

Curricular Summary

Name: Arthur Miranda do Espírito Santo

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1) Education/Training

Years	Duration (months)	Title or activity	Institution/Entity/Supervisor	Work title
2007-2010	48	Undergraduate degree	University of São Paulo – Institute of Mathematics and Statistics	Undergraduate Student
2011-2013	24	Graduate degree (MSc)	University of São Paulo – Institute of Mathematics and Statistics	Graduate Student
2013-2017	48	Graduate degree (DR, PhD)	University of Campinas – Institute of Mathematics, Statistics and Scientific Computing	Graduate Student
2017-2019	28	Post-Doctoral	University of Campinas – Center of Petroleum Studies	Researcher

2) Professional History.

I have been working since 2019 as a adjunct professor and researcher at the Institute of Mathematics and Statistics, Federal University of Rio Grande do Sul, and been a collaborator member of the Postgraduate Program in Applied Mathematics since 2023. I am a member of several commissions such as IME's Research Committee (vice coordinator since 2023), IME's Productivity Evaluation Committee (member since 2023), IME's Scientific Initiation Scholarships Evaluation Committee (member since 2023, coordinator since 2024), IF's Physics Degree Graduation Committee (member since 2023), Diversity and Inclusion Committee (member since 2024). I am also member of research societies, such as the INTERPORE Society and SBMAC (Brazilian Society of Computational and Applied Mathematics).

3) List of up to 5 of the most relevant scientific results

1. Abreu, E., Lambert, W., Perez, J., & **Santo, A.** (2017). A new finite volume approach for transport models and related applications with balancing source terms. *Mathematics and Computers in Simulation*, 137, 2-28. <http://dx.doi.org/10.1016/j.matcom.2016.12.012>
2. Abreu, E., Lambert, W., Pérez, J., & **Santo, A.** (2018). A weak asymptotic solution analysis for a Lagrangian–Eulerian scheme for scalar hyperbolic conservation laws. *Hyperbolic Problems: Theory, Numerics, Applications*, 223-230. <https://data.aims sciences.org/aimsmath-upload/cms/news/info/upload/6964fa9d-6e63-46af-8a2a-4fcd5cb63de6.pdf>
3. Abreu, E., Ferraz, P., **Espírito Santo, A.**, Pereira, F., Santos, L. G. C., & Sousa, F. S. (2023). Recursive formulation and parallel implementation of multiscale mixed methods. *Journal of Computational Physics*, 473, 111681. <http://dx.doi.org/10.1016/j.jcp.2022.111681>
4. Abreu, E., **Espírito Santo, A.**, Lambert, W., & Pérez, J. (2023). Convergence, bounded variation properties and Kruzhkov solution of a fully discrete Lagrangian–Eulerian scheme via weak asymptotic analysis for 1D hyperbolic problems. *Numerical Methods for Partial Differential Equations*, 39(3), 2400-2443. <http://dx.doi.org/10.1002/num.22972>
5. Abreu, E., **Espírito Santo, A.**, Lambert, W., & Pérez, J. (2024). A relaxation approach to modeling properties of hyperbolic–parabolic type models. *Communications in Nonlinear Science and Numerical Simulation*, 133, 107967. <http://dx.doi.org/10.1016/j.cnsns.2024.107967>

4) Research grants awarded by any agency or company to the researcher:

Project entitled “Theoretical and numerical approach to relaxation techniques for partial differential equations with hyperbolic-parabolic nature and discontinuous coefficients” with grant issued by Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul (Porto Alegre, BR), GRANT_NUMBER: 23/2551-0000772-0, from 2023-08 to 2025-08.

5) Academic quantitative indicators.

I have 5 publications in journals with selective editorial policy; 01 ongoing supervised master's dissertation; 95 citations total according to google Scholar since 2017.

6) Links to the author's ORCID webpage

6.a) ORCID profile: <https://orcid.org/0000-0002-2240-5506>

6.b) Web of Science profile: www.webofscience.com/wos/author/record/ISV-6498-2023

6.d) Google Scholar MyCitations profile: <https://scholar.google.com.br/citations?user=WqnCC8sAAAAJ>

7) Other information:

Over the last ten years, my professional career has been marked by significant achievements in numerical methods for simulating fluid dynamics in porous media and other mathematical modeling. During and after my doctoral studies, I engaged in international research, resulting in high-impact publications and important advances in the field. I collaborated with renowned institutions such as University of Texas in Dallas, Instituto Tecnico Metropolitano in Colombia and as well as national partnerships with UNICAMP, USP, LNCC and CEMADEN, to cite a few. I was in projects financed by Petrobras involving high-performance computer simulation of giant reservoirs. These approved projects and collaborations have strengthened my career and contributed significantly to the scientific community and industry. My work has clear social impacts, especially in the sustainable management of water and energy resources. The simulations developed can improve efficiency in the extraction of natural resources and reservoir management, promoting environmental sustainability. I am an active member of the INTERPORE Society and the Brazilian Society of Applied and Computational Mathematics (SBMAC), regularly participating in scientific events and international conferences. These activities keep me up to date with recent advances and enable new collaborations, which are fundamental to the continued progress of applied science.

In summary, my international research experience and collaboration networks have been crucial for the development of innovative numerical methods, with significant social impacts and contributions to more sustainable management of natural resources.

Note: In december 2021 I adopted two children, a 9-year-old and a 12-year-old by the time. In order to the adoption and adaptation process proceed smoothly, I made use of the adoption leave that the university offered, taking a 6-month leave of absence. My license was January 2022 to June 2022.