

CURRICULUM VITAE

Monsieur Guy BOUCHITTÉ

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- **Position** : Full Professor (PR- Classe Exc), Mathématiques, Université de Toulon et du Var.

- **Area of research** : My scientific research has been mainly devoted to the following fields, in which I published more than 70 papers:
 - Convex analysis
 - General theory of Γ -convergence
 - Semicontinuity and relaxation of functionals of the calculus of variations
 - Free discontinuity problems
 - Phase transitions
 - Singular perturbation problems
 - Asymptotic analysis in the continuum mechanics, thin structures.
 - Asymptotic analysis in electromagnetism.
 - Macroscopic behaviour of periodic networks: homogenization.
 - Geometric Measure Theory, tangent spaces to measures, varifolds.
 - Shape optimization problems
 - Mass transport problems.

- **PHD advisor (since 1993)**
 - LIDOUH Abdelluad, January 93: Homogénéisation de frontière pour la modélisation du contact entre un corps déformable non linéaire et un corps rigide
 - BELLIEUD Michel, January 97: Analyse asymptotique de formes de Dirichlet . Application a l' étude d' effets non locaux en homogénéisation.
 - SEPPECHER Pierre, HDR January 96: Les Fluides de Cahn-Hilliard
 - DUBS Christophe, July 98: Problèmes de perturbations singulières avec un potentiel dégénéré à l'infini. Applications à des modèles de transitions de phases et de segmentation d'images
 - FRAGALA Ilaria, February 2000: The variational Calculus with respect to a Measure
 - FELBACQ Didier (MC Physique) HDR , December 2000: Contribution à l'étude de la diffraction du champ électromagnétique. Applications aux matériaux à structure de bande photonique.

- GUENNEAU Sébastien, April 2001: Homogénéisation des quasi-cristaux et analyse des modes dans les fibres optiques de type cristal photonique.
- DE PASCALE Luigi, April 2001: Morse-Sard Theorem in Sobolev Spaces. Optimal transport Problems and Applications
- JIMENEZ Chloé, March 2005 Asymptotic of optimal transport problems.
- BOUREL Christophe, in progress Mathematical models for photonic crystals and metamaterials

Visiting positions

- 11-18 January, 2005, Santiago du Chili
- 11-23 april 2005, Politecnico de Milan
- 25-30 juillet 2005: CMAF Lisbonne
- 15-17 septembre 2005: Naples
- 1- 4 novembre 2005: Oberwolfach
- 5-6 Novembre 2005: Université de Bâle.
- 17-22 avril 2006: Politecnico de Milan
- 24-29 avril 2006: Université de Parme
- 9-15 juillet 2006: Oberwolfach
- 11-16 décembre 2006: CMAF, Lisbonne
- 10-14 avril 2007: Université de Parme
- 16-21 avril 2007: Politecnico de Milan
- 28 août-7 sept 2007: Benasque Center for Science
- 19-26 Février 2008: Narvik University college
- 26 janvier-21 février 2009: CMM, Santiago du Chili et Université Concepcion
- Mars 2009: Politecnico d Milan et Université d Parme
- 24 august-3 september 2009: Benasque Center for Science

Invited conferences 2005-2009

- [1] 2008 SPIE Optics and Photonics symposium San-Diego 2008, conference on Metamaterials (OP201)
- [2] PIERS 2009 Progress In Electromagnetics Research Symposium Beijing, CHINA, 23-27 March, 2009 (<http://piers.mit.edu/piers2k9Beijing/programadvance.php>)
- [3] Conference on Variational Analysis to be held at Montpellier on September 8-12, 2009.
- [4] Topology optimisation and material design, WCSMO 8, June 1-5, 2009, Lisbon, Portugal

- [5] Conférence: Polaritons, Plasmons de surface, Résonances : Interactions sub-longueur d'onde en optique (<http://www-ljk.imag.fr/Polaritons2009>), Aussois, du 4 au 7 mai
- [6] Scaling Up for Modeling Transport and Flow in Porous Media Dubrovnik, Croatia, 13-16 October 2008.
- [7] Séminaire Intitut Henri Poincaré, Paris , Mai 08
- [8] New Developments in PDE and Calculus of Variations, Lisbonne, 8-10 sept 2008
- [9] RCMS2007, Hong-Kong: 7-12 décembre 2007
- [10] Santiago du Chili: VII French-Latin American Congress on Applied Mathematics (FLA-CAM), 11-18 January, 2005
- [11] 15-17 septembre 2005: Workshop on thin structures, Naples
- [11] 1- 5 novembre 2005: Conference on reactive flows and porous media, Oberwolfach.
- [12] 13 nov 2006: Invitation Journée grains de sable (ANR), Amiens.
- [13] Conference Calculus of Variations, Oberwolfach July 9th - July 15th, 2006
- [14] 8 ième colloque franco-roumain de mathématiques appliquées, minisymposium calcul des variations, 28 août-1 septembre, 2006.
- [15] Variational and differential problem with constraints, Venise,Sept 18-20, 2006
- [16] Optimal transport theory: theory and applications, Pise, 14- 18 november, 2006.
- [17] Journées en la mémoire de Thomas Lachand Robert, Paris 6, 24-25 janvier 2007.

PUBLICATIONS during three last 5 years (2004-)

Mathematical journals

- [A0] G. BOUCHITTE , C. BOUREL, D. FELBACQ, Homogenization of the 3D Maxwell system near resonances and artificial magnetism. CRAS Volume 347, Issues 9-10, May 2009, Pages 571-576
- [A1] G. MILTON, P. SEPPECHER, G. BOUCHITTE, Minimization variational principles for acoustics, elastodynamics and electromagnetism in lossy inhomogeneous bodies at fixed frequency, Proc. R. Soc. A (2009) 465, 367396
- [A2] G. BOUCHITTE, A. MIELKE and T. ROUBICEK, A complete-damage problem at small strains, Z. Angew. Math. Phys. 60 (2009), no. 2, 205–236.
- [A3] E. ACERBI, G. BOUCHITTE, A general class of phase transition models with weighted interface energy, Ann. Inst. H. Poincaré Anal. Non Linéaire, Volume 25, Issue 6 (2008), 1111–1143
- [A4] G. BOUCHITTE, L. MASCARENHAS, L. TRABUCHO: On the curvature and torsion effects in one dimensional waveguide, ESAIM: COCV 13 4 (2007) 793-808
- [A5] G. BOUCHITTE, W. GANGBO and P. SEPPECHER, Michell trusses and lines of principal action. Math. Models Methods Appl. Sci. 18 (2008), no. 9, 1571–1603.
- [A6] G. BOUCHITTE, I. FRAGALA, P. SEPPECHER, 3D-2D analysis for the optimal elastic compliance problem, C. R. Math. Acad. Sci. Paris I, 345 (2007), 713718.
- [A7] G. BOUCHITTE, I. FRAGALA, Optimal design of thin plates by a dimension reduction for linear constraint problems, SIAM J Control Optim, vol. 46, 5 (2007), 1664–1682.
- [A8] G. BOUCHITTE , D. FELBACQ, Homogenization of a wire photonic crystal: the case of small volume fraction , SIAM J. Appl. Math. 66 (2006), 2061–2084.
- [A9] G. BOUCHITTE, I. FRAGALA, Optimality conditions for mass design problems and applications to thin plates, Arch. Ration. Mech. Anal. 184 (2007), no. 2, 257–284.
- [A10] G. BOUCHITTE , C. JIMENEZ, M. RAJESH, " A new L^∞ estimate in optimal mass transport, Proc. Amer. Math. Soc. 135 (2007), 3525-3535.
- [A11] E. ACERBI, G. BOUCHITTE, A general class of phase transition models with weighted interface energy, accepté dans Ann. Inst. H. Poincaré Anal. Non Linéaire
- [A12] G. BOUCHITTE, L. MASCARENHAS, L. TRABUCHO: On the curvature and torsion effects in one dimensional waveguide, ESAIM: COCV 13 4 (2007), 793–808.
- [A13] G. BOUCHITTE, T. CHAMPION, C. JIMENEZ: Completion of the space of measures in the Kantorovich norm, Rivista Mat Univ Parma,(7) 4, (2005) , 127–139

- [A14] A. BONDARENKO, G. BOUCHITTE, L.MASCARENHAS, M. RAJESH: Rate of convergence for correctors in almost periodic homogenization, *Continuum Discrete and continuous dynamical systems.*, A, vol 13,2, (2005), 503–514
- [A15] G. BOUCHITTE, I. FRAGALA, M. RAJESH, Homogenization of second order energies on periodic thin structures, *Calc. Var. Partial Differential Equations* 20 (2004), no. 2, 175–211.
- [A16] G. BOUCHITTE, I. FONSECA, L.MASCARENHAS: Bending moment in membrane theory, *J. Elasticity*, 73 (2004), 75–99.
- [A17] G. BOUCHITTE, D.FELBACQ, Homogenization near resonances and artificial magnetism from dielectrics. *C. R. Math. Acad. Sci. Paris* 339 (2004), no. 5, 377–382.

Journals in physics

- [A18] F. ZOLLA; G. BOUCHITTE; S. GUENNEAU: Pure Currents in Foliated Waveguides, *Quart. J. Mech. Appl. Math.* 61 (2008), no. 4, 453–474.
- [A19] G. BOUCHITTE, C. BOUREL Homogenization of finite metallic fibers and 3D-effective permittivity tensor *Proc.SPIE* 7029, 702914 (2008), DOI:10.1117/12.794935
- [A20] D. FELBACQ, B.GUIZAL, G. BOUCHITTE Effective properties of membrane photonic crystals, *Proc. SPIE* 7041, 70410R (2008), DOI:10.1117/12.794515
- [A21] G. BOUCHITTE, C. BOUREL Homogenization of finite metallic fibers and 3D-effective permittivity tensor *Proc.SPIE* 7029, 702914 (2008), DOI:10.1117/12.794935
- [A22] D. FELBACQ, B.GUIZAL, G. BOUCHITTE Effective properties of membrane photonic crystals, *Proc. SPIE* 7041, 70410R (2008), DOI:10.1117/12.794515
- [A23] G. BOUCHITTE, D. FELBACQ, F. ZOLLA: Bloch vector dependence of the plasma frequency in metallic photonic crystals, *Physical Review E* 74, 056612 (2006)
- [A24] G. BOUCHITTE, D. FELBACQ, Theory of negative index in periodic and random photonic crystals, *Proc. SPIE Int. Soc. Opt. Eng.* 6195, 7 pages, 61950I (2006)
- [A25] G. BOUCHITTE, D. FELBACQ, F. ZOLLA: Do Fresnel coefficients exist ?, *Wave motion*, 42 (2005), 75–95.
- [A26] G. BOUCHITTE, D. FELBACQ: Left handed media and homogenization of photonic crystals, *Optics letters*, Vol. 30 (2005), 10, 1189–1191.
- [A27] G. BOUCHITTE, D. FELBACQ: Homogenization of wire mesh photonic crystals embedded in a medium with a negative permeability, **Phys. Rev. Lett.** **94**, 183902 (2005)
- [A28] G. BOUCHITTE, D. FELBACQ: Negative refraction in periodic and random photonic crystals, *New J. Phys.* 7 159 10.1088/ (2005)

Ouvrage de vulgarisation:

- [L1] G. BOUCHITTE: Convex analysis and duality, Encyclopedia of Mathematical Physics, Elsevier vol.11, Oxford (2006), 642–653.

Submitted or in progress:

- [S1] G. BOUCHITTE, I. FRAGALA, P. SEPPECHER, Structural optimization of thin plates: the three dimensional approach.
- [S2] G. BOUCHITTE, B. SCHWEIZER: Homogenization of Maxwell equations with split rings, Preprint 38 pages soumis à Multiscale Model. Simul.
- [S3] G. BOUCHITTE, C. JIMENEZ, M. RAJESH, Asymptotics of a class of optimal mass transportation problems, en préparation
- [S4] G. BOUCHITTE, A. CHAMBOLLE: A duality approach for nonconvex variational problems, en préparation
- [S5] G. BOUCHITTE, C. DUBS, J. MALY, P. SEPPECHER: Phase transitions with a potential degenerated at infinity. Application to the equilibrium of droplets in R^N . en préparation