# Marco Barchiesi

Università degli Studi di Napoli "Federico II" barchies@gmail.com

# PERSONAL INFORMATION

Date of Birth July 20, 1976 Place of Birth Albano Laziale (Rome), Italy Nationality Italian, Finnish

## **APPOINTMENTS**

Dec. 2011 - Present	Ricercatore universitario TDa (Assistant Professor) in mathematical analysis at the Università degli Studi di Napoli "Federico II".
Oct. 2010 - Dec. 2011	Post Doctoral Fellow at the Università degli Studi di Napoli "Federico II", ERC Advanced Grant in "Analytic Techniques for Geometric and Functional Inequalities".
Sept. 2009 - Sept. 2010	Post Doctoral Fellow at the Basque Center for Applied Mathematics.
Sept. 2007 - Aug. 2009	Post Doctoral Fellow at the Center for Nonlinear Analysis, Carnegie Mellon University.

#### EDUCATION

2007	Ph.D. in Applied Mathematics, SISSA, Trieste, Italy.
title thesis	Multiscale analysis of some variational problems
supervisors	Prof. G. Dal Maso and Prof. A. DeSimone

2003 Laurea in Mathematics, Università di Roma "La Sapienza", Rome, Italy. title thesis Inclusioni differenziali per EDP: rigidità e mancanza di rigidità" Prof. V. Nesi supervisor 110/110 cum laude grade

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#### **Research** interests

- Homogenization via Γ-convergence
- Geometric measure theory
- Free discontinuity problems
- Isoperimetric inequalities

## PUBLICATIONS

(pdf files are available at http://cvgmt.sns.it/people/barchiesi/)

- Multiscale homogenization of convex functionals with discontinuous integrand. J. Convex Anal., 14 (2007), 205–226.
- [2] Loss of polyconvexity by homogenization: a new example. *Calc. Var. Partial Differential Equations*, 30 (2007), 215–230.
- [3] A variational approach to the local character of G-closure: the convex case. Joint work with J.-F. Babadjian. Ann. Inst. H. Poincaré Anal. Non Linéaire, 26 (2009), 351–373.
- [4] Homogenization of fiber reinforced brittle materials: the extremal cases. Joint work with G. Dal Maso. *SIAM J. Math. Anal.*, 41 (2009), 1874–1889.
- [5] New counterexamples to the cell formula in nonconvex homogenization. Joint work with A. Gloria. Arch. Ration. Mech. Anal., 195 (2010), 991– 1024.
- [6] A variational model for infinite perimeter segmentations based on Lipschitz level set functions: denoising while keeping finely oscillatory boundaries. Joint work with S. H. Kang, T. M. Le, M. Morini and M. Ponsiglione. *Multiscale Model. Simul.*, 8 (2010), 1715–1741.
- [7] Homogenization of the Neumann problem in perforated domains: an alternative approach. Joint work with M. Focardi. *Calc. Var. Partial Differential Equations*, 42 (2011), 257–288.
- [8] Stability of the Steiner symmetrization of convex sets. Joint work with F. Cagnetti and N. Fusco. *J. Eur. Math. Soc.*, accepted.

	TEACHING EXPERIENCE
Fall Semester 2012	Instructor, Istituzioni di Matematica. Università degli Studi di Napoli "Federico II".
Spring Semester 2012	Teaching Assistant, Analisi Matematica. Università degli Studi di Napoli "Federico II".
Spring Semester 2009	Instructor, Selected Topics in Analysis: Measure Theory. Carnegie Mellon University.
Spring Semester 2008	Instructor, Selected Topics in Analysis: Calculus of Variations. Carnegie Mellon University.

## VISITING POSITIONS

Fall 2008 Junior Program on Analysis, Hausdorff Research Institute, Bonn.

Fall 2006 Intensive research period on Calculus of Variations and Partial Differential Equations, Centro di Ricerca Matematica Ennio De Giorgi, Pisa.

## RESEARCH PROJECTS

Project title: Calculus of Variations and Image Processing.
Lenght: 1/09/2008 - 31/12/2008.
Financial entity: Junior Program on Analysis, Hausdorff Research Institute, Bonn.
Principal investigators: M. Barchiesi, S. H. Kang, T. M. Le, M. Morini, L. Mugnai and M. Ponsiglione.

#### SELECTED TALKS AND SEMINARS

January 2011	Seminar at the Università degli Studi di Napoli "Federico II".
June 2010	Meeting on Applied Mathematics and Calculus of Variations, Rome.
June 2010	Analysis seminar at the Universidad Autonoma de Madrid.
March 2010	PDE seminar at the Instituto Superior Técnico, Lisboa.
October 2009	Seminar at the Basque Center for Applied Mathematics, Bilbao.
February 2009	Analysis seminar at the University of Pittsburgh.
January 2008	US-CHILE Workshops: New Developments in PDEs II, Santiago.
December 2007	SIAM Conference on Analysis of Partial Differential Equations, Mesa.
October 2007	Seminar at the Carnegie Mellon University, Pittsburgh.
February 2007	XVII Giornate di Lavoro su Questioni di Teoria Geometrica della Misura e di Calcolo delle Variazioni, Levico Terme.

## POSTER SESSIONS

April 2009 Workshop Mathematical Aspects of Imaging, Modelling and Visualization in Multiscale Biology, Austin.

## Schools and workshops

September 2012	Meeting on Applied Mathematics and Calculus of Variations, Rome.
September 2012	ERC Workshop on Geometric Partial Differential Equations, Pisa.
July 2012	Geometric and Analytic techniques in Calculus of Variations and PDEs: workshops, $Pisa$
June 2012	Geometric and Analytic techniques in Calculus of Variations and PDEs: schools, $Pisa$
June 2011	HCDTE-Nonlinear Hyperbolic PDEs, Dispersive and Transport Equations-courses, Trieste.
June 2011	ERC Summer school on Calculus of Variations, Continuum Mechanics and Geometric Inequalities, Ischia.
June 2011	ICTP School and Conference on Mathematics and Physics of Soft and Biological Matter, Trieste.

May 2011	CNA Workshop on Macroscopic Modeling of Materials with Fine Structure, Pittsburgh.
October 2010	ERC Workshop on Optimal Transportation and Applications, Pisa.
June 2010	GNAMPA-ERC Summer School on Calculus of Variations and PDEs , Ischia.
October 2009	2nd International Meeting of Young Researchers on the Mechanics of Materials and Structures, Trieste.
June 2008	Summer School on Contemporary Topics in Nonlinear PDEs, Pittsburgh.
March 2008	New Trends in Calculus of Variations and Mass Transport, Pittsburgh.
June 2007	Fourth Summer School in Analysis and Applied Mathematics, Rome.
June 2007	Geometric Analysis and Nonlinear PDE, Bedlewo.
May 2007	Quasiconvexity, Quasiregularity, and Rigidity of Gradients, Regensburg.
October 2006	Variational Methods in Material Science, Pisa.
September 2006	Summer School on Calculus of Variations and Applications, Ponta Delgada.
September 2006	Workshop in Calculus of Variations, Lisboa.
June 2006	Third Summer School in Analysis and Applied Mathematics, Rome.
September 2004	Workshop on variational problems in material science, Trieste.

## References

## Professor Gianni Dal Maso

Email: dalmaso@sissa.it SISSA, Functional Analysis Sector Via Bonomea 265, 34136 Trieste, Italy

#### Professor Antonio DeSimone

Email: desimone@sissa.it SISSA, Functional Analysis Sector Via Bonomea 265, 34136 Trieste, Italy

#### **Professor Irene Fonseca**

Email: fonseca@andrew.cmu.edu Dept. of Mathematical Sciences CNA, Carnegie Mellon University Pittsburgh, PA 15213, USA

## **Professor Nicola Fusco**

Email: nfusco@unina.it Dept. of Mathematics and Applications Università degli Studi di Napoli "Federico II" Via Cintia, 80126 Naple, Italy

## Professor Giovanni Leoni

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# UPDATED

October 7, 2012