Curriculum Vitae - Pierre Bousquet

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Academic Positions

2014-present: Professor, Université Toulouse-III.

2008-2014: Assistant Professor (maître de conférences), Université Aix-Marseille.

2013: Habilitation Thesis to supervise Research (HDR) in Mathematics.
Title: *Density in Sobolev spaces with values into manifolds. Regularity in the Calculus of Variations. Critical cases for the divergence problem.*

2006-2008: Postdoctoral Researcher (agrégé préparateur), Ecole Normale Supérieure of Lyon.

2003-2006 : Ph. D. in Mathematics, Université Lyon-I.
Advisors : Francis Clarke and Petru Mironescu.
Title: *Regularity in the Calculus of Variations. Fractional Sobolev spaces.*

Research Interests

Calculus of Variations and Partial Differential Equations

Harmonic Analysis

Sobolev spaces between manifolds

Geometric measure theory

Publications

References

[1] Pierre Bousquet and Gyula Csató. The equation div $u + \langle a, u \rangle = f$. Submitted.

[2] Pierre Bousquet, Emmanuel Russ, Yi Wang, and Po-Lam Yung. Approximation in fractional Sobolev spaces and Hodge systems. Submitted.

[3] Guy Bouchitté and Pierre Bousquet. On a degenerate problem in the Calculus of Variations. *Trans. Amer. Math. Soc.* To appear.

[4] Pierre Bousquet, Augusto C. Ponce, and Jean Van Schaftingen. Weak approximation by bounded Sobolev maps with values into complete manifolds. *C. R. Math. Acad. Sci. Paris*, 356(3):264–271, 2018.

[5] P. Bousquet, L. Brasco, C. Leone, and A. Verde. On the Lipschitz character of orthotropic p-harmonic functions. *Calc. Var. Partial Differential Equations*, 57(3):Art. 88, 33, 2018.

[6] Pierre Bousquet and Lorenzo Brasco. C^1 regularity of orthotropic p-harmonic functions in the plane. *Anal. PDE*, 11(4):813–854, 2018.

[7] Pierre Bousquet, Augusto C. Ponce, and Jean Van Schaftingen. Density of bounded maps in Sobolev spaces into complete manifolds. *Ann. Mat. Pura Appl. (4)*, 196(6):2261–2301, 2017.

[8] Pierre Bousquet and Lorenzo Brasco. Global Lipschitz continuity for minima of degenerate problems. *Math. Ann.*, 366(3-4):1403–1450, 2016.

[9] Pierre Bousquet, Lorenzo Brasco, and Vesa Julin. Lipschitz regularity for local minimizers of some widely degenerate problems. *Ann. Sc. Norm. Super. Pisa Cl. Sci. (5)*, 16(4):1235–1274, 2016.

[10] Pierre Bousquet, Franck Boyer, and Flore Nabet. On a functional inequality arising in the analysis of finite-volume methods. *Calcolo*, 53(3):363–397, 2016.

[11] Pierre Bousquet, Augusto C. Ponce, and Jean Van Schaftingen. Strong density for higher order Sobolev spaces into compact manifolds. *J. Eur. Math. Soc. (JEMS)*, 17(4):763–817, 2015.

[12] Pierre Bousquet, Carlo Mariconda, and Giulia Treu. A survey on the non occurence of the Lavrentiev gap for convex, autonomous multiple integral scalar variational problems. *Set-Valued Var. Anal.*, 23(1):55–68, 2015.

[13] Pierre Bousquet and Jean Van Schaftingen. Hardy-Sobolev inequalities for vector fields and canceling linear differential operators. *Indiana Univ. Math. J.*, 63(5):1419–1445, 2014.

[14] Pierre Bousquet, Augusto C. Ponce, and Jean Van Schaftingen. Strong approximation of fractional Sobolev maps. *J. Fixed Point Theory Appl.*, 15(1):133–153, 2014.

[15] Pierre Bousquet and Petru Mironescu. Prescribing the Jacobian in critical spaces. *J. Anal. Math.*, 122:317–373, 2014.

[16] Pierre Bousquet, Carlo Mariconda, and Giulia Treu. On the Lavrentiev phenomenon for multiple integral scalar variational problems. *J. Funct. Anal.*, 266(9):5921–5954, 2014.

[17] Pierre Bousquet, Augusto C. Ponce, and Jean Van Schaftingen. Density of smooth maps for fractional Sobolev spaces $W^{s,p}$ into ℓ simply connected manifolds when $s \geqslant 1$. *Confluentes Math.*, 5(2):3–22, 2013.

[18] Pierre Bousquet, Petru Mironescu, and Emmanuel Russ. A limiting case for the divergence equation. *Math. Z.*, 274(1-2):427–460, 2013.

[19] Pierre Bousquet. The Euler equation in the multiple integrals calculus of variations. *SIAM J. Control Optim.*, 51(2):1047–1062, 2013.

[20] Pierre Bousquet. Continuity of solutions of a nonlinear elliptic equation. *ESAIM Control Optim. Calc. Var.*, 19(1):1–19, 2013.

[21] Pierre Bousquet and Petru Mironescu. An elementary proof of an inequality of Maz'ya involving L^1 vector fields. In *Nonlinear elliptic partial differential equations*, volume 540 of *Contemp. Math.*, pages 59–63. Amer. Math. Soc., Providence, RI, 2011.

[22] Pierre Bousquet. Continuity of solutions of a problem in the calculus of variations. *Calc. Var. Partial Differential Equations*, 41(3-4):413–433, 2011.

[23] Pierre Bousquet. Boundary continuity of solutions to a basic problem in the calculus of variations. *Adv. Calc. Var.*, 3(1):1–27, 2010.

[24] Pierre Bousquet, Carlo Mariconda, and Giulia Treu. Hölder continuity of solutions to a basic problem in the calculus of variations. *C. R. Math. Acad. Sci. Paris*, 346(23-24):1301–1305, 2008.

[25] Pierre Bousquet, Augusto C. Ponce, and Jean Van Schaftingen. A case of density in $W^{2,p}(M; N)$. *C. R. Math. Acad. Sci. Paris*, 346(13-14):735–740, 2008.

[26] Pierre Bousquet. Fractional Sobolev spaces and topology. *Nonlinear Anal.*, 68(4):804–827, 2008.

[27] Pierre Bousquet and Francis Clarke. Local Lipschitz continuity of solutions to a problem in the calculus of variations. *J. Differential Equations*, 243(2):489–503, 2007.

[28] Pierre Bousquet. Local Lipschitz continuity of solutions of non-linear elliptic differential-functional equations. *ESAIM Control Optim. Calc. Var.*, 13(4):707–716 (electronic), 2007.

[29] Pierre Bousquet. Topological singularities in $W^{s,p}(S^N, S^1)$. *J. Anal. Math.*, 102:311–346, 2007.

[30] Pierre Bousquet. On the lower bounded slope condition. *J. Convex Anal.*, 14(1):119–136, 2007.

[31] Pierre Bousquet and Francis Clarke. Continuité lipschitzienne des solutions d'un problème en calcul des variations. *C. R. Math. Acad. Sci. Paris*, 343(3):225–228, 2006.

International conferences since 2010

Geometric PDEs in Freiburg 2018.

Analysis of singular patterns in variational models, Toulouse, 2018.

Workshop Transitions de phase et équations non locales, Bucarest, 2018.

Miniworkshop Calculus of Variations and Partial Differential Equations, Napoli, 2017.

Workshop on Nonlinear Analysis and Optimization, Imperial College, London, 2015.

9èmes Journées scientifiques de l'Université de Toulon, Calcul des Variations, 2015.

Workshop on Calculus of Variations and Partial Differential Equations, Padova, 2014.

Conference on Existence and Regularity for Nonlinear Systems of Partial Differential Equations, Pisa, 2014.

12th Franco-Romanian Conference on Applied Mathematics, Lyon, 2014.

Optimization Days, an international workshop on Calculus of Variations, Università Politecnica delle Marche, Ancona, 2011.

Workshop for Young Researchers in Mathematics, Universidad Complutense, Madrid, 2010.

Workshop on some problems of the Calculus of variations, Università Milano Bicocca, 2010.

10th Franco-Romanian Conference on Applied Mathematics , Poitiers, 2010.

Joint SIAM/RSME-SCM-SEMA Meeting Emerging Topics in Dynamical Systems and Partial Differential Equations DSPDEs'10', Barcelona, 2010.

Recent Seminars

Ecole Polytechnique Fédérale de Lausanne, June 2018.

Université de Toulon, March 2018.

Université de Toulouse (Séminaire Pluridisciplinaire d'Optimisation de Toulouse - SPOT), November 2017.

Università degli studi di Ferrara, April 2017.

University of Heidelberg, October 2016.

Università degli studi di Napoli Federico II, September 2016.

Università degli studi di Padova, May 2016.

Università degli studi di Ferrara, May 2016.

Université de Toulon, March 2016.

The Chinese University of Hong-Kong, February 2016.

Mini-courses

4-hours mini-course (master in Mathematics), Université Catholique Louvain-la-Neuve, December, 2013.

One-week course (master in Mathematics), Université Tlemcen (Algeria), December, 2010.

Thesis Advisor

From September 2016, I am the coadvisor with Radu Ignat of our PhD student Hoang Phuong Nguyen.

Scientific evaluation

I have been one of the thesis referees for the theses of

- Tran Duc Minh Phan, advisor: Guy Bouchitté, Université de Toulon, June 2018.

- David Strütt, advisor: Bernard Dacorogna, Ecole Polytechnique Fédérale de Lausanne, June 2018.

- Nathalie Khalil, advisor : Piernicola Bettiol, Université de Brest, November 2017.

- Gwenael Mercier, advisor : Antonin Chambolle, Ecole Polytechnique, September 2015.

- Gyula Csató, advisor : Bernard Dacorogna, Ecole Polytechnique Fédérale de Lausanne, May 2012.

I have been a member of the thesis jury of

- Alexandra Convent, advisor: Jean Van Schaftingen, Université Catholique de Louvain, June 2017.

- Laurent Dietrich, advisors : Henri Berestycki and Jean-Michel Roquejoffre, Université Toulouse III, June 2015.

- Thùy Liên Nguyên, advisor: Mihai Maris, Université Toulouse III, December 2014.

Organization of workshops and summer schools

- organization with Radu Ignat of a Workshop *Analysis of singularities in PDE and Calculus of Variations*, IMT, Toulouse. The first session took place on May 28, 2015.

- organization with Petru Mironescu, Nadine Badr and Jean Van Schaftingen of the Winter School *Nonlinear Functions Spaces in Mathematics and Physical Sciences*, Lyon, December 14-18, 2015.

- October, 2014-March, 2015, organization of a weekly seminar in Applied Analysis, Toulouse III.

- organization with Thierry Champion and Roland Masson of the annual Workshop *Nice-Toulon-Marseille*, Porquerolles, June 10-13, 2012 and June 16-19, 2013.

- organization of a workshop on the Calculus of Variations, FRUMAM, Marseille, November 17-18, 2011.

- organization with Thierry Champion of a Summer School in the Calculus of Variations, CIRM, Marseille, June 11-15, 2011.

- organization with Petru Mironescu, Augusto Ponce and Jean Van Schaftingen of a quarterly workshop on Analysis (*Rencontres d'Analyse*), Lyon, Marseille, Grenoble, Louvain-la-Neuve, 2010-2014.

- 2006-2008 organization with Marc Bernot of a weekly seminar in Applied Analysis, Ecole Normale Supérieure of Lyon and Université Lyon I.

Activities

- January 2018-present, member of the *Collège Scientifique Mathématiques*, Toulouse-III.

- October 2016-present, member of the Teaching Commitee of the Mathematics Department, Toulouse-III.

- June, 2015-present, in charge of the Classe Préparatoire Universitaire aux Grandes Ecoles, a two-years course to prepare students to enter a college (école d'ingénieurs), Toulouse-III.

- June, 2015-June, 2017 member of the Scientific Foresight Committee of the Mathematics Department, Toulouse-III.

- April-May 2015, member of a Hiring Committee (comité de sélection), Toulouse III.

- 2011-2014, in charge of a one-year course for students preparing the *Agrégation de Mathématiques*, Aix-Marseille Université.