David Jesus

Partial Differential Equations, Ph.D.

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Employment

2023 –	**Postdoc**, University of Bologna, Italy.

Education

2018 – 2023	**Ph.D. in Mathematics**, *Title: Sharp regularity for degenerate fully nonlinear equations*, University of Coimbra.
	Supervision: Edgard Pimentel and José Miguel Urbano
2016–2018	**M.Sc. in Mathematics**, *Title: Campanato Spaces and applications in Partial Differential Equations*, University of Coimbra.
	Supervision: José Miguel Urbano
2012–2015	**B.Sc. in Mathematics**, University of Coimbra

Experience

2024 Oct-Nov	**Visiting Scholar**, *Department of mathematics*, Universidade de São Carlos.
2022 Oct	**Visiting Scholar**, *Department of mathematics*, Johns Hopkins University.
2022 Sep	**Research program**, *Geometric aspects of nonlinear partial differential equations*, Mittag-Leffler.
2022 Jul	**Workshop**, *Three Nonlinear Days in Coimbra*, University of Coimbra.
2020 Jan-Feb	**Visiting Scholar**, *Mathematics' section*, The Abdus Salam International Centre for Theoretical Physics (ICTP).
2020 Jun	**Summer School**, *Mean Field Games*, Institute for Mathematical and Statistical Innovation (IMSI), *(Remote)*.
2017 Aug	**Summer School**, *Computational Biology*, University of Coimbra.

Prizes and Honors

2017–2018	**Research Scholarship**, *Title: Regularity theory for free boundary problems that are limits of systems of nonlinear elliptic differential equations and modeling in neuroscience*, Fund granted by the Portuguese Foundation for Science and Technology (FCT), University of Coimbra.
	Supervision: Sílvia Barbeiro and Verónica Quítalo.
2017–2018	**Honor**, *Title: Doctor Renato Pereira Coelho*, University of Coimbra.
2012–2013	**Research Scholarship**, *Title: New talents in mathematics*, Fund granted by the Foundation Calouste Gulbenkian, University of Coimbra.

Selected talks and lectures

2024 Jul	**9th European Congress of Mathematics – Satellite Conference**, University of Coimbra.
2024 Jul	**9th European Congress of Mathematics – Mini Symposium**, University of Seville.
2024 Feb	**Analysis and PDE seminar**, University of Florence.
2023 Dec	**Analysis and PDE seminar**, University of Padova.
2023 Nov	**Analysis and PDE seminar**, University of Coimbra.
2023 Jun	**Analysis and PDE seminar**, Alma Mater Studiorum - University of Bologna.
2022 Oct	**Analysis and PDE seminar**, Johns Hopkins University.
2022 Jul	**Three Nonlinear Days in Coimbra**, University of Coimbra.
2021 Dec	**Analysis and PDE seminar**, Center of Mathematics, University of Coimbra.
2021 Dec	**Analysis and PDE seminar**, The Abdus Salam International Centre for Theoretical Physics (ICTP).
2021 Feb	**Regularity theory for nonlinear elliptic partial differential equations**, University of Coimbra.

List of publications

1. **A degenerate fully nonlinear free transmission problem with variable exponents**, *Calc. Var. Partial Differ. Equ. 61, 29 (2022).*

2. **Fully nonlinear Hamilton-Jacobi equations of degenerate type**, *joint work with E. Pimentel, and J. M. Urbano, Nonlinear Anal. 227 (2023).*

3. **Gradient regularity for fully nonlinear equations with degenerate coefficients**, *joint work with Y. Sire, accepted in Annali di Matematica Pura ed Applicata.*

4. **Free boundary regularity for the inhomogeneous one-phase Stefan problem**, *joint work with F. Ferrari, N. Forcillo, and D. Giovagnoli, to be published.*

5. **Boundary estimates for doubly nonlinear parabolic equations**, *joint work with U. Gianazza, to be published.*

Teaching

| 2023 Nov – 2024 May | **Tutoring**, *University of Bologna*, Mathematics Moduli I/II, Business and Economics, taught by Prof. Gian Luca Tassinari. |

Languages

Portuguese, *native.*

English, *excellent speaking, reading and writing.*

Spanish, *good speaking and reading.*