Curriculum Vitæ

Laura Caravenna

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Personal Information

Birth: March 1st, 1982, at Treviglio (BG), Italy

Citizenship: Italian. **Gender:** Female. **Civil Status:** Unmarried

Residence: Via S. Elisabetta 32, 20060 Pozzo d'Adda (MI), Italy

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Current position

CRM Junior Visitor since November 2009 at

Centro di Ricerca Matematice Ennio De Giorgi
Collegio Puteano, Scuola Normale Superiore,
Piazza dei Cavalieri 3, IT-56126 Pisa, Italy

Education

★ *Ph.D. in Mathematical Analysis*, October 23rd, 2009
equipollent[1] to *Dottorato di Ricerca in Matematica*
Institution: SISSA (Trieste, Italy)
Scholarship: by SISSA (Trieste, Italy)
selected with entrance examination
Thesis: The Disintegration Theorem and Applications to Optimal Mass Transport
Advisor: Prof. S. Bianchini

★ *Laurea Magistrale (Master's Degree) in Mathematics*, October 25th, 2006
Final Grade: 110/110 with honour
Institution: University of Trieste (Trieste, Italy)
Scholarship: by SISSA
selected with entrance examination
Thesis: On the Entropy Dissipation for Scalar Conservation Laws
Advisor: Prof. S. Bianchini

★ *Laurea Triennale (Bachelor) in Mathematics*, November 9th, 2004
Final Grade: 110/110 with honour
Institution: University of Milan (Milan, Italy)
Scholarship: by INDAM—National Inst. of High Mathematics
selected with entrance examination
Thesis: Numerical Observation on a Fermi-Pasta-Ulam-type Model
Advisor: Prof. D. Bambusi

★ *Scientific Certificate (Secondary School Diploma)*, 2001
Final Grade: 100/100
Institution: Liceo Scientifico 'Giordano Bruno' (Cassano d'Adda (MI), Italy)

Main Research Interests

Optimal mass transportation, measure theory, conservation laws

[1] Article 18, Comma 3 of Sissa Statute, published on G.U. Number 62, 15 March 2001

Papers

- ★ *On optimality of c-cyclically monotone transference plans*,
  joint work with S. Bianchini,
  C. R. Math. Acad. Sci. Paris, Ser. I, 348:613–618, 2010.

- ★ *A disintegration of the Lebesgue measure on the faces of a convex function*,
  joint work with S. Daneri,
  J. Funct. Anal., 258:3604–3661, 2010.

- ★ *On the extremality, uniqueness and optimality of transference plans*,
  joint work with S. Bianchini,
  Bull. Inst. Math. Acad. Sin. (N.S.), 4(4):353–455, 2009.

- ★ *A proof of Sudakov theorem with strictly convex norms*, *Math. Z.* (published on line), 2009.

- ★ *An entropy based Glimm-type functional*,
  J. Hyperbolic Differ. Equ., 5(3):643–662, 2008.

- ★ *An existence result for the Monge problem in $\mathbb{R}^n$ with norm cost functions* (preprint).

Given Talks

- ★ *Sets of Uniqueness for for Transference Plans*
  June 10-12, 2010, in the *Meeting on Applied Math. & Calculus of Variations (Roma, Italy).*

- ★ *Sets of Uniqueness for Optimal Transport Plans*
  Feb. 25th, 2010, in the *Intensive Research Month on Hyperbolic Conservation Laws & Fluid Dynamics (Parma, Italy).*

- ★ *Some problems in Optimal Mass Transport studied by Disintegration of Measures*
  Sept. 1st, 2009, in the *VI meeting on Hyperbolic Conservation Laws (Trieste, Italy).*

- ★ *Optimal transport maps for the Monge problem in $\mathbb{R}^N$*
  June 19, 2009, at *Optimal transport: theory and applications, Grenoble (France).*

- ★ *Un funzionale di interazione basato sull'entropia (An entropy-based interaction functional)*
  Feb. 12nd, 2009, at the *XIII Incontro Nazionale Problemi di Tipo Iperbolico (Bari, Italy).*

- ★ *A proof of Sudakov theorem with strictly convex norms*
  Jan. 27th, 2009, at the *First Winter School at IMDEA on PDE's and Inequalities (Madrid, Spain).*

★ *An entropy-based Glimm-type functional*
Jan. 21st, 2009, at the University of Parma (Italy).

★ *A proof of Sudakov theorem with strictly convex norms*
Nov. 5th, 2008, in the conference *Optimal transportation and applications (Pisa, Italy).*

★ *A partial proof of Sudakov theorem via disintegration of measures*
July 18th, 2008, in the *VI meeting on Hyperbolic Conservation Laws (L'Aquila, Italy).*

★ *Sufficient conditions for optimality of c-cyclically monotone transference plans*
Mar. 27th, 2008, at Northwestern University, Evanston (IL, USA)

★ *Condizioni sufficienti per l'ottimalità di piani c-ciclicamente monotoni (Sufficient conditions for optimality of c-cyclically monotone transference plans)*
Nov. 30th, 2007, at *Eq. alle der. parziali, meccanica dei fluidi e leggi di cons. (Pisa, Italy).*

★ *On the entropy dissipation for scalar conservation laws*
Oct. 2nd, 2006, SISSA (Trieste, Itlay)

★ *Selezionare soluzioni deboli di una legge di conservazione scalare: una condizione minimale di entropia per flussi strettamente convessi (Selecting weak solutions of scalar conservation laws: a minimal entropy condition for strictly convex fluxes)* (report from an article by De Lellis, Otto, Westdickemberg)
July 12nd, 2006, SISSA (Trieste, Italy)

Teaching

In the academic year 2008-2009, tutorial activity supporting the course

Mathematics and Statistics (I semester, I year, Biology Major) at the *University of Trieste*.

Computer and Language Skills

OS:	usage of Linux, Mac, Windows
Programming:	C, Java, Pascal, Matlab, LaTeX. Rudiments of HTML/CSS, R
Languages:	Italian (mother tongue), English

Short Schools and Conferences Attended

June 27-July 2, 2010—*International Summer School on Mathematical Fluid Dynamics*, Levico Terme (TN, Italy), School+Workshop
June 13-18, 2010—*Analytic Techniques for Geom. and Functional Inequalities*, Ischia (NA, Italy), School
June 10-12, 2010—*Meeting on Applied Mathematics & Calculus of Variations*, Rome (Italy), Meeting
Feb. 1-28, 2010—*Intensive Res. Month on Hyperb. Cons. Laws & Fluid Dyn.*, Parma (Italy), School+Workshop
Aug. 31-Sept. 4, 2009—*VII meeting on Hyperbolic Conservation Laws*, Trieste (Italy), School+Workshop
June 15-July 3, 2009—*Optimal transport: theory and applications*, Grenoble (France), School+Workshop
June 1-5, 2009—*V Summer School in Analysis and Applied Mathematics* , Roma (Italy), School
Feb. 11-13, 2009—*XIII Incontro Nazionale Problemi di Tipo Iperbolico*, Bari (Italy), Workshop
Feb. 9-10, 2009—*XVIII Conv. Naz. di Calcolo delle Variazioni*, Levico Terme (TN, Italy), Workshop
Feb. 5-7, 2009—*Trends in Nonlinear Analysis and PDE*, Polytechnic of Milan (Italy), Meeting
Jan. 25-30, 2009—*First Winter School at IMDEA on PDE's and Inequalitites*, Madrid (Spain), School
Nov. 3-6, 2008—*Optimal Transportation and Applications*, Pisa (Italy), Conference
Oct. 28-31, 2008—*Optimal transportation, geometry and functional inequalities*, Pisa (Italy), School
July 17-19, 2008—*VI meeting on Hyperbolic Conservation Laws*, L'Aquila (Italy)
June 22-28, 2008—*Nonlinear Pde's and Applications*, Cetraro (CZ, Italy), Summer School
June 2-13, 2008—*School and Conference on Differential Geometry*, ICTP-Trieste (Italy)
May 8-13, 2008—*Relaxation Models and Finite Volumes Methods*, Parma (Italy), Prof. Bouchut's lectures
Apr. 18-19, 2008—*Evolution Equations in Pure and Applied Sciences*, Firenze (Italy), Conference
Mar. 31- Apr. 4, 2008—*Aspects of Optimal Transportation in Geometry and Calculus of Variations*, Los Angeles (USA), Conference
Feb. 10-15, 2008—*XVIII Conv. Naz. di Calcolo delle Variazioni*, Levico Terme (TN, Italy), Workshop
Nov. 27-30, 2007—*Eq. alle derivate parziali, meccainca dei fluidi e leggi di cons.*, Pisa (Italy), Workshop
Oct. 10-13, 2007—*Phase Space Analysis of PDEs*, Pontignano (SI, Italy), Workshop
Sept. 10-26, 2007—*Optimal transport structures, gradient flows and entropy methods for applied PDE's*, Wien (Austria), School and Workshop
July 16-28, 2007—*Hyperbolic Partial Differential Equations*, Cortona (AR, Italy), School
June 21-22, 2007—*V meeting on Hyperbolic Conservation Laws*, Trieste (Italy), Workshop
May 28 - June 1, 2007—*Nonlinear Hyperbolic Problems*, Roma (Italy), Workshop
Nov. 23-25, 2006—*Regularity in Hyperbolic Problems*, Bertinoro (Forlì, Italy), Workshop
Nov. 21-22, 2006—*Microlocal Analysis and Applications to PDEs*, Pisa (Italy), Workshop
June 12-17, 2006—*Boltzmann Equation and Fluidodynamic Limits*, Trieste (Italy), Workshop
Aug., 2004—courses of *Cryptography* and *Complex Analysis*, Perugia (Italy), School organized by S.M.I.