

FRANCOIS HAMEL'S VITAE

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Educational and academic background

- 2000: Accreditation to direct research (“HDR”), University Paris VI.
- 1996: PhD thesis in mathematics, University Paris VI.
- 1990–1994: Student at the École Normale Supérieure, Paris.

Positions

- 2001–: Professor of Mathematics, Aix-Marseille University.
Highest level (“classe exceptionnelle 2”) since 2019.
Support by a national grant for scientific excellence since 2001.
- 2013: Visiting scholar and professor, University of California, Berkeley and Stanford University (6 months).
- 2008–2010: Visiting advanced researcher, Helmholtz Zentrum, München (2 years, Humboldt fellow).
- 1995–2001: CNRS research scientist, Laboratoire d’Analyse Numérique, University Paris VI.
- 1997–1998: Lecturer of mathematics, M.I.T.

Awards and recognition

- 2014: Inclusion in the list of Highly Cited Researchers.
- 2009–2014: Member of the French “Institut Universitaire de France” (IUF).
- 2008–2010: Fellow of the German Alexander von Humboldt Foundation (grant for advanced researchers).

Research fields

- Elliptic and parabolic partial differential equations (existence, qualitative properties, classification results, stability)
- Propagation phenomena in unbounded domains, travelling waves, generalized notions
- Spectral problems, shape optimization problems, rearrangement inequalities, isoperimetric inequalities
- Models in ecology and population dynamics, biological invasions, mutation-selection models, combustion models.

15 former PhD students and 2 PhD students currently registered

- Three former PhD students are professors in Algeria and China, two former PhD students are CNRS researchers in France, four former PhD students are assistant or associate professors in Canada, China and France, three former PhD students are post-doctoral fellows in France and Germany.
- Two former PhD students won the prize for the best PhD thesis in Aix-Marseille University in 2012 and 2018.

Main scientific responsibilities

- 2014–2019: Director of Archimedes Labex (650 members in the CIRM and 3 research units in mathematics and computer science).
- 2014–2019: Principal investigator of the French ANR NONLOCAL project (33 members).
- 2007, 2011, 2012: Member of the French national committee for research grants in mathematics.
- 2006–2010: Head of the “Applied analysis” team of I2M research unit (50 members).
- 2005–: Organization of 11 international conferences, in Canada, China, France, Germany, and Taiwan.

Current editorial boards

- *Ars Inveniendi Analytica, Nonlinear Differential Equations and Applications, Taiwanese Journal of Mathematics.*

Publications

- More than 100 publications in total, more than 2800 citations on MathSciNet, 7 papers cited more than 100 times, H-index = 27.
- Publications in journals such as Adv. Math., Amer. J. Math., Ann. Sci. École Norm. Sup., Annals Math., Arch. Ration. Mech. Anal., Comm. Math. Phys., Comm. Pure Appl. Math., Crelle’s J., Duke Math. J., J. Amer. Math. Soc., J. Europ. Math. Soc., J. Funct. Anal., J. Math. Biology, J. Math. Pures Appl., Math. Ann., Proc. National Acad. Sci. USA, SIAM J. Math. Anal., Trans. Amer. Math. Soc., etc.
- List of 12 selected publications
 - [1] (with Y. Liu, P. Sicbaldi, K. Wang and J. Wei) Half-space theorems for the Allen-Cahn equation and related problems, *J. reine angew. Math. (Crelle’s J.)* **770** (2021), 113-133.
 - [2] (with N. Nadirashvili) Shear flows of an ideal fluid and elliptic equations in unbounded domains, *Comm. Pure Appl. Math.* **70** (2017), 590-608.
 - [3] (with L. Rossi) Transition fronts for the Fisher-KPP equation, *Trans. Amer. Math. Soc.* **368** (2016), 8675-8713.
 - [4] (with N. Nadirashvili and Y. Sire) Convexity of level sets for elliptic problems in convex domains or convex rings: two counterexamples, *Amer. J. Math.* **138** (2016), 499-527.
 - [5] (with H. Berestycki) Generalized transition waves and their properties, *Comm. Pure Appl. Math.* **65** (2012), 592-648.

- [6] (with N. Nadirashvili and E. Russ) Rearrangement inequalities and applications to isoperimetric problems for eigenvalues, *Annals Math.* **174** (2011), 647-755.
- [7] (with L. Roques) Uniqueness and stability properties of monostable pulsating fronts, *J. Europ. Math. Soc.* **13** (2011), 345-390.
- [8] (with H. Berestycki and N. Nadirashvili) The speed of propagation for KPP type problems. II - General domains, *J. Amer. Math. Soc.* **23** (2010), 1-34.
- [9] (with H. Berestycki and H. Matano) Bistable travelling waves around an obstacle, *Comm. Pure Appl. Math.* **62** (2009), 729-788.
- [10] (with H. Berestycki) Front propagation in periodic excitable media, *Comm. Pure Appl. Math.* **55** (2002) 949-1032.
- [11] (with N. Nadirashvili) Travelling fronts and entire solutions of the Fisher-KPP equation in \mathbb{R}^N , *Arch. Ration. Mech. Anal.* **157** (2001), 91-163.
- [12] (with H. Berestycki and R. Monneau) One-dimensional symmetry of bounded entire solutions of some elliptic equations, *Duke Math. J.* **103** (2000), 375-396.

Talks given

- About 230 invited talks or courses worldwide.