

Eduardo García-Juárez

Curriculum Vitae

September 2019

Personal details

Department of Mathematics
University of Pennsylvania
David Rittenhouse Lab. 209 South 33rd Street
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Nationality: Spanish

Current position: Hans Rademacher Instructor August 2018

Research interests

Analysis, partial differential equations and fluid mechanics.

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) Sept. 2007 - Sept. 2012
Universidad de Sevilla (except final project, Sept. 2014)
Specialisation in Systems and Automation

Publications

1. “Global regularity for 2D Boussinesq temperature patches with no diffusion”, with F. Gancedo. **Ann. PDE** (2017), 3: 14.
2. “Global regularity of 2D density patches for inhomogeneous Navier-Stokes”, with F. Gancedo. **Arch. Ration. Mech. Anal** (2018), 229:339.
3. “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).
4. “Regularity results for viscous 3D Boussinesq temperature fronts”, with F. Gancedo. **Submitted**, *arXiv:1809.00701*, (2018).
5. “Global Regularity for Gravity Unstable Muskat Bubbles”, with F. Gancedo, N. Patel, R. Strain. **Submitted**, *arXiv:1902.02318*, (2019).

Fellowships and awards

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

Grants

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

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

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

Title: *Análisis Matemático*
Plan Andaluz de Investigación, Desarrollo e Innovación FQM104
Principal Investigator: Juan Arias de Reyna

Research visits

- University of Pennsylvania (Philadelphia, USA) June - July 2017
Host: Robert M. Strain
- Princeton University (New Jersey, USA) April - May 2018
Host: Peter Constantin

Seminars and Talks

- BCAM, Bilbao. May 2015
- *PHD* Seminar, IMUS, Sevilla. September 2015
- *PDEs and fluid mechanics* Seminar, ICMAT-CSIC, Madrid. May 2017
- *Conversaciones fluidas* Seminar, IMUS, Sevilla. May 2017

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

Conferences

- Workshop on Mathematics and its Applications, BCAM. May 2015, Bilbao.
- Summer Graduate School Incompressible Fluid Flows at High Reynolds Number, MSRI. 27 July - 7 August 2015, Berkeley, California.
- Mini-school and workshop Analysis of PDEs of Fluid Mechanics and Related Models, Rice University. October 2015. Houston, Texas.
- International Summer School on Evolution Equations, Charles University and Institute of Mathematics of the Czech Academy of Sciences. July 2016, Prague.
- Spanish-French Workshop on Analysis of PDEs from fluid Mechanics, ICMAT. September 2016, Madrid.
- Workshop Recent advances in PDEs: Analysis, Numerics and Control, IMUS. January 2017, Sevilla.
- Summer School and Workshop: Mathematical Analysis of Water Waves and Related Models, Bodega Marine Laboratory, University of California, Davis. June 2017, Bodega Bay, CA, USA.
- IV Young Researchers Meeting, Real Sociedad Matemática Española. June 2017, Valencia.
- Workshop Mathematical Analysis in Incompressible Fluids, IMUS. June 2018, Sevilla.
- Summer School and Workshop: Geometric Function Theory in Fluid Mechanics, BGSMATH. July 2018, Barcelona.
- Summer School on Fluids Mechanics at the ICMAT, ICMat. June, 2019, Madrid.

Organization activities

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

Teaching experience

- At University of Pennsylvania
 - 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
- Diego Córdoba, dcg@icmat.es