

December 2021

Personal details

Name Eduardo García-Juárez
 Date of birth February 20, 1989
 Nationality Spanish
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Current Position **Marie Skłodowska-Curie Individual Fellow**
 Departament de Matemàtiques i Informàtica
 Universitat de Barcelona
 Gran Via de les Corts Catalanes, 585, 08007, Barcelona

Positions

01/09/2021- **MSCA-IF-2020**, *Universitat de Barcelona*, Spain

07/2020-09/2021 **Post-doctoral researcher**, *Universitat de Barcelona*, Spain
 ERC St-G CAPA (PI Javier Gómez-Serrano)

08/2018-06/2020 **Hans Rademacher Instructor of Mathematics**, *University of Pennsylvania*, USA

06/2018-07/2018 **Post-doctoral researcher**, *Universidad de Sevilla*, Spain
 ERC St-G Fluid-Interface (PI Francisco Gancedo)

09/2015-06/2018 **FPU Predoctoral Fellow**, *Universidad de Sevilla*, Spain

11/2014-06/2018 **PhD candidate**, *Universidad de Sevilla*, Spain

Education

11/2014-06/2018 **Mathematics PhD**, *Universidad de Sevilla*, Spain

09/2007-09/2012* **Industrial Engineering** (five-year degree), *Universidad de Sevilla*, Spain
 09/2014 Final Project

11/2010-12/2013* **Mathematics** (four-year degree), *Universidad de Sevilla*, Spain
 07/2014 Final Project

PhD Thesis

Title Global Regularity for Incompressible Fluid Interfaces
 Advisor Francisco Gancedo
 Defense June 11, 2018, at *Instituto de Matemáticas de la Universidad de Sevilla (IMUS)*, Spain
 Committee Peter Constantin (Princeton University), Diego Córdoba (ICMAT), Raphaël Danchin (Université Paris-Est Créteil), Luis Escauriaza (UPV/EHU), Pedro Marín (Universidad de Sevilla).

Publications

9. Global regularity of 2D N-S free boundary with small viscosity contrast, with F. Gancedo. *Preprint, arXiv:2109.08764*, (2021).
8. Quantitative Hölder Estimates for Even S.I.O. on patches, with F. Gancedo. *Preprint arXiv:2109.08762*, (2021).
7. Self-similar solutions for the Muskat equation, with J. Gómez-Serrano, H. Q. Nguyen, B. Pausader. *Preprint, arXiv:2109.02565*, (2021).
6. The Peskin Problem with Viscosity Contrast, with Y. Mori, R. Strain. *Accepted for publication in Analysis & PDE, arXiv:2009.03360*, (2020).
5. Global Regularity for Gravity Unstable Muskat Bubbles, with F. Gancedo, N. Patel, R. Strain. *Accepted for publication in Memoirs of the AMS, arXiv:1902.02318*, (2019).
4. Regularity Results for Viscous 3D Boussinesq Temperature Fronts, with F. Gancedo. *Communication in Mathematical Physics*. 376, 1705-1736, (2020).
3. On the Muskat problem with viscosity jump: Global in time results, with F. Gancedo, N. Patel, R. Strain. *Advances in Mathematics*, 345, p. 552-597, (2019).
2. Global Regularity of 2D Density Patches for Inhomogeneous Navier-Stokes, with F. Gancedo. *Archive for Rational Mechanics and Analysis*, 229, 339-360, (2018)
1. Global Regularity for 2D Boussinesq Temperature Patches with No Diffusion, with F. Gancedo. *Annals of PDE*, 3:14, (2017).

Fellowships and awards

06-2021	<i>Extraordinary Doctorate Award</i> , Universidad de Sevilla
09/2021-08/2023	<i>MSCA-IF-2020 – Individual Fellowship</i> , Horizon 2020 Framework Programme Project 101031111 CAMINFLOW (160 932.48 eur)
07/2019-07/2021	<i>AMS-Simons Travel Grant</i> , American Mathematical and Simons Foundations, \$4000.
03/2018-06/2018	<i>FPU Travel Grant</i> , Government of Spain
03/2018-06/2018	<i>Travel Grant PP2018-9421</i> , Plan Propio de la Universidad de Sevilla
09/2015-06/2018	<i>Formación de Personal Universitario</i> , FPU, PhD Fellowship, Government of Spain
07/2012-09/2012	<i>Introduction to research scholarship</i> , Plan Propio de Investigación, Universidad de Sevilla
09/2011-06/2012	<i>Collaboration scholarship</i> , Government of Spain

Research Stays

- 08/09/2021-10/12/2021 Short-term scholar, *ICERM at Brown University*, USA
- 31/03/2018-31/05/2018 Visiting Student Research Collaborator, *Princeton University*, USA
- 01/06/2017-31/07/2017 Visiting Research Scholar, *University of Pennsylvania*, USA

Participation in funded projects

- 09/2021- Title: *Computer-assisted Analysis and Applications of Moving Interfaces in Incompressible Flows*
H2020 Marie Skłodowska-Curie Actions, CAMINFLOW 101031111, 2021-2023
Principal Investigator: Eduardo García-Juárez
- 07/2020- Title: *Global existence and Computer-Assisted Proofs of singularities in incompressible fluids, with Applications*
European Research Council, Starting Grant CAPA-852741, 2020-2025
Principal Investigator: Javier Gómez-Serrano
- 09/2015- Title: *Analysis of moving incompressible fluid interfaces*
European Research Council, Starting Grant Fluid-Interface-2251-0791
Principal Investigator: Francisco Gancedo
- 09/2018-08/2021 Title: Formación de singularidades en fluidos incompresibles
Ministerio de Ciencia e Innovación (Spain), MTM-2017-88976-P
Principal Investigator: Diego Córdoba
- 01/2014-02/2019 Title: Formación de singularidades en interfaces de flujos incompresibles
Junta de Andalucía, P12-FQM-2466
Principal Investigator: Francisco Gancedo

Invited Presentations

- 21/12/2021 I Jornadas de Premios Extraordinarios de Tesis, *IMUS*, Sevilla, Spain.
- 15/11/2021 Calderón-Zygmund Analysis Seminar, *The University of Chicago*, USA.
- 10/11/2021 PDE seminar for Postdocs and Graduate Students, *ICERM, Brown University*, USA.
- 27/09/2021 Analysis seminar, *Brown University*, USA
- 21/06/2021 Seminari d'Anàlisi de Barcelona, *Universitat Autònoma de Barcelona and Universitat de Barcelona*, Spain.
- 17/06/2021 One World Meeting of Young Mathematicians in Fluid Dynamics, online.
- 23/01/2020 MathBio seminar, *University of Pennsylvania*, Philadelphia, USA
- 10/05/2019 Partial Differential Equations seminar, *Brown University*, Providence, USA
- 28/03/2019 Differential Equations seminar, *University of Michigan*, Ann Arbor, USA

21/02/2019	Analysis of Fluids and Related Topics seminar, <i>Princeton University</i> , Princeton, USA
18/01/2019	Special Session on Math. Anal. In Fluid Dynamics, <i>Joint Mathematics Meetings 2019</i> of the American Mathematical Society, Baltimore, USA
10/01/2019	Conversaciones Fluidas seminar, <i>IMUS</i> , Sevilla, Spain
11/10/2018	Analysis seminar, <i>University of Pennsylvania</i> , Philadelphia, USA
20/11/2017	Ecuaciones Diferenciales seminar, <i>IEMATH-Granada</i> , Granada, Spain
07/09/2017	IV Young Researchers Meeting, <i>RSME</i> , Valencia, Spain
25/05/2017	Conversaciones Fluidas seminar, <i>IMUS</i> , Sevilla, Spain
10/05/2017	PDEs and fluid mechanics seminar, <i>ICMAT</i> , Madrid, Spain
23/05/2015	PHD seminar, <i>IMUS</i> , Sevilla, Spain
29/05/2015	Workshop on Mathematics and its Applications, <i>BCAM</i> , Bilbao, Spain

Organization experience

13/12/2019-14/12/2019	Co-organizer of the sessions Recent Results in Incompressible Fluid Mechanics, Part I, II, III, at <i>2019 SIAM Conference on Analysis of Partial Differential Equations</i> , La Quinta, USA
Sept. 2018-May 2020	Co-organizer of the <i>Analysis seminar</i> , University of Pennsylvania, Philadelphia, USA
12/06/2018-15/06/2018	Co-organizer of the workshop Mathematical Analysis in Incompressible Fluids (<i>MathFluids Workshop</i>), <i>IMUS</i> , Sevilla, Spain
Sept. 2017-May 2018	Co-organizer of the <i>Conversaciones Fluidas seminar</i> , <i>IMUS</i> , Sevilla, Spain
Sept. 2017-June 2018	Co-organizer of the <i>PHD seminar</i> , <i>IMUS</i> , Sevilla, Spain

Teaching Experience

Jan. 2021-June 2021	Equacions Diferencials (6 ECTS), 3 rd year BSc (Mathematics degree), <i>Universitat de Barcelona</i> , Spain
Jan. 2020-May 2020	Partial Differential Equations (Math 425), 4 th year BSc, <i>University of Pennsylvania</i> , USA
Jan. 2020-May 2020	Calculus IV, PDE (Math 241), 2 nd year BSc, <i>University of Pennsylvania</i> , USA
Aug. 2019-Dec. 2019	Multivariate Calculus, with Probability and Matrices (Math 115), 1 st year BSc, <i>University of Pennsylvania</i> , USA
Jan. 2019-May 2019	Partial Differential Equations (Math 425), 4 th year BSc, <i>University of</i>

Pennsylvania, USA

Jan. 2019-May 2019	Linear Algebra (Math 312), 3 rd year BSc, <i>University of Pennsylvania, USA</i>
Aug. 2018-Dec. 2018	Linear Algebra (Math 312), 3 rd year BSc, <i>University of Pennsylvania, USA</i>
Sept. 2017-Feb. 2018	Infinitesimal Calculus (1 ECTS), 1 st year BSc (Mathematics degree), <i>Universidad de Sevilla, Spain</i>
Sept. 2017-Feb. 2018	Mathematical Analysis (2.25 ECTS), 1st year BSc (Physics degree), <i>Universidad de Sevilla, Spain</i>
Sept. 2017-Feb. 2018	Mathematics (1.6 ECTS), 1 st year BSc (Chemistry degree), <i>Universidad de Sevilla, Spain</i>
Sept. 2016-Feb. 2017	Mathematical Analysis (2.25 ECTS), 1st year BSc (Physics degree), <i>Universidad de Sevilla, Spain</i>
Sept. 2016-Feb. 2017	Mathematics (2.4 ECTS), 1 st year BSc (Chemistry degree), <i>Universidad de Sevilla, Spain</i>
Sept. 2016-Feb. 2017	Differentiation of functions in R^n (0.4 ECTS), 2 nd year BSc, <i>Universidad de Sevilla, Spain</i>
Sept. 2016-Feb. 2017	Integration of functions in R^n (0.4 ECTS), 2 nd year BSc, <i>Universidad de Sevilla, Spain</i>

Conferences attended

08/09/2021-10/12/2021	Hamiltonian Methods in Dispersive and Wave Evolution Equations, ICERM, Providence, USA
11/12/2019-14/12/2019	SIAM Conference on Analysis of Partial Differential Equations, La Quinta, USA
24/06/2019-28/06/2019	Summer School on Fluids Mechanics, ICMAT, Madrid, Spain
02/07/2018-20/07/2018	Summer School and Workshop: Geometric Function Theory in Fluid Mechanics, BGSMATH, Barcelona, Spain
12/06/2018-15/06/2018	Workshop Mathematical Analysis in Incompressible Fluids, IMUS, Sevilla, Spain
04/09/2017-08/09/2017	IV Young Researchers Meeting, RSME, Valencia, Spain
05/06/2017-09/06/2017	Summer School and Workshop: Mathematical Analysis of Water Waves and Related Models, Bodega Marine Laboratory, UC Davis, Bodega Bay, USA
25/01/2017-27/01/2017	Workshop Recent Advances in PDEs: Analysis, Numerics, and Control, IMUS, Sevilla, Spain
19/09/2016-21/09/2016	Spanish-French Workshop on Analysis of PDEs from fluid Mechanics, ICMAT, Madrid, Spain
11/07/2016-15/07/2016	International Summer School on Evolution Equations, Charles University and Institute of Mathematics of the Czech Academy of Sciences, Prague, Czech

Republic

10/10/2015-13/10/2015 Mini-School and workshop Analysis of PDEs of Fluid Mechanics and Related Models, Rice University, Houston, USA

27/07/2015-07/08/2015 Summer Graduate School Incompressible Fluid Flows at High Reynolds Number, Mathematical Sciences Research Institute (MSRI), Berkeley, USA

Other activities

19/11/2019 Dinner Chat at Kings Court English College House, University of Pennsylvania.

Sept. 2018-May 2020 Member of the Library Committee at University of Pennsylvania.

Sept. 2019-May 2020 Math Major Advisor at University of Pennsylvania.

Reviewer Indiana University Mathematics Journal, Nonlinearity, Communications in Mathematical Sciences, Journal of Mathematical Physics, Mathematical Modeling of Natural Phenomena, Nonlinear Analysis Series B: Real World Applications, zbMath.

Languages

Spanish Native

English Advanced – C1/C2

French Intermediate – B1/B2 (Spain National Language School, 2007)

German, Italian Beginner – 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
Javier Gómez-Serrano jgomezerrano@ub.edu
Diego Córdoba dcg@icmat.es