

Eduardo García-Juárez

Curriculum Vitae

September 2020

Personal details

Departament de Matemàtiques i Informàtica
Universitat de Barcelona
Gran Via de les Corts Catalanes, 585
08007, Barcelona

Email: egarciajuarez@ub.edu
Web page: <https://egarciajuarez.com>
Nationality: Spanish

Current position: ERC Postdoc July 2020

Research interests

Analysis, partial differential equations, and fluid mechanics.

Positions

Postdoctoral Researcher July 2020 -
Universitat de Barcelona
ERC St-G CAPA (PI Javier Gómez Serrano)

Hans Rademacher Instructor Aug. 2018 - June 2020
University of Pennsylvania
Supervisor: Robert M. Strain

Postdoctoral Researcher June 2018 - July 2018
Universidad de Sevilla
ERC St-G Fluid-Interface (PI Francisco Gancedo)

FPU Predoctoral Fellow Sep. 2015 - June 2018
Universidad de Sevilla
PhD Advisor: Francisco Gancedo

Education

Mathematics PhD Nov. 2014 - June 2018
Universidad de Sevilla
Advisor: Francisco Gancedo

Mathematics (4 years Degree) Nov. 2010 - Dec. 2013
Universidad de Sevilla (except final project, July 2014)

Industrial Engineering (5 years Degree)
Universidad de Sevilla
Specialisation in Systems and Automation

Sept. 2007 - Sept. 2012
(except final project, Sept. 2014)

Publications

1. “The Peskin Problem with Viscosity Contrast”, with Y. Mori, R. Strain. **Submitted**, *arXiv:2009.03360*, (2020).
2. “Global Regularity for Gravity Unstable Muskat Bubbles”, with F. Gancedo, N. Patel, R. Strain. **Submitted**, *arXiv:1902.02318*, (2019).
3. “Regularity results for viscous 3D Boussinesq temperature fronts”, with F. Gancedo. **Comm. Math. Phys.**, 376, 1705–1736, (2020).
4. “On the Muskat problem with viscosity jump: Global in time results”, with F. Gancedo, N. Patel, R. Strain. **Adv. Math.**, Vol. 345, P. 552-597, (2019).
5. “Global regularity of 2D density patches for inhomogeneous Navier-Stokes”, with F. Gancedo. **Arch. Ration. Mech. Anal** (2018), 229:339.
6. “Global regularity for 2D Boussinesq temperature patches with no diffusion”, with F. Gancedo. **Ann. PDE** (2017), 3: 14.

Fellowships and awards

- *AMS-Simons Travel Grant* (American Mathematical Society and Simons Foundation, July 2019 - July 2021)
- *FPU Travel Grant* (Government of Spain, 2018)
- *Formación de Personal Universitario, FPU*, Ph.D. fellowship (Government of Spain, Sept. 2015 - Sept. 2019)
- *Introduction to research* scholarship (Universidad de Sevilla, July and September 2012)
- *Collaboration* scholarship (Government of Spain, Oct. 2011 - June 2012)
- High school award (Government of Spain, 2007)

Grants

Title: *Global existence and Computer-Assisted Proofs of singularities in incompressible fluids, with Applications* 2020 - 2025
European Research Council, Starting Grant *CAPA-852741*
Principal Investigator: Javier Gómez-Serrano

Title: *Analysis of moving incompressible fluid interfaces* 2015 - 2020
European Research Council, Starting Grant *Fluid-Interface 639227*
Principal Investigator: Francisco Gancedo

Title: *Formación de Singularidades en Fluidos Incompresibles* 2018 - 2020
MEC MTM2017-89976-P
Principal Investigator: Diego Córdoba

Title: *Formación de Singularidades en Interfases de Flujos Incompresibles* 2014 - 2018
Junta de Andalucía, Proyecto de Excelencia P12-FQM-2466
Principal Investigator: Francisco Gancedo

Research visits

- Universidad de Sevilla (Sevilla, Spain) June - July 2019
Host: Francisco Gancedo
- Princeton University (New Jersey, USA) April - May 2018
Host: Peter Constantin
- University of Pennsylvania (Philadelphia, USA) June - July 2017
Host: Robert M. Strain

Seminars and Talks

- *MathBio* Seminar, University of Pennsylvania, Philadelphia. January 2020
- *Partial Differential Equations* Seminar, May 2019
Brown University, Providence.
- *Differential Equations* Seminar, March 2019
University of Michigan, Ann Arbor.
- *Analysis of Fluids and Related Topics* Seminar, February 2019
Princeton University, Princeton.
- *Joint Mathematics Meetings*, Baltimore. January 2019
AMS Special Session on Math. Anal. in Fluid Dynamics.
- *Conversaciones fluidas* Seminar, IMUS, Sevilla. January 2019
- *Analysis* Seminar, University of Pennsylvania, Philadelphia. October 2018
- *Ecuaciones Diferenciales* Seminar, IEMath-GR, Granada. November 2017
- IV Young Researchers Meeting, RSME, Valencia. September 2017
- *Conversaciones fluidas* Seminar, IMUS, Sevilla. May 2017
- *PDEs and fluid mechanics* Seminar, ICMAT-CSIC, Madrid. May 2017
- *PHD* Seminar, IMUS, Sevilla. September 2015
- BCAM, Bilbao. May 2015

Conferences

- SIAM PDE. December, 2019, La Quinta, California.
- Summer School on Fluids Mechanics at the ICMAT, ICMAT. June, 2019, Madrid.
- Summer School and Workshop: Geometric Function Theory in Fluid Mechanics, BGSMath. July 2018, Barcelona.
- Workshop Mathematical Analysis in Incompressible Fluids, IMUS. June 2018, Sevilla.

- IV Young Researchers Meeting, Real Sociedad Matemática Española. September 2017, Valencia.
- Summer School and Workshop: Mathematical Analysis of Water Waves and Related Models, Bodega Marine Laboratory, University of California, Davis. June 2017, Bodega Bay, CA.
- Workshop Recent advances in PDEs: Analysis, Numerics and Control, IMUS. January 2017, Sevilla.
- Spanish-French Workshop on Analysis of PDEs from fluid Mechanics, ICMAT. September 2016, Madrid.
- International Summer School on Evolution Equations, Charles University and Institute of Mathematics of the Czech Academy of Sciences. July 2016, Prague.
- Mini-school and workshop Analysis of PDEs of Fluid Mechanics and Related Models, Rice University. October 2015. Houston, Texas.
- Summer Graduate School Incompressible Fluid Flows at High Reynolds Number, MSRI. 27 July - 7 August 2015, Berkeley, California.
- Workshop on Mathematics and its Applications, BCAM. May 2015, Bilbao.

Organization activities

- Co-organizer of the sessions *Recent Results in Incompressible Fluid Mechanics, Part I, II, III* at 2019 SIAM PDE, La Quinta, California.
- Co-organizer of the *Analysis Seminar*, University of Pennsylvania (2018-19-20)
- Co-organizer of the workshop *Mathematical Analysis in Incompressible Fluids*, Sevilla, June 12-15th, 2018.
- Co-organizer of *Conversaciones Fluidas* Seminar, IMUS (2017-18)
- Co-organizer of *PHD Seminar*, IMUS (2017-18)
- Member of Library Committee (2018-19, 2019-20) and Math Major Advising Committee (2019-20), University of Pennsylvania.
- Referee for *Communications in Mathematical Sciences*, *Journal of Mathematical Physics*, *Mathematical Modelling of Natural Phenomena*, *Nonlinear Analysis Series B: Real World Applications*, *zbMATH* Reviewer.

Teaching experience

- At University of Pennsylvania
 - Partial Differential Equations (Math 425) Spring 2020
 - Calculus IV, PDE (Math 241) Spring 2020
 - Multivariate Calculus, with Prob. and Mat. (Math 115) Fall 2019
 - Partial Differential Equations (Math 425) Spring 2019
 - Linear Algebra (Math 312) Spring 2019
 - Linear Algebra (Math 312) Fall 2018
- At Universidad de Sevilla

- Infinitesimal Calculus 2017/18 (1.00 ECTS)
- Math. Analysis (Physics degree) 16/17 (2.25 ECTS), 17/18 (2.25 ECTS)
- Mathematics (Chemistry degree) 16/17 (2.40 ECTS), 17/18 (1.60 ECTS)
- Differentiation of functions in \mathbb{R}^n 2016/17 (0.40 ECTS)
- Integration of functions in \mathbb{R}^n 2016/17 (0.40 ECTS)

Languages

- Spanish: Native.
- English: Advanced - C1/C2.
- French: Intermediate - B1/B2. (Spain National Language School, 2007)
- German, Italian: Elementary - A1/A2. (Universidad de Sevilla, 2008)

References

- Francisco Gancedo, fgancedo@us.es
- Robert M. Strain, strain@math.upenn.edu
- Yoichiro Mori, y1mori@sas.upenn.edu
- Diego Córdoba, dcg@icmat.es
- Philip Gressman, gressman@math.upenn.edu, (teaching)