CURRICULUM VITAE

Sabrina D. Roscani
CONICET (Consejo Nacional de Investigaciones Científicas y Técnicas)
Dto. de Matemática, FCE, Universidad Austral de Rosario (UA), Paraguay 1950,
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1 Current Activity and Education

- July 2022 up to present: **Adjoint researcher** CONICET, at UA.
- April 2014 up to now: Adjoint professor at Dto. de Matemática, Escuela de Ciencias Exactas y Naturales, Uiversidad Nacional de Rosario (UNR), Argentina.
- December 2018 - June 2022: **Assistant researcher** CONICET, at UA.
- April 2016- Decempber 2018: **Posdoctoral** at Universidad Austral with a fellowship from CONICET.
- November 2015: **Ph.D. in Mathematics,** at Universidad Nacional de Rosario (UNR), Argentina, with a scholarship from CONICET. Advisors: Eduardo A. Santillan Marcus and Domingo A. Tarzia.
- March 2011: **Degree in Mathematics,** at the Universidad Nacional de Rosario (UNR), 2006 - 2011.
- March 2006: **Mathematics Teaching Degree,** at Universidad Nacional de Rosario (UNR), Argentina.

2 Research interests

I am interested in Fractional Calculus and partial differential equations, with my research primarily focusing on fractional diffusion equations. In particular, I am especially interested in fractional free boundary problems.

Additionally, I work in the field of solid mechanics, specifically on elasticity problems within shell theory.

3 Publications in the Last 5 Years

- N. Caruso, S. Roscani, L. Venturato, V. Voller. "*On Computation of Prefactor of Free Boundary in One Dimensional One-Phase Fractional Stefan Problems*", Fractal and Fractional 9(7):379 (2025).
- A.D. Arós-Rodríguez, C. Fernandes, S. Roscani, "*Asymptotic Analysis of Elastic Elliptic Membrane Shells in Frictional Contact: Exploring Wear Phenomena. Preprint.* Asymptotic Analysis 142(1):291–320 (2025).
- D. Hilhorst, S. Roscani, P. Rybka, "*Convergence of solutions of a one-phase Stefan problem with Neumann boundary data to a self-similar profile*", Nonlinear Differential Equations and Applications 31, 56 (2024).
- S. Roscani, V. Voller. "*On an enthalpy formulation for a sharp-interface memory-flux Stefan problem*", Chaos, Solitons and Fractals, 181:114679 (2024).

- V. Voller, S. Roscani "*A general non–Fourier Stefan problem formulation that accounts for memory effects*", International Journal of Heat and Mass Transfer, 209:124094 (2023).

- S. Roscani, L. Venturato "*About Convergence and Order of Convergence of some Fractional Derivatives*", Progress in Fractional Differentiation and Applications 8(4): 495–508 (2022).

- S. Roscani, K. Ryszewska and L. Venturato "*A one-phase space-fractional Stefan problem with no liquid initial domain*". SIAM Journal on Mathematical Analysis 54(5):5489–5523 (2022).

- I. Cardos, S. Roscani and D. Tarzia, "About the convergence of a family of initial boundary value problems for a fractional diffusion equation of Robin type", Applied Mathematics and Computation 433: 127375 (2022).

- S. Roscani, D. Tarzia, and L. Venturato. "The similarity method and explicit solutions for the fractional space one-phase Stefan problems". Fractional Calculus and Applied Analysis 25:995–1021 (2022).

- M.T. Cao-Rial, G. Castiñeira, Á. Rodríguez-Arós, S. Roscani, "Mathematical and asymptotic analysis of thermoelastic shells in normal damped response contact", Communications in Nonlinear Science and Numerical Simulation 103:105995 (2021).

- M.T. Cao-Rial, G. Castiñeira, Á. Rodríguez-Arós, S. Roscani, " Asymptotic Analysis of Elliptic Membrane Shellsin Thermoelastodynamics", Journal of Elasticity, 143:385–409 (2021).

- S. Roscani, N. D. Caruso, D. A. Tarzia, "*Explicit solutions to fractional Stefan-like problems for Caputo and Riemann-Liouville derivatives*", Communications in Nonlinear Science and Numerical Simulation 90: 105361 (2020).

4 Research Grants in the last 5 years

- Proyectos Austral N°O06-25CI2001, "Estudio de problemas gobernados por ecuaciones diferenciales parciales no lineales en procesos de difusión anómala y en deformación de láminas", (2025-2026). Under my coordination.

- CONICET PIP N° 11220220100532, "Estudio de problemas modelizados por ecuaciones diferenciales parciales no clásicas. Teoría y aplicaciones, " (2024-2027). Co-director.

- PICT-2021-I-INVI-00317, "Time or Space Fractional Stefan Problems. Theory and applications", (2023-2025). Under my coordination.

- Proyecto Austral 006–INV00030, "Problemas asociados a ecuaciones de difusión fraccionaria con derivadas temporales y/o espaciales de Caputo y Riemann-Liouville. Teoría y aplicaciones", (2023/2024). Under my coordination.

- Proyecto Austral 006–INV00020, "Problemas asociados a ecuaciones de difusión fraccionarias", (2021/2022). Under my coordination.

- CONMECH - European Union's Horizon 2020 n° 823731, "Nonsmooth Contact Dynamics", (2019-2024). Integrant.

5 Selected conference presentations by invitation

- **2024:** ISAAC-ICMAM Conference of Analysis in Developing Countries 2024.

- **2024:** 3rd Emerging Trends in Applied Mathematics and Mechanics (ETAMM 2024), A Coruña, España.

- **2023:** 10th International Congress on Industrial and Applied Mathematics, virtual, Waseda University, Tokyo, Japan (minisymposium participation)

- **2023:** Seminario Fontán de Matemáticas, evento CONMECH en el Centro de Investigación y Tecnología Matemática de la Galicia.

- **2021:** Reunión Anual de la Unión Matemática Argentina virtUMA2021 (minicourse).

- **2021:** Mathematical Congress of the Americas, Buenos Aires, online, (minisymposium participation)

- **2020:** Nonlocal diffusion problems, nonlocal interface evolution (Online), Institute of Mathematics, Polish Academic of Science.

- **2019:** Jornadas de Analistas Jóvenes de Argentina (JAJA2019), Santa Fe, Argentina (conference).

6 Supervision and training of students/researchers

6.1 Bachelor's thesis supervision

- D. Guevara, " Un problema fraccionario unidimensional de Stefan con condición de tipo convectiva", Tesina de Licenciatura en Matemática, FCEIA-UNR, Rosario, Febrero de 2025.

- L. Venturato, "Derivada fraccionaria de Caputo–Fabrizio", Trabajo Final de la Licenciatura en Matemática, FCEIA (UNR), Rosario, 18 de Marzo de 2019.

6.2 PhD thesis supervision

- L. Venturato, "Estudio de soluciones a problemas de tipo Stefan asociados a procesos de difusión anómala y aleaciones binarias ", Tesis doctoral, Doctorado en Matemática, UNR, Rosario, 14 de Diciembre de 2023.