

# Simone Creo

## Curriculum Vitae

### Position

- 01/07/2021 – present day **PostDoc**, *Sapienza Università di Roma*, Department of Basic and Applied Sciences for Engineering.  
TITLE OF THE PROJECT: "Un approccio costruttivo ad alcuni problemi al contorno su insiemi frattali e su strutture irregolari"

### Previous Positions

- 01/07/2020 – 30/06/2021 **PostDoc**, *Sapienza Università di Roma*, Department of Basic and Applied Sciences for Engineering.  
TITLE OF THE PROJECT: "Equazioni alle derivate parziali degeneri o singolari e loro applicazioni"
- 01/07/2019 – 30/06/2020 **PostDoc**, *Sapienza Università di Roma*, Department of Basic and Applied Sciences for Engineering.  
TITLE OF THE PROJECT: "Problemi al contorno per equazioni a derivate parziali ellittiche o paraboliche in domini irregolari e loro approssimazione numerica"
- 01/09/2018 – 31/07/2019 **Tutor of Geometry and Mathematical Analysis (I - II)**, *Università Niccolò Cusano*.
- 01/02/2018 – 31/03/2018 **Winner of a public selection**, *Sapienza Università di Roma*, Department of Basic and Applied Sciences for Engineering.  
TITLE OF THE PROJECT: "Problemi di magnetostatica in domini frattali e prefrattali: regolarità delle soluzioni deboli e loro approssimazione numerica tramite F.E.M. irregolari"
- 01/11/2014 – 09/02/2018 **PhD Student in "Mathematical Models for Engineering, Electromagnetics and Nanosciences"**, *Sapienza Università di Roma*, Department of Basic and Applied Sciences for Engineering.

### Education

- 01/11/2014 – 09/02/2018 **PhD in Mathematical Models for Engineering, Electromagnetics and Nanosciences**, *Sapienza Università di Roma*, Department of Basic and Applied Sciences for Engineering, Grade: OTTIMO.  
Advisor: Prof. Maria Rosaria Lancia. Thesis Title: *Local and nonlocal Venttsel' problems in fractal domains*.

Via Antonio Scarpa 10 – 00161 Rome, Italy

✉ [simone.creo@uniroma1.it](mailto:simone.creo@uniroma1.it) • 🌐 [www.sbai.uniroma1.it/~simone.creo](http://www.sbai.uniroma1.it/~simone.creo)

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10/2011 – **Master's Degree in Mathematics**, *Sapienza Università di Roma*, Department of  
01/2014 Mathematics.

Advisor: Prof. Paola Vernole. Thesis Title: Equazioni differenziali su domini prefrattali.

09/2008 – **Bachelor Degree in Mathematics**, *Sapienza Università di Roma*, Department of  
10/2011 Mathematics.

Advisor: Prof. Fabiana Leoni. Thesis Title: Il principio del massimo e alcune sue applicazioni.

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## Publications

- 1) **S. Creo**, *Singular  $p$ -homogenization for highly conductive fractal layers*, accepted for publication on *Zeitschrift für Analysis und ihre Anwendungen*.
- 2) **S. Creo, M. R. Lancia**, *Fractional  $(s, p)$ -Robin-Venttsel' problems on extension domains*, *Nonlinear Differential Equations and Applications (NoDEA)*, 28 (3), (2021), paper no. 31, 33 pp.  
DOI: 10.1007/s00030-021-00692-w
- 3) **M. Cefalo, S. Creo, M. Gallo, M. R. Lancia, P. Vernole**, *Approximation of 3D Stokes flows in fractal domains*, in: Lancia M.R., Rozanova-Pierrat A. (eds) *Fractals in Engineering: Theoretical Aspects and Numerical Approximations*, SEMA SIMAI Springer Series, vol. 8, Springer, Cham, 2021, 27–53.
- 4) **S. Creo, M. R. Lancia, P. Vernole**,  *$M$ -Convergence of  $p$ -fractional energies in irregular domains*, *Journal of Convex Analysis*, 28 (2), (2021), 509–534.
- 5) **S. Creo, M. Hinz, M. R. Lancia, A. Teplyaev, P. Vernole**, *agnetostatic problems in fractal domains*, in: *Fractals and Dynamics in Mathematics, Sciences and the Arts Volume 5: Analysis, Probability and Mathematical Physics on Fractals*, World Scientific, 2020, 477–502.
- 6) **S. Creo, M. R. Lancia**, *Friedrichs inequality in irregular domains*, *Journal of Mathematical Analysis and Applications*, 484 (1), (2020), 123665.
- 7) **S. Creo, M. R. Lancia, A. I. Nazarov**, *Regularity results for nonlocal evolution Venttsel' problems*, *Fractional Calculus and Applied Analysis*, 23 (5), (2020), 1416–1430.
- 8) **S. Creo, M. R. Lancia, P. Vernole**, *Convergence of fractional diffusion processes in extension domains*, *Journal of Evolution Equations*, 20 (1), (2020), 109–139.
- 9) **M. Cefalo, S. Creo, M. R. Lancia, P. Vernole**, *Nonlocal Venttsel' diffusion in fractal-type domains: regularity results and numerical approximation*, *Mathematical Methods for the Applied Sciences*, 42 (14), (2019), 4712–4733.
- 10) **S. Creo, M. R. Lancia, A. I. Nazarov, P. Vernole**, *On two-dimensional nonlocal Venttsel' problems in piecewise smooth domains*, *Discrete and Continuous Dynamical Systems Series S*, 12 (1), (2019), 57–64.
- 11) **S. Creo, V. Regis Durante**, *Convergence and density results for parabolic quasi-linear Venttsel' problems in fractal domains*, *Discrete and Continuous Dynamical Systems Series S*, 12 (1), (2019), 65–90.

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- 12) **S. Creo, M. R. Lancia, A. Vélez-Santiago, P. Vernole**, *Approximation of a nonlinear fractal energy functional on varying Hilbert spaces*, *Communications on Pure and Applied Analysis*, 17 (2), (2018), 647–669.
- \* **S. Creo**, *Local and nonlocal Venttsel' problems in fractal domains*, PhD Thesis, 2018.

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## Organization of Conferences and Minisymposia

**Part of the Organizing Committee**, *Workshop on "Advances in Singular and Degenerate PDEs"*, Department of Basic and Applied Sciences for Engineering, Sapienza Università di Roma, Rome, Italy, September 16 - 17 2021 (upcoming).

**Organizer**, *Minisymposium MS29 "New Trends in Mathematical Models for Applications"*, Congress "SIMAI 2018", Sapienza Università di Roma, Rome, Italy, July 2 - 6 2018.

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## Scientific Presentations

**Speaker**, *"8th European Congress of Mathematics"*, Minisymposium MS-ID 52 "Differential equations, dynamical systems and applications", Portorož, Slovenia (moved online), June 20 - 26 2021.

Title of the talk: **Ultracontractivity for  $p$ -fractional Robin-Venttsel' problems in extension domains**

**Poster presentation**, *"International Congress on Industrial and Applied Mathematics (ICIAM) 2019"*, Valencia, Spain, July 15 - 19 2019.

Title of the poster: **Nonlinear heat flow problems across irregular interfaces**

**Speaker**, *"International Conference on Elliptic and Parabolic Problems"*, Minisymposium MS17 "Nonlinear evolutions problems and mathematical modeling", Gaeta (LT), Italy, May 20 - 24 2019.

Title of the talk: **On some quasi-linear BVPs in fractal-type domains**

**Poster presentation**, *Workshop on "Analysis of Nonlocal and Nonsmooth Models"*, Bielefeld, Germany, March 25 - 29 2019.

Title of the poster: **Quasi-linear Venttsel' problems in nonsmooth domains**

**Poster presentation**, *"Fifth Workshop on Thin Structures"*, Naples, Italy, September 13 - 15 2018.

Title of the poster: **Asymptotics for quasi-linear BVPs with dynamical boundary conditions in fractal domains**

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**Speaker**, Congress "SIMAI 2018", Minisymposium MS29 New Trends in Mathematical Models for Applications, Sapienza Università di Roma, Italy, July 2 - 6 2018.  
Title of the talk: **Venttsel' problems for the  $p$ -Laplacian on 3D fractal domains**

**Speaker**, "International Conference on Elliptic and Parabolic Problems", Minisymposium MS15 "Differential Problems in Applications", Gaeta (LT), Italy, May 22 - 26 2017.  
Title of the talk: **BVPs with nonlocal dynamical boundary conditions**

**Speaker**, "11th AIMS Conference on Dynamical Systems, Differential Equations and Applications", Special Session SS122 "Variational convergence and Degeneracies in PDES: fractal domains, composite media, dynamical boundary conditions", Orlando, FL, USA, July 1 - 5 2016.  
Title of the talk: **Numerical approximation of nonlocal Venttsel' problems in (pre)fractal domains**

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## Research Projects and Memberships

### As P.I.:

2020 **P.I.**, GNAMPA project (INdAM) "Advances in Evolution Equations: fractals, Wentzell problems, applications to Mathematical Finance".

### As member:

2020 **Member**, Sapienza Research Project "Fractal analysis between theory and applications", Scientific Manager: Prof. M. R. Lancia.

2019 **Member**, Sapienza Research Project "A constructive approach to some problems of analysis on fractals and on irregular structures", Scientific Manager: Prof. M. R. Lancia.

2018 **Member**, Sapienza Research Project "Vector Boundary Value Problems on Fractafolds", Scientific Manager: Prof. M. R. Lancia.

2017 **Member**, Sapienza Research Project "Boundary Value Problems with Integrodifferential Terms on Fractafolds", Scientific Manager: Prof. M. R. Lancia.

2016 **Member**, Sapienza Research Project "Problemi non lineari sui frattali", Scientific Manager: Prof. M. A. Vivaldi.

### Affiliations

2015 – present day **Member**, GNAMPA (National Group of Mathematical Analysis, Probability and its Applications).

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## Teaching activities

- A.Y. **Teacher of Metodi Matematici per l'Ingegneria (SSD MAT/05)**, *Master's Degree in Chemical Engineering (Ingegneria Chimica)*, Sapienza Università di Roma.  
2020/2021 6 CFU
- A.Y. **Teacher of Istituzioni di Matematica (SSD MAT/05)**, *Bachelor Degree in Design*, Sapienza Università di Roma.  
2019/2020 6 CFU
- A.Y. **Teacher of Istituzioni di Matematica (SSD MAT/05)**, *Bachelor Degree in Design*, Sapienza Università di Roma.  
2018/2019 6 CFU
- A.Y. **Teacher of Analisi I (SSD MAT/05)**, *Bachelor Degree in Aerospace Engineering (Ingegneria Aerospaziale)*, Sapienza Università di Roma, with Prof. M. R. Lancia.  
2018/2019 3 CFU
- A.Y. **Teacher of Analisi Matematica (SSD MAT/05)**, *Bachelor Degree in Management Engineering (Ingegneria Gestionale)*, Sapienza Università di Roma, with Prof. P. Vernole.  
2017/2018 3 CFU
- A.Y. **Tutor of Analisi I (SSD MAT/05)**, *Bachelor Degree in Aerospace Engineering (Ingegneria Aerospaziale)*, Sapienza Università di Roma, with Prof. M. R. Lancia.  
2017/2018 40 hours
- A.Y. **Tutor of Analisi I (SSD MAT/05)**, *Bachelor Degree in Aerospace Engineering (Ingegneria Aerospaziale)*, Sapienza Università di Roma, with Prof. M. R. Lancia.  
2016/2017 40 hours

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## Grants and Scholarships

- 2019 Winner of a Grant for Financial Support to the participation to the "International Congress on Industrial and Applied Mathematics (ICIAM) 2019", Valencia, Spain, July 15 - 19 2019.
- 11/2014 – 10/2017 Winner of a PhD scholarship in "Mathematical Models for Engineering, Electromagnetics and Nanosciences", Department of Basic and Applied Sciences for Engineering (SBAI), Sapienza Università di Roma.

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## Professional experience

- 2018 – Reviewer for "Applicable Analysis"

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## Languages

- English **Good knowledge**  
Italian **Mother tongue**  
French **Basic knowledge**  
Spanish **Basic knowledge**

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## Computer skills

Programming Languages C/C++, Matlab, Mathematica, SQL

Other knowledge  $\LaTeX$ , Comsol, Office applications

Possessor of the MOS (Microsoft Office Specialist) Certification

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