

# Daniela De Silva

## Curriculum Vitae

### Appointments

*Barnard College, Columbia University*, Assistant Professor, September 2009 –  
*Barnard College, Columbia University*, Term Assistant Professor, August 2007 – August  
2009  
*Johns Hopkins University*, J.J. Sylvester Assistant Professor, January 2006 – July 2007  
*Mathematical Sciences Research Institute*, Postdoctoral Fellow, Fall 2005

### Education

*Massachusetts Institute of Technology*, Ph.D in Mathematics, June 2005 – Thesis advisor:  
David Jerison  
*Massachusetts Institute of Technology*, Visiting student, 2000/2001  
*University of Naples “Federico II”*, B.A. Summa cum Laude in Mathematics, November  
1997 – Senior thesis advisor: Angelo Alvino

### Research fellowships

Doctoral fellowship at the University of Naples “Federico II”, 1998–2000  
I.N.d.A.M. fellowship at the University of Naples “Federico II”, 1998

### Research interests

Partial Differential Equations, Harmonic Analysis.

### Papers/Publications

1. *Some remarks on nonlinear elliptic equations and applications to Hamilton-Jacobi equations*, (with C. Trombetti), C.R. Acad. Sci. Paris, t. 333, Serie I, p. 91-96, 2001
2. *Estimates for the gradient of solutions of elliptic equations in Orlicz-Sobolev spaces*, Ricerche di Matematica, vol. LI, issue 1, p. 25-47, 2002
3. *Global well-posedness for a periodic nonlinear Schrödinger equation in 1D and 2D*, (with N. Pavlovic, G. Staffilani and N. Tzirakis) Discrete and Continuous Dynamical Systems, Vol. 19 (2007), n. 1, 37–65.
4. *Global well-Posedness for the  $L^2$ -critical nonlinear Schrödinger equation in higher dimensions*, (with N. Pavlovic, G. Staffilani and N. Tzirakis) CPAA, Vol. 6 (2007), n.4, 1023–1041.
5. *Global well-posedness and polynomial bounds for the defocusing  $L^2$ -critical nonlinear Schrödinger equation in  $\mathbf{R}$* , (with N. Pavlovic, G. Staffilani and N. Tzirakis) Comm. in PDEs. Vol. 33 (2008), n. 8, 1395–1429(35)

6. *Low regularity solutions for a 2D quadratic non-linear Schrödinger equation*, (with I. Bejenaru), Trans. Amer. Math. Soc. 360 (2008), 5805-5830.
7. *Existence and regularity of monotone solutions to free boundary problems*, Amer. J. of Math. 131, no. 2, 351–378
8. *A singular energy minimizing free boundary*, (with D. Jerison) J. Reine Angew. Math., Vol. 2009 Issue 635, 1–22.
9. *Symmetry of global solutions to a class of fully nonlinear elliptic equations in 2D*, (with O. Savin) Indiana Univ. Math. J., 2009; 58 (1), 301–315
10. *Bernstein-type techniques for 2D free boundary graphs*, Math. Z. 260, no. 1, 47–60
11. *Radial graphs of constant mean curvature in the Hyperbolic space*, (with J. Spruck) Calculus of Variations and PDEs 34, no. 1, 73–95
12. *Minimizers of convex functionals arising in random surfaces*, (with O. Savin) Duke Math. J., Volume 151, Number 3 (2010), 487-532.
13. *A fully nonlinear problem with free boundary in the plane*, (with E. Valdinoci) Ann. Scuola Norm. Sup. Pisa Cl. Sci. (5) Vol. IX (2010), 111-132
14. *Gradient bound for energy minimizing free boundary graphs*, (with D. Jerison), Comm. on Pure and Applied Math. Volume 64, Issue 4 (2011), 538555
15. *Free boundary regularity for a problem with right hand side*, to appear in Interfaces and free boundaries.
16. *Regularity in a one-phase free boundary problem for the fractional Laplace*, (with J.M. Roquejoffre), submitted.
17. *Higher regularity for a free boundary problem for the fractional Laplace*, (with O. Savin), under revision.
18. *A free boundary problem for the fractional Laplacian: Lipschitz implies  $C^{1,\alpha}$* , (with O. Savin), in preparation.

### Seminars/Conferences

#### *Fall 2010*

PDE Seminar, Brown University

#### *Spring 2010*

PDE Seminar, Uconn

#### *Fall 2009*

American Mathematical Society, Fall Central Section Meeting, Waco TX, Session on Harmonic Analysis and Partial Differential Equations

#### *Spring 2009*

Colloquium, Rutgers University

Colloquium, Barnard College, Columbia University

#### *Summer 2008*

PDE Seminar, University of Rome “Tor Vergata”

*Spring 2008*

PDE Seminar, UT Austin

*Spring 2007*

JAMI Conference on Nonlinear dispersive equations

*Fall 2006*

Conference on Geometric Analysis and Non-linear Elliptic PDEs (in honor of J. Spruck's 60th birthday)

Geometry and Analysis Seminar, Columbia University

Canadian Mathematical Society, Winter Meeting 2006, Special session on Schrödinger equations

*Spring 2006*

PDE Seminar, Purdue University

*Fall 2005*

Analysis Seminar, UCLA

Mathematical Sciences Research Institute, Program in Nonlinear Dispersive Equations

Canadian Mathematical Society, Winter Meeting 2005, Special session on Free Boundary problems

*Spring 2005*

Analysis Seminar/PDE, MIT

PDE Seminar, Purdue University

PDE Seminar, Brown University

*Fall 2004*

Analysis Seminar, Princeton University

Analysis Seminar, Courant Institute

Analysis/PDE Seminar, Johns Hopkins University

**Teaching experience**

BARNARD COLLEGE, COLUMBIA UNIVERSITY– Fall 2007–Spring 2010, Instructor for the following classes:

- *Intro to Modern Analysis I.*
- *Partial Differential Equations.*
- *Calculus II.*
- *Undergraduate Seminars.*

JOHNS HOPKINS UNIVERSITY– Spring 2006–Spring 2007, Instructor and course coordinator for the following classes:

- *Introduction to the calculus of variations.*
- *Analysis I.*
- *Calculus II.*
- *Ordinary differential equations.*

MIT– Fall 2003– Spring 2005, Teaching Assistant for the following classes:

- *Calculus 18.02.*
- *Calculus 18.022.*

#### **Service to University/Profession**

Organizer of the Geometry and Analysis seminar at Columbia University.

Member of the Prize Exam committee at Barnard College, Columbia University.

Member of the BLAIS committee.

Major adviser.

Referee for several Mathematics Journals.

#### **Personal information**

Barnard College, Columbia University

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Web: <http://www.math.columbia.edu/~desilva/>

Citizenship: Italian

**Date:** May 2011