

Danilo Gregorin Afonso

M.Sc.

Languages

Português

English

Italiano

Interests

Nonlinear Analysis / Partial Differential Equations / Calculus of Variations / Overdetermined problems / Shape Optimization / Philosophy of Mathematics

Education

- Since 2020 Ph.D. candidate in Mathematics Sapienza Università di Roma
Advisor: Prof. Dr. Filomena Pacella
Grant: Sapienza Università di Roma
- 2020 M.Sc. - Mathematics Universidade de São Paulo
Dissertation: Normalized solutions for a Schrödinger-Bopp-Podolsky system
Advisor: Prof. Dr. Gaetano Siciliano
Grant: CNPq
- 2018 Naval Engineer Universidade de São Paulo
Dissertation: Dynamics of a moored ship in a harbor
Advisor: Prof. Dr. Celso P. Pesce
Co-advisor: Prof. Dr. Alexandre N. Simos

Research Projects

- Since 2020 Mixed partially overdetermined problems
Sapienza Università di Roma
PhD research project
Advisor: Prof. Dr. Filomena Pacella
Key-words: overdetermined problems, Cheeger problem, shape optimization
- 2018 - 2020 A Schrödinger-Bopp-Podolsky system with Neumann conditions
Universidade de São Paulo
Master's degree research project
Advisor: Prof. Dr. Gaetano Siciliano
Key-words: Calculus of Variations, minimax methods, Krasnoselskii Genus, bi-Laplacian operator, Lagrange multipliers
- 2017 Dynamics and stability of a moored ship in a harbor: mathematical modeling of fluid-structure interaction phenomena and numerical simulations
Laboratory of Offshore Mechanics - Universidade de São Paulo
Capstone design
Advisor: Prof. Dr. Celso P. Pesce
Key-words: stability, galloping, bifurcation
- 2017 Introduction to Functional Analysis and Sobolev Spaces, with views towards applications in differential equations
Universidade de São Paulo
Undergraduate Research Project
Advisor: Prof. Dr. Gláucio Terra
Key-words: Functional Analysis, Sobolev spaces, variational methods
- 2015 Variational principles of classical mechanics
Laboratory of Offshore Mechanics - Universidade de São Paulo
Undergraduate Research Project
Advisor: Dr. Leonardo Casetta
Key-words: Calculus of Variations, Hamilton's Principle, lagrangian mechanics

Publications

Afonso, D. G., Iacopetti, A. and Pacella, F. (2022). *Overdetermined problems and relative Cheeger sets in unbounded domains*. *arXiv:2203.08940[math.AP]*

Afonso, D. G. and Siciliano, G. (2021). *Normalized solutions to a Schrödinger-Bopp-Podolsky system under Neumann boundary conditions*. *Communications in Contemporary Mathematics*. doi:10.1142/S0219199721501005

Bosco, D. N. G. et al (2020). *Intercultural Science-Art Project "Magritte Meets Science"*. *arXiv:2009.14084v1[math.HO]*

Afonso, D. G. (2020). *Normalized solutions for a Schrödinger-Bopp-Podolsky system*. Master's dissertation, Instituto de Matemática e Estatística, Universidade de São Paulo, São Paulo. doi:10.11606/D.45.2020.tde-22042020-123659

Other writings

- 2021 An Introduction to the Moving Plane Method
Study notes
- 2020 A note on the Brezis-Kato regularity argument
Study notes
- 2020 A Brief Introduction to Differential Calculus in Banach Spaces
Lecture notes
- 2019 Notes on Real Analytic Functions and Analytic Hypoelliptic Operators
Study notes
- 2019 Notas de aula - Teoria de Distribuições e Análise de Fourier
Lecture notes
- 2019 Critical Points and Topology: a beautiful love affair
Study notes

Teaching

- 2020 Instructor, MAT 5709 - Cálculo em espaços de Banach
Universidade de São Paulo
- 2019 Teaching Assistant, MAT 0147 - Cálculo Diferencial e Integral II para Economia
Universidade de São Paulo
Education Improvement Program Internship
Supervisor: Prof. Dr. Gaetano Siciliano
- 2019 Teaching Assistant, MAP 0413 - Equações de Derivadas Parciais
Universidade de São Paulo
Education Improvement Program Internship
Supervisor: Prof. Dr. Orlando Lopes

Conferences and seminars

- 2022 Seminario de EDP PUC-Rio
Talk: *Serrin meets Cheeger*
- 2022 Summer School in Analysis and PDEs Università degli studi della Campania Luigi Vanvitelli
Poster presentation: *Serrin meets Cheeger*
- 2022 Shape Optimization, Related Topics and Applications Roscoff
Poster presentation: *Overdetermined problems in unbounded domain - first steps*
- 2022 I Encontro Paulista de Pós-Graduação em Matemáticas online
Talk: *A Schrödinger-Bopp-Podolsky system with Neumann conditions*
- 2022 Seminario $P(n)$ Sapienza Università di Roma
Talk: *A Schrödinger-Bopp-Podolsky system with Neumann conditions*
- 2021 Encontro de (ex)alunos IME-USP online
Talk: *An overview of variational methods, and how a particle talks to itself*
- 2020 ICMC Summer Meeting on Differential Equations ICMC - USP
Poster presentation: *Normalized solutions for a Schrödinger-Bopp-Podolsky system*
- 2019 7th Heidelberg Laureate Forum Heidelberg
Artwork presentation: *Resolvendo sem resolver*
- 2019 32° Colóquio Brasileiro de Matemática IMPA
Poster presentation: *Critical Points and Topology: a beautiful love affair*
- 2019 Latin America Strategy Forum for Research Infrastructure ICTP - SAIFR
Participant

Voluteering

- 2020 POLI-USP Mentorship Program
- 2018 International Mathematical Union General Assembly

