

Postdoctoral Fellow — KAUST, Saudi Arabia

AELSON SOBRAL

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RESEARCH INTEREST	Regularity theory for nonlinear PDEs, Variational methods, Singular Free Boundary problems, and Maximum principles for nonlinear PDEs.	
EDUCATION	Universidade Federal da Paraíba (UFPB), João Pessoa, Brazil	2020–2024
	Ph.D. in Mathematics	
	• Supervisors: Damião Araújo and Eduardo Teixeira.	
	Universidade Federal de Sergipe (UFS), São Cristóvão, Brazil	2016–2020
	B.Sc. & M.Sc. in Mathematics	
	• Supervisor: Disson dos Prazeres	
	AWARDS	<i>Lenilde Duarte de Sá</i> prize for outstanding thesis at UFPB.
EXPERIENCE	Postdoctoral Fellow	2024–present
	King Abdullah University of Science and Technology (KAUST), Saudi Arabia	
	• Supervisor: José Miguel Urbano	
	Visiting Researcher	2023–2024
	PUC-Rio	
	• Supervisor: Boyan Sirakov	
	Research Exchange Program	2022–2023
	University of Central Florida, USA	
SELECTED WORK	• Supervisor: Eduardo Teixeira	
	[1] D. Araújo, A. Sobral, J.M. Urbano, and E. Teixeira, <i>On free boundary problems shaped by varying singularities</i> . To appear in Calc. Var. Partial Differential Equations (2026).	
	[2] D. Araújo, A. Sobral, E. Teixeira, <i>Regularity in diffusion models with gradient activation</i> , J. Func. Anal. 289 (2025), no. 11, Paper No. 111147, 31 pp.	
	[3] D. Dos Prazeres, A. Sobral, R. Teymurazyan, <i>The fractional Laplacian uncovered</i> . Colóquio Brasileiro de Matemática (2025).	

[4] A. Sobral, E. Teixeira, J. M. Urbano, *Degenerate free boundary problems with oscillatory singularities*, Partial Differ. Equ. Appl. 6 (2025), no. 2, Paper No. 14, 16 pp.

[5] D. Dos Prazeres, A. Sobral, and J. M. Urbano, *Cordes-Nirenberg type results for nonlocal equations with deforming kernels*, J. Func. Anal. 287 (2024), no. 9, Paper No. 110593, 33 pp.

[6] D. Araújo, A. Sobral, J.M. Urbano, and E. Teixeira, *Borderline regularity in singular free boundary problems*. Submitted.

[7] B. Sirakov and A. Sobral, *Keller-Osserman and Harnack type results for nonlinear elliptic PDE with unbounded ingredients*. Submitted.

**JOURNAL PEER
REVIEW**

- Nonlinear Analysis: Theory and Applications
- Bulletin of the Brazilian Mathematical Society
- Revista Matemática Iberoamericana
- Potential Analysis

**ORGANIZING
COMMITTEES**

2026

- Special session at the AIMS conference, Athens, Greece.

2024

- Special session at the AIMS conference, Abu Dhabi, UAE.
- Free boundary problems: Theory & applications, João Pessoa, Brazil.
- Analysis of PDEs: Theory & Applications, João Pessoa, Brazil.

**CONFERENCES
& SEMINARS**

2025

- AMCS School (KAUST)
- Invited speaker at special session of the Mathematical Congress of the Americas, Miami, USA.
- Speaker in advanced courses session at the Brazilian Colloquium of Mathematics (CBM), IMPA, Rio de Janeiro, Brazil.
- Invited speaker at the workshop on analysis and PDEs, KAUST, Saudi Arabia.
- AMCS Graduate Seminar, KAUST, Saudi Arabia.

2024

- Invited speaker at Mostly Maximum Principle conference, PUC-Rio, Brazil.
- Invited speaker at ICMC summer meeting, UFSCAR, São Carlos, Brazil.

2023

- Analysis seminar at Federal University of Paraíba (UFPB), João Pessoa, Brazil.
- Analysis seminar at Wayne State University (online).
- Poster presentation at the XII Workshop on Nonlinear Differential Equations, UNB, Brazil.
- Invited speaker at special session of 13th AIMS conference, UNCW, North Carolina, USA.
- Invited speaker at special session of the Brazilian Colloquium of Mathematics (CBM), IMPA, Rio de Janeiro, Brazil.

2021

- XIV ENAMA (online).
- Poster presentation at MCA (online).
- Contributed talk at [B₁⁻]: Analysis and PDE from the south (online).

