

CONTACT INFORMATION	Universidad de Alicante Departamento de Matemáticas Facultad de Ciencias II Campus de Sant Vicent del Raspeig s/n 03690 Sant Vicent del Raspeig (Alicante), Spain	
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	Personal website: https://carlosesteveyague.github.io ResearchGate: https://www.researchgate.net/profile/Carlos-Esteve-Yaguee Google Scholar: https://scholar.google.com/citations?user=I7H... Linkedin: https://www.linkedin.com/in/carlos-esteve-yague-1817541a9/ Github: https://github.com/carlosesteveyague	
PERSONAL INFORMATION	Date of birth: 31st of May, 1991 Place of birth: Castalla, Alicante, Spain Citizenship: Spanish	
RESEARCH INTERESTS	Analysis of PDEs (Hamilton-Jacobi equations, Nonlinear parabolic and elliptic PDEs, transport equation, conservation laws). Applications of PDEs (Inverse problems, optimal control theory and calculus of variations, numerical methods). Image Analysis and applications to single particle Electron Microscopy. Mathematics of Deep Learning and Applications.	
EDUCATION	PhD in Applied Mathematics September 2015 – July 2019 Université Paris 13, France Title: <i>Etude qualitative de trois problèmes paraboliques non linéaires.</i> Advisor: Prof. Philippe Souplet.	
	MSc, Mathematics September 2014 – July 2015 Université Paris 13, France Master thesis: <i>Touchdown behavior of the solution of a parabolic equation arising in the MEMS problem.</i> Supervisor: Prof. Philippe Souplet.	
	BSc, Mathematics Septiembre 2010 – June 2014 Universidad de Alicante, Spain Final project: <i>Decay rates for nonlocal equations.</i> Supervisors: Prof. Julio D. Rossi. Prof. Ángel San Antolín.	
EXPERIENCE	Ramón y Cajal researcher at University of Alicante September 2024 – Present Department of Mathematics, University of Alicante, Spain	
	PI of the Ramón y Cajal 2022 grant RYC2022-035966-I, co-funded by the Ministry of Science, Innovation and Universities of Spain and the European Union.	
	Research Associate at Cambridge Image Analysis January 2022 – July 2024 DAMTP, University of Cambridge, United Kingdom	
	Researcher in the cryo-EM project, in collaboration with the group of Sjors Scheres at the Laboratory for Molecular Biology (Cambridge), Ozan Oktem (KTH and Edinburgh) and the Alan Turing Institute.	
	Under the supervision of Prof. Carola Schönlieb* * University of Cambridge	
	Postdoctoral researcher at ERC Advanced Grant project DyCon. October 2021 – December 2021 Chair of Computational Mathematics, Universidad de Deusto, Bilbao, Spain	
	Under the supervision of Enrique Zuazua** ** Alexander von Humboldt Professor at FAU Erlangen-Nuremberg	
	Artificial Intelligence Researcher June 2021 – September 2021 Sherpa.ai, Bilbao, Spain	

Postdoctoral researcher at ERC Advanced Grant project DyCon. September 2019 – May 2021
Universidad Autónoma de Madrid, Spain

Under the supervision of **Enrique Zuazua****

Teaching and research assistant September 2018 – July 2019
(Attaché Temporaire d'Enseignement et de Recherche)
at Laboratoire Jacques-Louis Lions, Sorbonne Université, Paris, France

PREPRINTS

1. with O. Bokanowski, and R. Tsai *Solving Hamilton-Jacobi equations by minimizing residuals of monotone discretizations*, arXiv:2601.21764, May 2026. [Link](#)

PUBLISHED
ARTICLES

1. with K. Abraham, A. Balanov, and T. Bendory. *Sample Complexity Analysis of Multi-Target Detection via Markovian and Hard-Core Multi-Reference Alignment*, with K. Abraham, A. Balanov and T. Bendory. *Information and Inference: a Journal of the IMA* 15 (3), iaag021, 2026. [Link](#)
2. with R. Tsai, and A. Massucco. Hamilton-Jacobi Equations, Finite Differences, and Neural Networks, *SIAM News. Collections* 59.04 (2026). [Link](#)
3. with R. Tsai. Usable boundary for visibility-based surveillance-evasion games, *Research in the Mathematical Sciences*, 12 (3), 1-40 (2025). [Link](#)
4. with R. Tsai and A. Massucco. Finite-difference least square methods for solving Hamilton-Jacobi equations using Neural Networks, *Journal of Computational Physics* 524, 113721 (2025). [Link](#)
5. with W. Diepeveen, J. Lellmann, O. Öktem and C.-B. Schönlieb. Riemannian geometry for efficient analysis of protein dynamics data, *Proceedings of the National Academy of Sciences* 121 (33), e2318951121 (2024). [Link](#)
6. with W. Diepeveen, O. Öktem and C.-B. Schönlieb. Spectral decomposition of atomic structures in heterogeneous cryo-EM, *Inverse Problems* 39 (2023). [Link](#)
7. with B.Geshkovski. Sparsity in long-time control of neural ODEs, *Systems and Control Letters* 172 (2023) [Link](#)
8. with E. Zuazua. Reachable set for Hamilton-Jacobi equations with non-smooth Hamiltonian and scalar conservation laws, *Nonlinear Analysis* 227 (2023). [Link](#)
9. with E. Zuazua. Differentiability with respect to the initial condition for Hamilton-Jacobi equations, *SIAM J. Math. Anal.*, 54, 5 (2022), 5388-5423. [Link](#)
10. with U. Biccari and D.J. Oroya-Villalta . Multilevel Selective Harmonic Modulation via Optimal Control, *Appl Math Optim* 86, 43 (2022). [Link](#)
11. with H. Kouhikouh, D. Pighin and E. Zuazua. The turnpike property and the long-time behavior of the Hamilton-Jacobi-Bellman equation for finite-dimensional LQ control problems, *Math. Control Signals Syst.* (2022). [Link](#)
12. with B.Geshkovski, D. Pighin and E. Zuazua. Turnpike in Lipschitz–nonlinear optimal control, *Nonlinearity* 35 (2022), 1652–1701. [Link](#)
13. with E. Zuazua. The inverse problem for Hamilton–Jacobi equations and semiconcave envelopes, *SIAM J. Math. Anal.*, 52, 6 (2020), 5627–5657. [Link](#)
14. with P. Blanc and J. D. Rossi. A game theoretical approach for the evolution problem associated with eigenvalues of the Hessian, *J. London Math. Soc.* (2) 00 (2020), 1-25. [Link](#)
15. Single-point Gradient Blow-up on the Boundary for Diffusive Hamilton-Jacobi Equation in domains with non-constant curvature, *Journal de Mathématiques Pures et Appliquées* 137 (2020), pp. 143–177. [Link](#)
16. with Ph. Souplet. No touchdown at points of small permittivity and nontrivial touchdown sets for the MEMS problem, *Advances in Differential Equations*, Vol 24, Number 7-8(2019), 465-500. [Link](#)
17. with Ph. Souplet. Quantitative touchdown localization for the MEMS problem with variable dielectric permittivity, *Nonlinearity* 31 (2018), 4883-4934. [Link](#)

18. with J.D. Rossi and A. San Antolín. Upper bounds for the decay rate in a nonlocal p-Laplacian evolution problem. *Boundary Value Problems* 2014, 2014:109(13 May 2014). [Link](#)

TEACHING EXPERIENCE	Lecturer at University of Alicante, Spain	2025 – 2026
	Mathematical Analysis I, 1st year of Degree in Mathematics 60 hours of lectures.	
	Real Analysis of Several Variables I, 2nd year of Degree in Mathematics 60 hours of lectures.	2024 – 2025
	Graduate course at the University of Cambridge, United Kingdom Topics in Mathematics for Deep Learning, Part III Graduate Course. 16 hours of lectures in Lent Term.	2023 – 2024
	Graduate course at the University of Cambridge, United Kingdom Topics in Mathematics for Deep Learning, Part III Graduate Course. 16 hours of lectures in Easter Term.	2022 – 2023
	Teaching assistant at Sorbonne Université, France Mathematical analysis and algebra for sciences, 1st year of BSc. Matrix calculus, 1st year of BSc.	2018 – 2019
	Teaching assistant at Université Paris 13, France Mathematical Analysis 1, 1st year of BSc. Mathematical Analysis 3, 2nd year of BSc.	2017 – 2018
SCHOLARSHIPS AND FUNDING	Teaching assistant at Université Paris 13, France Mathematical Analysis 1, 1st year of BSc. Mathematical Analysis 2, 1st year of BSc.	2016 – 2017
	UTALENT 2023 University of Alicante, Spain	September 2024 – August 2027
	Funding: 10.000,00 EUR Funded by the University of Alicante: Programa propio de I+D+I del Vicerrectorado de Investigación y transferencia de conocimiento.	
	Ramón y Cajal grant RYC2022-035966-I University of Alicante, Spain	September 2024 – August 2029
	Funding: 244.350,00 EUR co-funded by the Ministry of Science, Innovation and Universities of Spain and the European Union	
	Doctoral contract at École Doctorale Galilée Université Paris 13, France	September 2015 – August 2018
	Master Scholarship M2 LAGA-PGSM Université Paris 13, France	September 2014 – August 2015

PARTICIPATION IN CONFERENCES AND COLLOQUIUMS	1. Congreso Bienal Real Sociedad Matemática Española, held from the 19th to the 23rd of January 2026, at the University of Alicante, Spain. Invited talk in mini symposium and mini symposium organization.	
	2. PGMO Days 2025, held in EDF Lab Paris-Saclay, Palaiseau, France, on November 17-18, 2025. Invited talk in mini symposium and mini symposium organization.	
	3. SIAM Conference on Control and Its Applications (CT25), held in Montréal, Canada, on July 28th-30th, 2025. Invited talk in mini symposium.	
	4. 16th Viennese Conference on Optimal Control and Dynamic Games, held in Vienna, Austria, on July 15th-18th, 2025. Invited talk in mini symposium.	

5. RSME's 7th Congress of Young Researchers. From January 13 to January 17, 2025, in Bilbao, Spain. Invited talk in the parallel session MA05: Partial Differential Equations V: Fluid Dynamics and Control Theory.
6. Speaker at the "2nd COPI2A meeting: Control, Problemas Inversos y Aprendizaje Automático". December 2-3 2024, in Almagro, Spain. Invited speaker.
7. Participation in the workshop "Constrained Dynamics, Stochastic Numerical Methods and the Modeling of Complex Systems", held from the 26th to the 31st of May 2024, at Oberwolfach, Germany.
8. International Conference on Elliptic and Parabolic Problems, held from the 20th to the 24th of May 2024, at Gaeta, Italy. Invited talk in mini symposium.
9. Speaker at the 3rd CamEM Symposium, held on the 19th of April 2024, at MRC Laboratory of Molecular Biology, Cambridge, UK. Invited speaker.
10. Invited speaker at Journées Jeunes EDPistes de France 2024, held from the 20th to the 22nd of March 2024, at Université de Toulouse III - Paul Sabatier, France.
11. Congreso Bienal Real Sociedad Matemática Española, held from the 22nd to the 26th of January 2024, at the Public University of Navarra, Pamplona, Spain. Invited talk in mini symposium.
12. Workshop on Models and Algorithms for Path Planning, held from the 4th to the 6th of December 2023, at the University of Texas at Austin, USA. Invited talk.
13. Workshop "PDE meets Data: challenges and perspectives in model development and calibration", held from the 18th to the 19th of July at the University of Warwick, UK. Invited talk.
14. 11th Applied Inverse Problems Conference (AIP 2023), held in Göttingen, Germany from September 4 to 8, 2023. Organizer of the minisymposium "Trends and open problems in cryo electron microscopy".
15. 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023) held from the 20th to the 25th of August, 2023 at Waseda University, Tokyo, Japan. Invited talk in mini symposium.
16. SIAM Conference on Control and Its Applications (CT23), held in Philadelphia, USA, from the 24th to the 26th of July, 2023. Invited talk in mini symposium.
17. Workshop "Leveraging Model- and Data-Driven Methods in Medical Imaging", held at the UBC Okanagan campus in Kelowna, Canada, from June 25 to June 30, 2023. Invited talk.
18. SIAM Conference on Computational Sciences and Engineering (CS23), held in Amsterdam, the Netherlands (from February 26 to March 3, 2023). Invited talk in the Minisymposium "Advancements in uncertainty quantification and inverse problems in coupled systems".
19. Invited speaker at the Workshop: Cryo-Electron Microscopy and Beyond, at IPAM-UCLA, Los Angeles, USA (from November 14-18, 2022). Invited speaker. [Link to video](#)
20. IX Partial differential equations, optimal design and numerics, at Centro Pedro Pascual in Benasque, Spain (from 22th to 26th of August, 2022). 30 minutes talk.
21. Cambridge Mathematics of Information Healthcare Hub Academic Engagement Event (26th of July 2022, Cambridge, United Kingdom). 5 minutes talk in the Elevator Pitches.
22. Cedyá XVII in Zaragoza, Spain (online participation on the 21st of July 2022). Invited talk in the mini-symposium "Optimal control and inverse problems".
23. Equadiff 15 in Brno Czech Republic (from 11th to 15th of July 2022). Invited talk in the mini-symposium "Qualitative behavior in nonlinear parabolic problems".
24. VII Jornadas de Análisis matemático, held at Universidad de Alicante, Spain (from 15th to 17th of January 2020). Invited talk (in Spanish).
25. VIII Partial differential equations, optimal design and numerics, at Centro Pedro Pascual in Benasque, Spain (from 18th to 30th of August, 2019). Invited talk.
26. 7th IST-IME, A conference in Analysis and Applications, in Sao Paulo, Brazil (from 23rd to 27th of July, 2018). 10 minutes talk.

27. 8th Euro-Japanese workshop on blow-up, Sendai, Japan (from 4th to 8th of June, 2018). 20 minutes talk.
28. Journées jeunes EDPistes 2018, Nancy, France (from 21st to 23rd of March, 2018).
29. VI Jornadas de Análisis matemático, Universidad de Alicante, Spain (from 24th to 26th of January, 2018). 40 minutes talk (in Spanish).
30. Equadiff 2017, Bratislava, Slovakia (from 24th to 28th of July, 2017). 30 minutes talk.
31. Journées jeunes EDPistes, Autrans, France (from 20th to 22nd of March, 2017). Poster presentation.
32. Summer school on Elliptic PDE's at Tenerife, Universidad de La Laguna, Spain (from 18th to 20th of July, 2016). 30 minutes talk.

SEMINARS

1. LC2 seminar: Learning, Computation and Control seminar 6 of May 2026
Imperial College, London, UK
2. Seminar at the Department of Applied Mathematics and Statistics 5 of March 2026
Universidad Politécnica de Cartagena, Spain
3. Seminar at Laboratoire Jaques Louis Lions. 20 of February 2025
Sorbonne Université, Paris, France
4. Seminar at Department of Mathematics, 19 of December 2024
Group of Mathematical Analysis.
University of Alicante, Spain
5. Seminar at Stanley Osher's group in UCLA 8 of July 2024
UCLA, Los Angeles, USA.
6. Seminar at Cambridge Image Analysis group 21 of June 2024
University of Cambridge, United Kingdom.
7. LC2 seminar: Learning, Computation and Control seminar 20 of April 2023
Imperial College, London, UK
8. Seminar at ODEN Institute, 9 of December 2022
University of Texas at Austin, USA.
9. Seminar at Cambridge Image Analysis group 28 of January 2022
University of Cambridge, United Kingdom.
10. Sesión de primavera de EDPs del Departamento de Matemáticas 9 of April 2021
Universidad Autónoma de Madrid, Spain.
11. Team seminar in the Dycon project, 13 of September 2019
University of Deusto, Bilbao, Spain.
12. Seminar at Departamento de Matemática 18 of July 2018
Universidad de Buenos Aires, Argentina.
13. Séminaire des doctorants du LAGA 8 of March 2017
Université Paris 13, France.
14. Séminaire des doctorants du LAGA, 17 of May 2016
Université Paris 13, France.

RESEARCH VISITS

- **Laboratoire Jaques Louis Lions**, Université Paris Cité, Paris, France.
Professeur invité, hosted by Olivier Bokanowski, from May 18 to June 17, 2026.
- **Laboratoire Jaques Louis Lions**, Université Paris Cité, Paris, France.
Hosted by Olivier Bokanowski, from 6 to 10 of October, 2025.
- **Laboratoire Jaques Louis Lions**, Université Paris Cité, Paris, France.
Hosted by Olivier Bokanowski, from 5 to 16 of May, 2025.
- **Laboratoire Jaques Louis Lions**, Sorbonne Université, Paris, France.
Hosted by Borjan Geshkowsky, from 17 to 21 of February, 2025.
- **Oden Institute**, University of Texas at Austin, USA.
Hosted by Richard Tsai, from 1 to 11 of December, 2023.
- **Oden Institute**, University of Texas at Austin, USA.
Hosted by Richard Tsai, from 5 to 9 of December, 2022.
- Core participant at **IPAM**'s long program on "Computational Microscopy" at UCLA, Los Angeles, USA.
From September 12 to December 16, 2022.
- **Departamento de Matemáticas**, Universidad de Buenos Aires, Argentine.
Hosted by Julio D. Rossi, from 7 to 22 of July, 2018.
- **Centro de Modelamiento Matemático de Chile**
Financed by project Ecos in January 2016.

INTERNSHIPS

- **MSc research stage** March – June 2015
LAGA, Université Paris 13, France
Under the supervision of Prof. Philippe Souplet.
- **BSc research stage** October 2013 – June 2014
Departamento de Análisis Matemático de la Universidad de Alicante, Spain.
Under the supervision of Prof. Julio D. Rossi and Prof. A. San Antolín.

COMPUTER SKILLS

- Solid in **Python**: machine learning and deep learning (**PyTorch**, **scikit-learn**, **pandas**, **numpy**).
- Solid in **MatLab**: simulation of partial differential equations and dynamical systems.
- Proficient in **L^AT_EX**.
- Operating Systems: MacOS, Linux, Windows.

LANGUAGE SKILLS

English (fluent), French (fluent), Spanish (native), Catalan (native).

SCIENCE DISSEMINATION

1. Organisation and participation of the 3rd Science Week at Collège d'Espagne de Paris, May 2018.
2. Organisation and participation of the 2nd Science Week at Collège d'Espagne de Paris, May 2017.
3. Organisation and participation of the 1st Science Week at Collège d'Espagne de Paris, May 2016.

REFERENCES

Prof. **Philippe SOUPLET**

Université Paris 13, France

E-mail: souplet@math.univ-paris13.fr

Prof. **Carola-Bibiane SCHÖNLIEB**

University of Cambridge, United Kingdom.

E-mail: cbs31@cam.ac.uk

Prof. **Enrique ZUAZUA**

Alexander von Humboldt Professorship.

Friedrich-Alexander Universität, Erlangen-Nürnberg, Germany.

Chair of Computational Mathematics, Universidad de Deusto, Bilbao, Spain.

Universidad Autónoma de Madrid, Spain.

E-mail: enrique.zuazua@fau.de

Prof. **Julio D. ROSSI**

Universidad de Buenos Aires, Argentina.

E-mail: jrossi@dm.uba.ar