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PERSONAL INFORMATION

Born: August 18, 1977.
Citizenship: Brazilian.
Visa status: H1-B.

EDUCATION

Ph.D. in Mathematics. August 2007
University of Texas at Austin.
Advisor: Prof. Luis A. Caffarelli.
Thesis title: Least Supersolution Approach to Regularizing Elliptic Free Boundary Problems.

Master of Science in Mathematics. August 2001.
Universidade Federal do Ceará - Brazil.

Bachelor Degree in Mathematics. (Magna Cum Laude). January 2000.
Universidade Federal do Ceará - Brazil.

RESEARCH INTERESTS

- Partial Differential Equations and its Applications,
- Free Boundary Theory,
- Geometric Measure Theory,
- Harmonic Analysis and Potential Theory,
- Nonlinear Geometric Functional Analysis.

PROFESSIONAL EXPERIENCE

- Visiting Assistant Professor - University of Iowa - August 2007 - Present.
- Teaching Assistantship - University of Texas at Austin

Fall 2002, 2003 2004; Spring 2004; Summer 2005, 2006, 2007.
- Graduate Research Assistantship - University of Texas at Austin.

Summer 2004 (Prof. Rafael De la LLave)
Fall 2005, Spring 2006, Summer 2006, Fall 2006 (Prof. Luis Caffarelli)
- Lourenço Filho College (Brazil) - Spring 2002
- Farias Brito High School (Brazil) - Spring 2002.

PUBLICATIONS ¹

1. *Weak convergence under nonlinearities.* (with E. Teixeira). Annals of the Brazilian Academy of Sciences. (2003) 75(1) 9–19.
2. *On the behavior of weak convergence under nonlinearities and applications.* (with E. Teixeira). Proceedings of the American Mathematical Society. 133 (2005), 1647-1656.
3. *A Singular perturbation free boundary problem for elliptic equations in divergence form* (with E. Teixeira). Calc. Var. Partial Differential Equations 29 (2007) 161-190.
4. *Least supersolution approach to regularizing free boundary problems.* Arch. Ration. Mech. Anal. 191 (2009), no. 1, 97–141.
5. *On the Regularity of Maximal Operators,* Proc. Amer. Math. Soc. 136 (2008), no. 12, 4395–4404 (with Emanuel Carneiro).
6. *Corrigendum to: Least supersolution approach to regularizing free boundary problems.* To appear Arch. Ration. Mech. Anal. 194 (2009), no. 2, 713-716.
7. *Multilinear maximal operators in Sobolev spaces,* submitted. (with Emanuel Carneiro).
8. *Hausdorff measure estimates for the free boundaries of subsolutions to nonlinear elliptic equations and applications,* preprint. (with Lihe Wang).
9. *Boundary behavior of solutions to nonlinear elliptic equations at regular points,* preprint. (with Lihe Wang).
10. *Boundary gradient estimates for nonlinear elliptic equations in $C^{1,dini}$ domains and Hopf Lemma,* in preparation. (with Lihe Wang).
11. *Boundary Harnack inequality for elliptic equations in Reifenberg flat domains,* in preparation (with Lihe Wang).

FELLOWSHIPS AND AWARDS

- Professional Development Award - University of Texas at Austin - Summer 2007
- A. D. Hutchison Student Endowment Fellowship - Fall 2006, Spring 2007.
- Bing Graduate Research Assistantship - UT Mathematics Dept. - Spring 2005.
- NSF Grant/Rutgers University - Conference in Honor to Haim Brezis - Summer 2004.
- Univ. Politécnic de Catalunya Grant - Jornadas Sistemas Dinamicos - Spain - Summer 2004.
- Bruton Fellowship - Summer 2003.
- Regent's Fellowship - Spring 2003.
- Dean's Excellence Award (Fellowship)- Spring 2003.
- Dean's Excellence Award (Fellowship)- Fall 2002.
- Capes-Brazil - Ph.D. Fellowship - September/2001 - August/2002.
- CNPq-Brazil - Master Degree Fellowship - January/2000 - August/2001.
- Magna Cum Laude Diploma - 2000 - Universidade Federal do Ceará - Brazil.
- CNPq-Brazil - Undergraduate Fellowship "Initiation on Research." July 1996 - July 1999.
- Funcap-Brazil - Undergraduate Fellowship - Spring 1996.
- Universidade Federal do Ceará Honors Certificate - State Mathematical Olympiad - 1994.

SELECTED CONFERENCE TALKS

1. *Nondegeneracy properties in free boundary problems and applications to inhomogeneous p -laplace operator,* SIAM PDE conference, Dec/2009, Miami, Florida, USA.
2. *Least Supersolution Method for Free Boundary Problems of Flame Propagation Type and Applications,* Iowa PDE Seminar, Iowa State University, October/2009.

¹Preprints available at www.math.uiowa.edu/~dmoreira

3. *Least Supersolution Method for Free Boundary Problems of Flame Propagation Type*, 27o. Colóquio Brasileiro de Matemática, IMPA, RJ, Brasil, July/2009.
4. *Regularizing methods in free boundary problems*. Partial Differential Equations Meeting - Universidade Federal do Ceará - Brazil - August 2006.
5. *On the behavior of weak convergence under nonlinearities and applications*. VI International Joint Meeting American Mathematical Society - Sociedad Mexicana Matematica. Houston, May/04.

TEACHING EXPERIENCE

University of Iowa (as primary instructor)

1. Fall 2009 - Vector Calculus, Topics in Free Boundary Problems and Elliptic PDEs.
2. Spring 2009 - Vector Calculus.
3. Fall 2008 - Fully Nonlinear Elliptic PDEs (graduate course), Calculus II.
4. Spring 2008 - Calculus I (2 sections).
5. Fall 2007 - Ordinary Differential Equations.

University of Texas at Austin (as teaching assistant)

1. Real Analysis - Summer 2007, Fall 2002,
2. Linear Algebra and Matrix Computations - Summer 2006.
3. Partial Differential Equations II - Spring 2006.
4. Methods of Applied Mathematics (graduate course) - Fall 2004.
5. Ordinary Differential Equations - Spring 2004, Summer 2005.
6. Calculus II - Fall 2003.

Teaching experience in Brazil

1. Spring 1995 - Math Olympiads Course - Christus High School.
2. Spring 2002 - Linear Algebra, Algebraic Structures - Lourenço Fillho College.
3. Spring 2002 - Calculus I - Farias Brito High School.

REVIEWER

1. *Mathematical Reviews* - American Mathematical Society
2. *Advances in Mathematics*

ORGANIZED CONFERENCES

1. 2009 SIAM Conference on Analysis of Partial Differential Equations (Dez/2009)

CONFERENCES ATTENDED

1. *Iowa PDE Seminar - 2009* Iowa State University - October - 2009.
2. *Workshop in Geometric Partial Differential Equations* - Institute for Advanced Study, Princeton, Feb/2009.
3. *Future Directions in Nonlinear PDE - Honor to Luis Caffarelli* - University of Texas at Austin - December 2008.
4. *Midwest Geometry Conference 2007* - University of Iowa - May 2007
5. *Jornadas Introducion Sistemas Dinamicos* - Universitat Politècnica de Catalunya - Barcelona - Spain - July 2004

6. *Conference in Honor to Haim-Brezis - Ecole Polytechnique - Paris - Summer 2004.*
7. *Texas PDE Conference - Texas A & M - College Station - TX - April 2004*
8. *Texas Dynamics Workshop - University of Houston - Houston- TX - March 2004.*
9. *X Escola de Geometria Diferencial - UFMG - Belo Horizonte - Brazil - July 1998.*
10. *Colóquios Brasileiros de Matematica - IMPA - Brazil - 1997, 1999, 2001.*

REFERENCES

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Professor Sandro Salsa
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