Eduardo García-Juárez

Curriculum Vitae

September 2018

Personal details

Departament of Mathematics
University of Pennsylvania
David Rittenhouse Lab.
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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 student 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)
Overall mark: 8.66/10

Industrial Engineering (5 years Degree) Sept. 2007 - Sept. 2012
Universidad de Sevilla (except final project, Sept. 2014)
Specialisation in Systems and Automation
Overall mark: 9.23/10

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. (**Submitted**, *arXiv:1710.11604*, 2017)

4. "Regularity results for viscous 3D Boussinesq temperature fronts", with F. Gancedo. (**Preprint**, *arXiv:1809.00701*, 2018)

Fellowships and awards

- High school award from the Government of Spain (2007)
- *Collaboration* scholarship from the Government of Spain (October 2011 - June 2012)
- *Introduction to research* scholarship from Universidad de Sevilla (July and September 2012)
- *Formación de Personal Universitario, FPU,* Ph.D. fellowship from the Government of Spain (September 2015 - September 2019)

Grants

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

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

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.

Attended courses and seminars

- Lecture Series on PDE analysis of flows of implicitly constitued fluids, Josef Malek, IMUS. September 2014, Sevilla.
- Optimization methods in portfolio management, IMUS. November 2014, Sevilla.
- PDEs describing compressible heat-conducting fluids, Eduard Feireisl, IMUS. December 2014, Sevilla.
- Doc-Course: Applied mathematics and optimization, IMUS-BCAM. March - May 2015, Sevilla and Bilbao.
- II Sevilla Workshop on Mixed Integer NonLinear Programming, IMUS. March 2015, Sevilla.
- Lectures on Muskat probrem, F. Gancedo, Institute of Mathematics of the Polish Academy of Sciences (IMPAN). May 2015, Varsovia.
- Conference Mathematics for better living, Alfio Quarteroni, IMUS. June 2015, Sevilla.
- Longtime behavior of dissipative evolution equations, Maurizio Grasselli, IMUS. June 2015, Sevilla.
- (II Pre-doc Course on Operation Research) An introduction to Bayesian Statistics and MCMC Methods, IMUS. June 2015, Sevilla.

- Homogenization of elliptic equations, François Murat, IMUS. December 2015, Sevilla.
- Statistical Methods in Matlab, MathWorks, Universidad de Sevilla. June 2016, Sevilla.
- Domain decomposition algorithms for the numerical approximation of PDEs at large scales, Santiago Badía, IMUS. September 2016. Sevilla.
- Lectures on the Onsager conjecture, Roman Shvydkoy, IMUS. October 2016, Sevilla.
- A high-order local projection stabilization method for natural convection problems, Samuele Rubino, IMUS. November 2016. Sevilla.
- The evolution of regular planar polygons under the vortex filament equation, Francisco de la Hoz, IMUS. January 2017. Sevilla.
- Existence and uniqueness questions for the MHD equations, José Luis Rodrigo, IMUS. March 2017, Sevilla.
- Mixing solutions for the Muskat problem, Ángel Castro, IMUS. April 2017, Sevilla.
- Continuation Criteria for the Relativistic Vlasov-Maxwell System, Neel Patel, IMUS. November 2017, Sevilla.
- The Muskat equation with data in the critical Sobolev space, Omar Lazar, IMUS. February 2018, Sevilla.
- Periodic Orbits and Rotating Smooth Vortices, Juan Soler, IMUS. March 2018, Sevilla.
- On Nonlocal Keller-Segel Type Equations, Suleyman Ulusoy, Princeton University. April 2018, Princeton.
- Global well posedness of 2D diffusive Fokker-Planck-Navier-Stokes system, Joonhyun La, Princeton University. April 2018, Princeton.
- Singularity Formation in Incompressible Fluid, Tarek Elgindi, Princeton University. April 2018, Princeton.
- Degraded Mixing Solutions for the Incompressible Porous Media, Ángel Castro, Princeton University. April 2018, Princeton.
- Gravity Water Waves and Emerging Bottom, Thibault de Poyferré, Princeton University. April 2018, Princeton.
- Studying Dynamics Using Semidefinite Programming, David Goluskin, Princeton University. May 2018, Princeton.

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.

Teaching experience

• Mathematical Analysis (Physics degree)	2016/17 (2.25 ECTS) 2017/18 (2.25 ECTS)
• Mathematics (Chemistry degree)	2016/17 (2.40 ECTS) 2017/18 (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)
• Infinitesimal Calculus	2017/18 (1.00 ECTS)

Languages

- Spanish: Native.
- English: Advanced - C1/C2. (IELTS 7.0, 2012)
- French: Intermediate - 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
- Antonio Rojas, arojas@us.es (teaching)