

# Nikola Kamburov

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CONTACT INFORMATION	Facultad de Matemáticas Pontificia Universidad Católica de Chile Avda. Vicuña Mackenna 4860 Macul, Santiago 7820436 Chile	Office: 201 Tel: (+56) 23541027 E-mail: <a href="mailto:nikamburov@mat.uc.cl">nikamburov@mat.uc.cl</a> Website: <a href="http://mat.uc.cl/~nikamburov">http://mat.uc.cl/~nikamburov</a>
BIOGRAPHICAL INFORMATION	Place of Birth: Gabrovo, Bulgaria	Citizenship: Bulgarian
EMPLOYMENT	<b>Pontificia Universidad Católica de Chile, Facultad de Matemáticas</b> Assistant Professor, July 2016 –  <b>The University of Arizona, Department of Mathematics</b> Visiting Assistant Professor, August 2015 – May 2016 Hanno Rund Postdoctoral Fellow, August 2012 – May 2015	
EDUCATION	<b>Massachusetts Institute of Technology</b> Ph.D., Mathematics, June 2012 Advisor: David Jerison Thesis: <i>A free boundary problem inspired by a conjecture of De Giorgi</i>  <b>Princeton University</b> A.B., Mathematics, Magna Cum Laude, June 2007	
RESEARCH INTERESTS	Free boundary problems, Non-linear PDE, Calculus of variations, Geometric analysis, Pattern formation	
HONORS AND AWARDS	FONDECYT Iniciación Proyecto No. 11160981, “Free Boundaries and Minimal Surfaces” American Foundation for Bulgaria Fellowship, MIT, 2007–2008 Phi Beta Kappa, 2006 Gottdiener Fellowship for Summer Research, Princeton University, 2006 2 Shapiro Prizes for Academic Excellence, Princeton University, 2004 and 2005 International Physics Olympiad 2002 and 2003, Bronze Medal National Diploma of Excellence from the Bulgarian Ministry of Education, 2003	
PUBLICATIONS AND PREPRINTS	<i>A free boundary problem inspired by a conjecture of De Giorgi</i> , Commun. Part. Diff. Eq. 38, no. 3 (2013): 477–528. DOI:10.1080/03605302.2012.739672 (joint with D. Jerison) <i>Structure of one-phase free boundaries in the plane</i> , Int. Math. Res. Notices 2016, no. 19 (2016): 5922–5987. DOI:10.1093/imrn/rnv339 (joint with N. Ercolani and J. Lega) <i>The phase structure of grain boundaries</i> , Phil. Trans. R. Soc. A 376, no. 2117 (2018): 20170193. DOI:10.1098/rsta.2017.0193 (joint with B. Sirakov) <i>Uniform a priori estimates for positive solutions of the Lane–Emden equation in the plane</i> , Calc. Var. 57, no. 164 (2018). DOI:10.1007/s00526-018-1435-6 (joint with D. Jerison) <i>Free boundaries subject to topological constraints</i> , submitted, arXiv:1902.00158 (joint with L. Sciaraffia) <i>Nontrivial solutions to Serrin’s problem in annular domains</i> , submitted, arXiv:1902.10587	

INVITED TALKS

12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Taipei, Taiwan, July 5-9, 2018  
 Belgium+Chile+Italy Conference in PDE, Brussels, November 13-17, 2017  
 LXXXVI Encuentro Anual de SOMACHI, Talca, November 2-4, 2017  
 Geometric Properties of Local and non-Local PDEs, CMO-BIRS, Oaxaca, Mexico, May 21-26, 2017  
 Coloquio de Matemática UC, P. Universidad Católica, Santiago, Chile, April 7, 2017  
 CAPDE seminar, Millenium Nucleus Center, Santiago, Chile, November 7, 2016  
 University of New Mexico, Department Colloquium, Albuquerque NM, September 24, 2015  
 Symposium on Analysis and PDEs, Purdue University, Lafayette IN, June 1-4, 2015  
 Qualitative and Geometric Aspects of Elliptic PDEs, Centre de Recerca Matemàtica, Bellaterra (Barcelona), September 2-6, 2013  
 Rutgers University Nonlinear Analysis Seminar, New Brunswick NJ, March 27, 2012  
 Columbia University Geometry and Analysis Seminar, New York NY, February 2, 2012  
 MIT Geometric Analysis, Cambridge MA, September 21, 2011

CONFERENCES AND WORKSHOPS

*Workshop on Mean Curvature and Regularity*, IAS, Princeton NJ, November 2018  
*Mathematical Congress of the Americas*, Montreal, Canada, July 2017  
*Mathematics Days in Sofia*, Sofia, Bulgaria, July 2017  
*Variational Models of Soft Matter*, PUC, Santiago, Chile, January 2017  
*Mathematics Days in Sofia*, Sofia, Bulgaria, July 2014  
*Kinetics, non standard diffusions and stochastics*, University of Texas–Austin, May 2014  
*Current Developments in Mathematics*, Harvard University, November 2013  
*Recent Advances in Nonlinear PDE*, Courant Institute, May 2013  
*The Riviere-Fabes Symposium on Analysis and PDE*, University of Minnesota, April 2012  
*Analysis and Applications*, A Conference in Honor of Elias M. Stein, Princeton University, May 2011  
*Workshop on Analysis of nonlinear PDEs and free boundary problems: applications to homogenization*, Pacific Institute for the Mathematical Sciences, Vancouver, Canada, July 2009  
*The Power of Analysis*, Conference on the occasion of Charles Fefferman’s 60-th birthday, Princeton University, May 2009.

TEACHING AND MENTORING

- At Pontificia Universidad Católica de Chile
  - Instructor, Ecuaciones Diferenciales Parciales (MAT 2505), Primer semestre 2019
  - Advisor, Taller de Iniciación Científica, Segundo semestre 2018, student: Luciano Sciaraffia
  - Instructor, Algebra Lineal (MAT 1203), Segundo semestre 2018
  - Instructor, Cálculo II (MAT 1620), Primer semestre 2018
  - Instructor, Cálculo I (MAT 1100), Segundo semestre 2017
  - Instructor, Teoría de Números (MAT 2225), Segundo semestre 2017
  - Instructor, *Ecuaciones en Derivadas Parciales II* (MPG3131), Segundo semestre 2016
- At the University of Arizona
  - Instructor, *Analysis of ODE* (Math 355), Spring 2016, Fall 2014, Spring and Fall 2013
  - Instructor, *Calculus I* (Math 125), Fall 2015 and Fall 2012
  - Instructor, *Nonlinear Dynamics and Chaos* (Math 454), Spring 2015 and Spring 2014
- At MIT
  - Teaching Assistant, *Principles of Applied Mathematics* (18.311), Spring 2012
  - Recitation Instructor for OCW Scholar, *Linear Algebra* (18.06), Summer 2011
  - Grader, *Real and Functional Analysis* (18.125), Spring 2011 and Spring 2009
  - Grader, *Analytic Number Theory* (18.785), Spring 2011
  - Mentor, Directed Reading Program in Mathematics, January 2011
  - Teaching Assistant, *Computational Science and Engineering I* (18.085), Fall 2010
  - Recitation Instructor, *Differential Equations*, (18.03) Spring 2010
  - Recitation Instructor, *Calculus* (18.01A/02A), Fall 2009
  - Grader, *Theory of Probability* (18.175), Spring 2009

Grader, *Differential Analysis* (15.155), Fall 2008

- Mentor at the Research Summer School of Mathematics and Informatics for high-school students (LISH'15), Blagoevgrad, Bulgaria, 2015

MEMBERSHIPS American Mathematical Society, SIAM, SOMACHI

LANGUAGES Bulgarian (native), English (fluent), Spanish (advanced), German (advanced),