

Denisse Sciamarella

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POSITIONS	▪ CNRS Researcher since 2001 ▪ IFAECI Deputy Director since 2018
DEGREES	Diplôme d'Habilitation à diriger des Recherches PHYSIQUE, de la Faculté des Sciences d'Orsay, Université Paris-Saclay, FRANCE (2018). Doctorado en Ciencias Físicas, Universidad de Buenos Aires, ARGENTINA (2001). Licenciatura en Ciencias Físicas, Universidad de Buenos Aires, ARGENTINA (1997).
EDUCATION	Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation, Scholarship: Computational Fluid Dynamics. Supervision: Jean-Luc Guermond. Workplace: LIMSI, FRANCE (2001). École Normale Supérieure (ENS), Scholarship: Physique de la Turbulence Réelle. Supervision: Yves Pomeau. Workplace: Laboratoire de Physique Statistique (LPS), Paris, FRANCE (2000). Deutscher Akademischer austatschdienst (DAAD), Scholarship: History of Sciences. Supervision: Menso Folkerts. Workplace: Ludwig Maximilians Universität München, GERMANY (1999). Fondo para el mejoramiento de la Calidad Universitaria (FOMECA), Scholarship: Estructura topológica de flujos caóticos. Supervision: G. B. Mindlin. Workplace: Departamento de Física de la Facultad de Ciencias Exactas y Naturales (FCEN) de la Universidad de Buenos Aires (UBA), ARGENTINA (1997).
STUDENT SUPERVISION	Internships: Daniel Benacquista (2005), Nora Elisa Chisari (2008), Marine Bayard (2016), Charlotte Buisine (2018), Robin Durand (2020), Adrián Barreal (2021), Tito Ignacio Lasanta Viñes (2021), Yanis Baoche (2022), Nicolás Seltzer & Andrés Felipe Tovar Capera (2022-2023). Graduate theses: Stuttgart University (GERMANY): Florian Krebs (2010-2011) & Philipp Dörr (2012-2013). Universidad de Buenos Aires (ARGENTINA): Angel Centeno (2012-2013), Luciana Salvagni (2022-2023), Adrián Barreal (2022-2023), Paz Lodi-fe (2024-2025), Julia Zack (2024-2025). PhD theses: Université Paris-Saclay (FRANCE). Florian Tuerke (2013-2017), Defense: 7/4/2017; Universidad de Buenos Aires (ARGENTINA) Gisela Charó (2015-2020) Defense: 30/3/2020; Caterina Mosto (2022-2026) PhD Theses with CONICET scholarship; Guido Albarello (2024-2028) Université de La Rochelle (FRANCE) Juan Cruz Bonel (2020-2023) PhD co-tutelle Thesis with MITI CNRS (3 years) and CONICET (2 years) scholarship with Universidad de Buenos Aires. Post-docs: Fabrice Silva (2009-2010) Fellowship Bernardo Houssay followed by ANR plan retour post-doctorants (RPDOC 2012), Pierre Audier (2015-2016) Programme de séjours de recherche post-doctoraux « Bernardo Houssay », Darío Alviso (2017-2018) CONICET scholarship, Gisela Charó (2019-2021) CONICET scholarship.
P.I. IN RECENT / ONGOING PROJECTS	LEFE/MANU: NOISE Noise-Nonlinearity Interaction in Climate Dynamics (INSU-CNRS) CLIMAT-AMSUD: CYAN Climate dYnamics ANalysis from Data (code: 21-CLIMAT-05) ANR-TeMPlex: Topological Methods for the Planet's dynamics – TeMPlex (code: ANR-23-CE56-0002) CE56 - Interfaces : mathématiques, sciences du numérique – sciences du système Terre et de l'environnement. November 2023 - 48 Months
BOOK CHAPTERS	Sciamarella, D. & Charó, G. D. Chapter 9: New Elements for a Theory of Chaos Topology, in Topological Methods for Delay and Ordinary Differential Equations, edited by Pablo Amster & Pierluigi Benevieri, Series Title: Advances in Mechanics and Mathematics, Springer Birkhäuser Cham, Hardcover ISBN 978-3-031-61336-4 (2024)
SELECTED PUBLICATIONS	G. D. Charó and M. Ghil and D. Sciamarella. Random templex encodes topological tipping points in noise-driven chaotic dynamics. Chaos: An Interdisciplinary Journal of Nonlinear Science, 33 (10), pp.103141 (2023) Michael Ghil, Denisse Sciamarella. Review article. Dynamical systems, algebraic topology and the climate sciences. Nonlinear Processes in Geophysics, 30 (4), pp.399–434 (2023) G. D. Charó, C. Letellier, D. Sciamarella. Templex: a bridge between homologies and templates for chaotic attractors. Featured article. Chaos: An Interdisciplinary Journal of Nonlinear Science, 32, (2022)

D. Alviso, D. Sciamarella, A. Gronskis & G. Artana. Flow-induced self-sustained oscillations in a straight channel with rigid walls and elastic supports. *Bioinspiration & Biomimetics*, 17(6), 065005 (2022)

G. D. Charó, M. D. Chekroun, D. Sciamarella, M. Ghil. Noise-driven topological changes in chaotic dynamics. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 31 (10), 103115 (2021)

G. D. Charó, G. Artana, D. Sciamarella. Topological colouring of fluid particles unravels finite-time coherent sets. *Journal of Fluid Mechanics*, 923 (2021)

G. D. Charó, G. Artana, & D. Sciamarella. Topology of dynamical reconstructions from Lagrangian data. *Physica D*, 405, 132371 (2020)

F. Tuerke, F. Lusseyran, D. Sciamarella, L. Pastur, and G. Artana. Nonlinear delayed feedback model for incompressible open cavity flow. *Phys. Rev. Fluids* 5, 024401 – Published 20 February (2020)

G. D. Charó, D. Sciamarella, S. Mangiarotti, G. Artana C. Letellier. Observability of laminar bidimensional fluid flows seen as autonomous chaotic systems. *Chaos*, 29, 123126 (2019)

F. Tuerke, L. Pastur, D. Sciamarella, F. Lusseyran, G. Artana. Experimental study of double-cavity flow. *Experiments in Fluids* 58:76 (2017)

F. Tuerke, L. Pastur, Y. Fraigneau, D. Sciamarella, F. Lusseyran, G. Artana. Nonlinear dynamics and hydrodynamic feedback in two-dimensional double cavity flow. *Journal of Fluid Mechanics* 813, pp. 1-22 (2017)

P. Audier, D. Sciamarella and G. Artana. Pre-switching bifurcation of a slender jet, *Physics of Fluids* 28(1) (2016)

F. Tuerke, D. Sciamarella, F. Lusseyran, L. Pastur and G. Artana. Frequency-selection mechanism in incompressible open-cavity flows via reflected instability waves. *Physical Review E* 91(1-1):013005 (2015)

D. Sciamarella and G. Artana. Relaxation to one-dimensional postglottal flow in a vocal fold model. *Speech Communication* 66 (2015)

D. Sciamarella, F. Silva and G. Artana. Similarity Analysis of a Glottal-like Jet. *Experiments in Fluids*, Volume 53, Issue 3, pp. 765-776 (2012)

F. Krebs, F. Silva, D. Sciamarella, G. Artana. A three-dimensional study of the glottal jet. *Experiments in Fluids*, Volume 52, Number 5, pp. 1133-1147 (2012)

N. E. Chisari, G. Artana, D. Sciamarella. Vortex Dipolar Structures in a Rigid Model of the Larynx at Flow Onset. *Experiments in Fluids*. Vol. 50 (2) 397-406 (2010)

D. Sciamarella, G. Artana. A water hammer analysis of pressure and flow in the voice production system, *Speech Communication* 51 (4), 344 (2008)

R. Laje, D. Sciamarella, J. Zanella, G. B. Mindlin. Bilateral source acoustic interaction in a syrinx model of an oscine bird *Phys. Rev. E* 77, 011912 (2008)

D. Sciamarella, P. Le Quéré. Solving for unsteady airflow in a glottal model with immersed moving boundaries - *European Journal of Mechanics B/Fluids* Vol 27/1 pp 42-53 (2008)

Y. Pomeau, D. Sciamarella. An unfinished tale of nonlinear PDE's: do solutions of 3D incompressible Euler equations blow up in finite time?- *Physica D* Vol 205/1-4 pp 215-221 (2005)

D. Sciamarella, C. d'Alessandro. On the acoustic sensitivity of a symmetrical two-mass model of the vocal folds to the variation of control parameters - *Acta Acustica* Vol 90 pp 746-761 (2004)

D. Sciamarella, Y. Pomeau. Coherent Bragg Scattering of light by a vortex lattice in rotating superfluid He. *Journal of Low Temperature Physics, (JLTP)* 123, 1/2 (2001)

D. Sciamarella, G. B. Mindlin. Unveiling the topological structure of chaotic flows from data. *Phys. Rev. E* 036209, 64, 3 (2001)

D. Sciamarella, G. B. Mindlin. Topological Structure of Flows from Human Speech Data. *Physical Review Letters* 82, 7 (1999)

SELECTED CONFERENCES

D. Sciamarella, Exploring state-space topology in the geosciences, Invited Speaker at The Mathematics of Climate and the Environment, CliMathParis, Institut Henri Poincaré Video: <https://youtu.be/RH2zzE8OkGE> September 11th 2019 (2019)

D. Sciamarella, Invited speaker at Perspectives on Climate Sciences - European Geosciences Union (EGU) NPG division: Nonlinear Processes in Geosciences. Video: <https://youtu.be/W1yndTsvR0g> July 7th (2021)

D. Sciamarella, Minicourse Dynamical Systems, Algebraic Topology & Climate URL: clima.dm.unipi.it/2024/01/22/minicourse-dynamical-systems-algebraic-topology-and-climate University of Pisa, Italy. February 20th (2024)