Communications in Pure and Applied Analysis 7, no. 3 (2008), pp. 591-600.
17. *The Hele-Shaw problem as a "Mesa" limit of Stefan problems: Existence, uniqueness, and regularity of the free boundary*, I. A. Blank, M. K. Korten, C. N. Moore, Trans. Am. Math. Soc. 361, #3 (2009), 146-151.
18. *Complexities. Women in Mathematics (Review)*, M. K. Korten, The Mathematical Intelligencer, Vol 31 #3, Summer 2009.
19. *Uniqueness with signed measures as data for the Cauchy problem for the two-phase Stefan problem*, M. K. Korten, C. N. Moore, Commun. Appl. Anal. 15 (2011), no. 1, 8999.
20. *On the free boundary in a mixed-type parabolic-conservation law equation*, G-Q. Chen, M. K. Korten, C. N. Moore, M. Torres (in progress).
21. *Similarity solutions of a mixed type equation - wax deposition in a cold pipe*, A. Coons, M. Korten, G.V. Powell, L. Vo (preprint).
22. *Similarity solutions to a singular equation used in image denoising*, M. Korten, C. Moore, P. Salazar (in progress).
23. *Similarity solutions with hysteretic behavior for a forward-backward heat equation*, N. Bravo, D. Flores, M. Korten (preprints).

AWARDS AND FUNDING:

1. *K-State Women of Distinction Award 2013*.
2. *Developing Scholars award for Quality Mentoring in Research 2010*.
3. **NSF** (\$420,421.00) REU Site: Summer Undergraduate Mathematics Research (SUMaR) at K-State, PI (current).
4. **NSF** (\$32,664) Prairie Analysis Seminar 2009-2011, Co-PI (funding for the 2009-2011 Prairie Seminar).

5. *Arts and Sciences Diversity Lecture* Spring 2009 (\$500).
6. **NSF** *Free Boundary Problems with a Degenerate Phase: Regularity of Solutions and Interphases*, PI (2005-2009), \$84,000N.
7. **You Make a Difference at K-State Award 2006**, Women in Engineering and Sciences program, KSU.
8. **You Make a Difference at K-State Award 2005**, Women in Engineering and Sciences program, KSU.
9. **ADVANCE KSU-NSF** *Career Advancement Program 2006*, M. K. Korten, \$10,000.
10. **ADVANCE KSU-NSF** *Internal Advisory Board Departmental Initiatives 2006*, with C. N. Moore and L. Pigno, \$10,000.
11. **ADVANCE KSU-NSF** *Internal Advisory Board Departmental Initiatives 2005*, with C. N. Moore and L. Pigno, \$10,000.
12. **ADVANCE KSU-NSF** *Advance Invited Speaker awards*.
13. **ADVANCE KSU-NSF** *Career Enhancement Initiative awards*.
14. **NSF** (\$15,400) *The Prairie Analysis Seminar 2008*, PI, with E. Gavosto, C. N. Moore, and R. H. Torres.
15. **NSF** *The Prairie Analysis Seminar 2007*, PI, with E. Gavosto, C. N. Moore, and R. H. Torres.
16. **NSF** *The Prairie Analysis Seminars 2005-2006*, PI, with E. Gavosto, C. N. Moore, and R. H. Torres.
17. **NSF** *The Prairie Analysis Seminar 2004*, co-PI, with E. Gavosto, C. N. Moore, and R. H. Torres.
18. **MSRI** *Prairie Analysis Seminar 2004*, co-PI, with C. N. Moore (KSU) and E. Gavosto, R. H. Torres (KU).
19. **MSRI** *Prairie Analysis Seminar 2004-2006*, with C. N. Moore (KSU) and E. Gavosto, R. H. Torres (KU).
20. **NSF** *Prairie Analysis Seminar 2003*, PI, with C. N. Moore (KSU) and E. Gavosto, R. H. Torres (KU).
21. **MSRI** *Prairie Analysis Seminar 2003*, with C. N. Moore (KSU) and E. Gavosto, R. H. Torres (KU).

22. **Kansas EPSCoR**, First Awards 2003-2004.
23. **Mentoring Fellowship** for Women and Minorities in the Sciences and Engineering, KSU, 2001-2004.
24. **Fall 1999 IRIG-PCG** award #628410, University of Louisville.
25. **FOMECA** postdoctoral fellowship (Argentinean Ministry of Culture), fall 1997 and spring 1998, Department of Mathematics, Z. Krieger School of Arts and Sciences, Johns Hopkins University.
26. **CONICET** (Argentinean Research Council): *Postdoctoral fellowship*, 1995 -1997; *Advanced studies fellowship*, 1991-1994; *Graduate research fellowship*, 1989 -1991.

Ph.D. STUDENTS:

- Donald Adongo, 2008, now at Murray State University, KY.

MASTER'S STUDENTS:

- Gaëlle Chabod and Carine Krahlénbuhl, Spring 1999, Université de Franche-Comté.
- Heather Van Dyke, Kansas State University, Spring 2002.
- Vanessa Samarrai, Kansas State University, Fall 2004.

UNDERGRADUATE RESEARCH supervised:

- Perla Salazar, 2009 - Spring 2012. Perla was sponsored by Bridges (NIH/K-State), "Developing Scholars", McNair, and DoD SMART awards. She held a Waldermar Trjitzinsky award from AMS.
- Mentor of mathematics major Alyson Deines, winner of Clare Boothe Luce (2005) and Goldwater (2006) scholarships, and honorable mention in the Alice T. Schaffer Prize 2007 for undergraduate women in mathematics from AWM, currently pursuing Ph.D. at the University of Washington (Seattle).
- I supervised Amanda Coons, GiaVonni Powell, and Long Vo in an REU project in applied mathematics/ differential equations, on wax deposition in an oil pipeline. We are currently editing the manuscript for submission. Preprint available on the K-State Math Department REU web site.
- I supervised Diane Flores in an REU project in applied mathematics/ differential equations on a forward-backward heat equation. Preprint available on the K-State Math Department REU web site.
- I supervised Nikolas Bravo in an REU project in applied mathematics/ differential equations, on a forward-backward heat equation in higher dimensions. Preprint available on the K-State Math Department REU web site.

TEACHING:

- **Math 220:** Analytic Geometry and Calculus I (including coordination three times), **Math 312:** Finite Applications of Mathematics, **Math 520:** Foundation of Analysis, **Math 521:** The Real Number System, **Math 633-634:** Advanced Calculus I - Advanced Calculus II, **Math 655:** Elementary Numerical Analysis, **Math 721-722:** Analysis 1 - Analysis 2, **Math 840-841:** Differential Equations 1 and 2, **Math 852-853:** Functional Analysis 1 and 2, **Math 991-992, now Math 823/824:** Topics in Analysis (Introduction to Geometric Measure theory; Regularity and Singularity of Energy Minimizing Maps), at KSU.

- **College Algebra (Math 111)**, at the Department of Mathematics, University of Louisville.

- **Calculus, Ordinary Differential Equations**, at the Équipe de Mathématiques, Université de Franche-Comté.

- **Complex Analysis, Analysis I, Analysis II, Ordinary Differential Equations, Partial Differential Equations**, at the Department of Mathematics, School of Sciences, University of Buenos Aires.

- **Complex Analysis**, at the Department of Mathematics, School of Engineering, University of Buenos Aires.

ORGANIZATION OF MEETINGS AND PANELS:

1. **Special Session “PDEs and Geometry”** at the Central Section AMS meeting # 964, Lawrence, KS, March 2001 (with L. Kapitanski).
2. **Prairie Analysis Seminar**, Manhattan, KS: 2001, 2003, 2005, 2007, 2009, 2011, 2013 (upcoming); Lawrence, KS: 2002, 2004, 2006, 2008, 2010; (with C. N. Moore, E. Gavosto, and R. Torres).
3. AWM Panel on **Supporting the diverse personal lives of mathematicians** at the 2004 AWM Annual Meeting in Phoenix (AZ) (with Carolyn Gordon, Helen Moore, and Christina Sormani).
4. **Special Session “Regularity in PDEs and Harmonic Analysis”** #1000 Southwestern Section meeting of the AMS, Albuquerque, NM, October 2004 (with C. N. Moore and M. C. Pereyra).
5. **Special Session on “Singular Integrals, Geometric Analysis, and Free Boundary Problems”** #1015 Southeastern Section meeting of the AMS, Miami, FL, April 2006 (with L. de Carli and C. N. Moore).
6. **Special Session on “Undergraduate Research”**, #1081 Central section AMS meeting, Lawrence, KS, March-April 2012.

PRESENTATIONS AT CONFERENCES:

- *Free Boundary Problems: Theory and Applications - International Colloquium*, Irsee, Germany, June 11-20, 1987.
- *X ELAM*, 12-23 August 1991, Tanti, Córdoba, Argentina.
- *Simposio Internacional en Ecuaciones no Lineales y Problemas de Frontera Libre*, 25-29 July 1994, Buenos Aires, Argentina.
- *Free Boundary Problems and Applications, International Congress*, 11-18 June 1995, Zakopane, Poland (poster).
- *Free Boundary Problems: Workshop on Irregular Free Boundaries*, Stockholm, Sweden, 19-22 May 1996.
- *Free Boundary Problems, Theory and Applications*, Crete, Greece, 8-14 de June 1997.
- *Third European Conference on Elliptic and Parabolic Problems*, Pont-à-Mousson, France, 16-20 June 1997.
- *Workshop on Geometric Analysis of Maps, Surfaces and Free Boundaries*, Freiburg, Germany, July 13-15, 1998.
- *Nonlinear Partial Differential Equations: An international conference in memory of S. N. Kruskov*, Besançon, June 28-July 2, 1999.
- *AMS Fall Central Section Meeting*, Austin, TX, October 9, 1999.
- *Recent Progress on Harmonic Measure from an Geometric and Analytic Point of View*, (24th. UARK Spring Lecture) University of Arkansas, Fayetteville, 3/2-4/2000.
- *International Conference on Generalized Functions, Linear and Non-Linear Problems*, Poite-à-Pitre, Guadeloupe, France, 4/17-21/2000.
- *Nonlinear Analysis 2000 and beyond*, Courant Institute, NYU, 5/28/2000 - 6/2/2000 (poster).
- *Fourth New Mexico Analysis Seminar*, Albuquerque, NM, March 1-3, 2001.
- *Arkansas Spring Lectures*, Fayetteville, Arkansas, April 26-28, 2001.
- *Arkansas Spring Lectures*, Fayetteville, Arkansas, April 11-13, 2002.
- *Sixth New Mexico Analysis Seminar*, Albuquerque, NM, March 6-8, 2003.
- *Symposium on Analysis and PDEs*, Purdue University, May 23-26, 2003.
- *AMS Meeting #989*, Special Session on Geometric Methods in PDEs, Boulder, CO, October 2-4, 2003.
- *AMS Meeting #1000*, Special Session on Regularity in PDEs and Harmonic Analysis, Albuquerque, NM, October 16-17, 2004.
- *CMS Winter 2004 Meeting*, Symposium on Harmonic Analysis, Montréal, Canada, December 11-13, 2004.
- *CUNY Geometric Analysis Conference 2005*, Mar. 19-20, 2005. Invited talk.
- *Analysis Conference on the Interplay of Complex Variables, Probability and Partial Differential Equations*, Washington University in St. Louis, May 11-14, 2005.
- *Free Boundary Problems, Theory and Applications*, Coimbra, Portugal, June 7-12, 2005.

- *Special session on “Geometry of Differential Equations”*, AMS meeting #1011, Lincoln, NE (10/05).
- *Special session on “Singular Integrals, Geometric Analysis, and free Boundary Problems,”* AMS meeting #1015, Miami (4/06).
- *“Analysis of front propagation and its applications”*, session in the *SIAM Conference on Analysis of Partial Differential Equations 2006*, 07/06, Boston.
- *Plenary Speaker*, 59th Midwest Partial Differential Equations Seminar, Spring 2007, University of Kentucky, Lexington.
- *Invited Speaker*, WCNA 2008, July 2008, Orlando.
- *Invited Speaker*, Minisymposium on Recent Advances in Analysis of Partial Differential Equations at the SIAM SEAS conference in Huntsville, Alabama (3/24-25/2012).

INVITED ADDRESSES:

Georgia Tech, University of Toronto, Courant Institute of Mathematical Sciences - NYU, Syracuse University, Rice University, University of Tennessee, University of Kentucky, University of Louisville, Purdue University, Kansas State University, University of Lisbon, Johns Hopkins University, Carnegie Mellon University, University of Pittsburg, Case Western Reserve University, Wayne State University, University of New Mexico (Las Cruces), University of Paris XI-Orsay, Math. Institute of the Polish Academy of Sciences (IMPAN), University of Franche-Comté.

LEADERSHIP SERVICE:

- Invited Participant, (upcoming June 2013) Workshop on “New Directions for Mathematics Research experiences for Undergraduates (REUs),” Mount Holyoke College (supported by NSF).
- *Invited Panelist*, on The Retention of Women in Mathematics, AWM, at the Joint Mathematics Meetings in San Diego, march 2013.
- *Invited Panelist*, Project NeXT panel about “Establishing Undergraduate Research Programs” at the Joint Mathematics Meeting in San Diego in March 2013.
- *Member*, REU Site Leadership group in mathematics.
- *Member and Undergraduate Mentor*, Math Alliance and Institute for Broadening Participation.
- *Director of Summer Programs of the Center for Integration of Undergraduate, Graduate and Postdoctoral Research* (since Spring 2010).
- Interim Director of the Center for Integration of Undergraduate, Graduate and Postdoctoral Research (fall 2009).
- Participant in the Workshop for Women in Science and Engineering, KSU, February 2008.
- Member of the committee charged with reviewing the Arts and Sciences Dean’s five year tenure, 2007.
- Member of the Provost’s Mentoring Grant selection committee (since Fall 2007).
- Member of the Arts and Sciences Diversity Committee, 2007-2010; chair of the faculty diversity issues subcommittee.

- Participant in the BIRS Workshop on Diversity in the Mathematics and Scientific Community I and II, 7/27-29/2007, Banff, Canada. Website: <http://mathdiversity.wesleyan.edu/>
- Member of the Nominating Committee of the Association for Women in Mathematics (AWM) (2006-2007; 2008-2009).
- Member of the AWM Workshop selection committee charged with selecting graduate students and postdocs that would expose their research accomplishments at the workshop for Women Graduate Students and Recent Ph.D.s at the New Orleans Joint Mathematics Meetings in 1/2007.
- Member of NSF panels charged with the evaluation of research proposals (2006, 2007, 2008, 2010, two in 2011), that met in Washington, D.C.. Reviewer of an FRG proposal (2009).
- Member of the departmental post-doc screening committee 2006-2007, 2010-2011.
- Member of the departmental GPAC and of the Development Committee.
- Chair of the departmental screening committee 2005-2006, 2009-2010.
- Grant Reviewer for the Arkansas Science and Technology Authority (2001).
- Secretary of the Unión Matemática Argentina at the Instituto Argentino de Matemática, 1990 - 1992.

OTHER:

- **Memberships:** Society for Industrial and Applied Mathematics, American Mathematical Society, Association for Women in Mathematics, Society for the Advancement of Chicanos and Native Americans in Science (SACNAS).
- **Research visits:** Arbeitsgemeinschaft Funktionalanalysis, Math. Institut, U. Tübingen, Germany, June-July 1987; Dipartimento di Matematica “Ulisse Dini” de la Università Degli Studi di Firenze, 4/29/91 to 6/24/91; Séance de travail at the Séminaire d’Analyse, Laboratoire de Mathématiques et Mécanique Théorique, Université de Besançon, France, June 20-26, 1997; Mathematisches Institut, Albert-Ludwigs Universität Freiburg, April 27-30, 1999.
- **Reviewer** for *Zentralblatt für Mathematik* since 1994; **referee** for *Mathematische Zeitschrift*, *American Journal of Mathematics*, *International Journal of Mathematics and Mathematical Sciences*, *Contemporary Mathematics*, *Indiana University Mathematics Journal*, *Transactions of the AMS*, and *Proceedings of the AMS*; **reviewer** of “Introduction to Real Analysis” (Bartle/Sherbert), 3rd edition, for John Wiley & sons, eds.; and of *Stewarts Calculus or Calculus: Early Transcendentals*.
- **LEA/RN** workshop at KSU, participant, December 2000.
- **Undergraduate Advisor** at the Department of Mathematics, KSU, since October 2000. (Advisor of a 2005 Clare Boothe Luce Fellowship, 2006 Goldwater Scholarships, and honorable mention in the Alice T. Schaffer Prize 2007 for undergraduate women in mathematics from AWM winner, and a 2002 Extraordinary Student Award winner.)
- **Temporary, Initial, Academic, and Teaching Advisor** for graduate students at the Department of Mathematics, KSU.
- **Member of the examining committees for the Master of Science degree:** of Christo-

pher Shane, Benjamin Van Dyke, Nicholas Adongo, Lacey Huebel, Sapto Indratno, Kyle Kincade, Teang Ho.

-**Member of the Ph.D. Committees** of Omar Gil Alvarez, Departamento de Matemática, Facultad de Ciencias, Universidad Autónoma de Madrid, Fall 1996. At Kansas State University: Sami Shahin (Spring 2002), Njinasoa Randriampiry (Spring 2007), Mukta Bhandari(Spring 2011), Sapto Indratno (Spring 2011), and Santosh Ghimire (Spring 2012), Nhan Tran, Hao Zheng (current).

- **Outside Chair of Ph.D. committee:** of Hansang Kim (civil engineering), Wijith Munasinghe (statistics), and Robert Poulson (statistics).

- **Member of the Faculty Advising Team** of the KSU team at the *Mathematical Contest in Modeling*, 2001 - 2010. Since 2003 KSU teams won either one or two “Meritorious Winner” awards.

- **Committees:** 2001 PDE Qualifying exam and graduate restructuring committee, PDE Qualifying Committee since Summer 2000. Counseling Exam committee on and off since 2002, Calculus textbook committee (2002-2004).

- Organized an activity for the **GROW 2007, 2008, 2009, 2010, 2011, 2012** programs (with C. N. Moore) for the Women in Engineering and Sciences Program, KSU.

- **Main Speaker**, 5th. Annual GEMS conference, Junction City High School, February 22, 2001.

- **Organizer** (with Suzanne Franks and Thomas Muenzenberger) Of semesterly social / mentoring gatherings of female mathematics and secondary mathematics education majors and KSU Mathematics faculty, during 2001 and 2002.

- **Speaker, Multicultural Engineering Colloquium**, 2/7/02.

- **Designer and Organizer** (with Stefano Vidussi) of the Graduate Mentoring program at the Mathematics Department, Kansas State University; **seminar talk** about the mentoring program in 2002.

- **Seminar talks** in the graduate teaching assistant training weeks 2002-2003, 2003-2007, 2009-2010. Opening talks in the undergraduate mathematics seminar (since Spring 2001), and in the minority engineering program (Spring 2002).

- **Presidential Lecturer**, Kansas State University.

- **Mentor**, of Assistant Professor Maria Alfonseca, Spring 2005 - Member of the mentoring teams of Assistant Professors Virginia Naibo 2006-2010, and Diego Maldonado 2006-2009.

-*Languages:* Spanish (native speaker), English, German and French (excellent), Italian (fluent), Portuguese, Polish (limited).

Permanent resident of the USA.