

CURRICULUM VITAE

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Research Interests

Nonlinear Partial differential equations, calculus of variations Mathematical physics/biology (chemotaxis), geometric analysis.

1. Higher Education

- 12/1997 **PhD degree in Mathematics**
 École Polytechnique Fédérale de Lausanne
 Bifurcation Problems for Special Solutions of Maxwell's Equations
 Adviser: C.A. Stuart (committee J. Pejsachowicz, C.G. Simader)
- 03/1992 **MSc degree in Mathematics** (Faculty prize)
 University of Lausanne
 Two Problems on Algebraically Closed Fields (Adviser: J. Boéchat)
- 10/1989 **BSc degree in Mathematics**
 University of Lausanne

2. Position and Teaching experience

- Since 08/2016, *Professor*, College of Staten Island and CUNY Graduate Center.
- 01/2012, *Associate professor*, College of Staten Island and CUNY Graduate Center.
- 09/2009, *Assistant professor*, College of Staten Island and CUNY Graduate Center.

3. Academic and Professional Honors

- Simons collaborative grant (2012-2017)
- Ramón Y Cajal Fellow (August 2008)
- Alexander von Humboldt Fellow (January 2006)
- Faculty prize for the Master Thesis (March 1992)

4. Refereed Articles

A) Published Papers

- [1] *Some results related to Schiffer's Problem* (2019), to appear (with B. Kawohl).
- [2] *Criticality theory for Schrödinger operators with singular potential*, J. Differential Equations **265** (2018), 3400–3440 (with S. Prashanth).
- [3] *Antisymmetry of solutions for some weighted elliptic problems*, Comm. Partial Differential Equations **43** (2018), 506–547 (with X. Cabré, M. Sanchón, S. Villegas).
- [4] *Multi-bump bound states for a Schrödinger system via Lyapunov-Schmidt reduction*, NoDEA Nonlinear Differential Equations Appl. **24** (2017), Art. 65, 22 pp. (with Z. Tang).
- [5] *On a resonant mean field type equation: a “critical point at Infinity” approach*, Discrete Contin. Dyn. Syst. **37** (2017), 1789–1818. (with M. Ahmedou and M. Ben Ayed).
- [6] *Ergodicity and spectral cascades in point vortex flows on the sphere*, Phys. Rev. **E 91** (2015) (with D. Dritschel and A. Poje).
- [7] *The p -Royden and p -harmonic boundaries for metric measure spaces*, Anal. Geom Metr. Spaces **3** (2015), 111–122 (with M. Puls).
- [8] *Holomorphic cubic differentials and minimal Lagrangian surfaces in $\mathbb{C}H^2$* , Math. Res. Lett. **20** (2013), 1–20. (with Z. Huang and J. Loftin).
- [9] *A class of degenerate elliptic eigenvalue problems*, Adv. nonlin. anal. **2** (2013), 91–125 (with F. Schuricht).

- [10] *Multi-bump bound states for a system of nonlinear Schrödinger equations*, J. of Differential Equations **252** (2012), 3630–3657 (with Z.W. Tang).
- [11] *Minimal Immersions of Closed Surfaces in Hyperbolic Three-Manifolds*, Geometria Dedicata **158** (2012), 397–411 (with Z. Huang).
- [12] *Uniqueness and symmetry of equilibria in a chemotaxis system*, J. Reine Angew. Math. **654** (2011), 83–124 (with D. Horstmann).
- [13] *Exact multiplicity of nematic states for an Onsager model*, Nonlinearity **23** (2010), 3157–3185 (with J. Vukadinovic).
- [14] *Numerical solution of the Helmholtz equation in an infinite strip by Wiener-Hopf factorization*, Numer. Methods Partial Differential Equations **26** (2010), 1247–1274 (with F. Maggio and G. Rodriguez).
- [15] *Nonlocal elliptic boundary value problems related to chemotactic movement of mobile species*, Proceedings of the RIMS Conference on “Mathematical Analysis on the Self-organization and Self-similarity”, September 16-18, 2008, in Kyoto, RIMS Kokuroku Bessatsu B15, 39–72, (2009) (with D. Horstmann).
- [16] *Eigenvalue problems with weights in Lorentz spaces*, Calc. Var. Partial Differential Equations **36** (2009), 355–376 (with T.V. Anoop and M. Ramaswamy).
- [17] *A Minimax Theorem in the presence of unbounded Palais-Smale sequences*, Israel J. Math. **172** (2009), 125–143 (with J. Horák).
- [18] *Isoperimetric profile and uniqueness for Neumann problems*, Ann. Inst. H. Poincaré Anal. Non Linéaire, **26** (2009), 81–100.
- [19] *Gradient theory of phase transitions with a rapidly oscillating forcing term*, Asym. Analysis **60** (2008), 29–59 (with N. Dirr and M. Novaga).
- [20] *Global bifurcation for semilinear elliptic problems*, Recent Advances in Nonlinear Analysis, Edited by M. Chipot, C.-S. Lin, D.H. Tsai, World Scientific, 2008, 197–216. (with M. Ramaswamy).
- [21] *Laplacian eigenvalues for mean zero functions with constant Dirichlet data*, Forum Math. **20** (2008), 763–782 (with A. Greco).
- [22] *Best constant in some exponential Sobolev inequalities*, Indiana Univ. Math. J. **57** (2008), 1907-1928 (with B. Kawohl).

- [23] *Existence of traveling wave solutions of invasion for Ginzburg-Landau-type problems in infinite cylinders*, Arch. Ration. Mech. Anal. **188** (2008), 475–508 (with C. Muratov and M. Novaga).
- [24] *A deformation Lemma with an application to a mean field equation*, Topol. Methods Nonlinear Anal. **30** (2007), 113–138.
- [25] *One-dimensional symmetry of periodic minimizers for a mean field equation*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. **6** (2007), 269–290 (with C.-S. Lin).
- [26] *Simplicity of the principal eigenvalue for indefinite quasilinear problems*, Adv. Differential Equations **12** (2007), 407–434 (with B. Kawohl and S. Prashanth).
- [27] *Uniqueness of solutions for a mean field equation on torus*, J. Differential Equations **229** (2006), 172–185 (with C.S. Lin).
- [28] *A blowing-up branch of solutions for a mean field equation*, Calc. Var. Partial Differential Equations **26** (2006), 313–330.
- [29] *Γ -convergence of the Allen-Cahn energy with a rapidly oscillating forcing term*, Interfaces Free Bound **8** (2006), 47–78 (with N. Dirr and M. Novaga).
- [30] *Simplicity of principal eigenvalue for p -Laplace operator with singular indefinite weight*, Arch. Math. (Basel) **86** (2006), 79–89 (with S. Prashanth).
- [31] *On the uniqueness and simplicity of the principal eigenvalue*, Rend. Accad. Naz. Sci. XL Mem. Mat. Appl. **16** (2005), 132–142.
- [32] *A mean field equation on a torus: one-dimensional symmetry of solutions*, Comm. PDE **30** (2005), 1315–1330 (with X. Cabré and M. Sanchón).
- [33] *A priori estimates and uniqueness for some mean field equations*, J. Differential Equations **217** (2005), 154–178 (with L. Zhang).
- [34] *A Mountain Pass Theorem without Palais-Smale condition*, C. R. Acad. Sci. Paris Ser. I Math. **341** (2005), 287–291.
- [35] *A Deformation Lemma for a Moser-Trudinger type functional*, Nonlinear Anal. **63** (2005), 282–299.

- [36] *Gamma-star-shapedness for semilinear elliptic equations*, Comm. Pure Appl. Anal. **4** (2005), 93–99 (with A. Greco).
- [37] *Some elliptic semilinear indefinite problems on \mathbb{R}^N* , Proc. Roy. Soc. Edinburgh **134** (2004), 333–361 (with J. Giacomoni and M. Ramaswamy).
- [38] *Linear vs. nonlinear selection for the propagation speed of solutions of scalar reaction-diffusion equations invading an unstable equilibrium*, Comm. Pure Appl. Math. **57** (2004), 616–636 (with C. Muratov and M. Novaga).
- [39] *Strong comparison principle for solutions of quasilinear equations*, Proc. AMS **132** (2004), 1005–1011 (with S. Prashanth).
- [40] *A Dirichlet problem with asymptotically linear and sign changing nonlinearity*, Rev. Mat. Complut. **16** (2003), 465–481 (with P. Magrone and H.S. Zhou).
- [41] *$SU(3)$ Chern-Simons vortex theory and Toda systems*, J. Differential Equations **184** (2002), 443–474 (with M. Nolasco).
- [42] *A Neumann problem in exterior domain*, Manuscripta Math. **106** (2001), 63–74 (with D. Cao and H.S. Zhou).
- [43] *An application of the Artin-Schreier Theorem*, Comm. Algebra **29** (2001), 4421–4424 (with J. Boéchat).
- [44] *Branches of solutions to a semilinear elliptic equations with singular coefficients on \mathbb{R}^N* , Rend. Mat. Appl. **19** (1999), 489–506.
- [45] *The branch of positive solutions to a semilinear elliptic equation on \mathbb{R}^N* , Rend. Sem. Mat. Univ. Padova **101** (1999), 229–262 (with H. Jeanjean and C.A. Stuart).
- [46] *Branches of solutions to semilinear elliptic equations on \mathbb{R}^N* , Math. Z. **230** (1999), 79–105 (with H. Jeanjean and C.A. Stuart).

B) Preprints

- [47] *Non-degeneracy of topological solutions to a Chern-Simons model with two Higgs fields*, preprint (with J. Prajapat).

C) Other Publications

- [48] *Two problems on algebraically closed fields*, Université de Lausanne, Master Thesis, 1992, 80pp.
- [49] *Bifurcation Problems for Special Solutions of Maxwell's Equations*, PhD Thesis, École polytechnique fédérale de Lausanne, no 1748 (1997), 200pp.