Fernando Costa Jr.

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Professional situation

Since 2024 **Associate professor**,
Mathematics Department of the Federal University of Paraíba, Paraíba, Brazil

Since 2023 **FNRS Postdoctoral researcher**
Mathematics Departement of the University of Mons, Mons, Belgium

2021 – 2023 **Temporary assistant professor**
Mathematics Departement of the Avignon University, Avignon, France

Education

2018 - 2021 **Ph.D in Mathematics** (Advisor: Frédéric Bayart)
Clermont Auvergne University, Clermont-Ferrand, France
Title: Hypercyclic vectors and algebras

2016 - 2018 **M.Sc. in Mathematics** (Advisor: Daniel Pellegrino)
Federal University of Paraíba, Paraíba, Brazil
Title: A geometria de $\mathcal{L}(^m\mathbb{R}^n)$ e aplicações

2012 - 2015 **Lic. in Mathematics** (Advisor: Ornan Oliveira)
Federal University of Alagoas, Campus Arapiraca, Brazil
Title: Teorias de Integração

Scientific responsibilities

Since 2024 **Member of the Mathematics Graduate Program at my university**

2023 - 2024 **Coordinator of the PEPS project "Linear dynamics of shifts on trees"**

2021 - 2023 **Member of the Avignon Mathematics Laboratory's council**

2018 - 2022 **Member of the ANR project "Frontiers of Operator Theory"**

Since 2023 **Reviewer for Advances In Operator Theory and MathSciNet**

Visits

- Visiting researcher, February 2024, Universitat Politècnica, València, Spain.
- Visiting researcher, June 2023, École Nationale Supérieure d'Ingénieurs de Bretagne Sud, Vannes, France.

Research interests

My research focuses on problems and objects stemming from functional analysis, operator theory, geometric measure theory, topological dynamics and the geometric theory of Hilbert, Banach, or Fréchet spaces. My main research topic is that of Linear Dynamics, in the broad sense (hypercyclicity, frequent hypercyclicity, common hypercyclicicty, hypercyclic subspaces, hypercyclic algebras, recurrence, universality). I'm also interested in more general notions of spaceability and on optimization problems around parametrizations of fractal sets and around some functional inequalities (Bohnenblust-Hille, Grothendieck, KSZ).

Publications

2024 **Self-similar fractals and common hypercyclicity**
Journal of Functional Analysis, to appear

2022 **Disjoint and common hypercyclic algebras**
Israel Journal of Mathematics
(with F. Bayart and D. Papathanasiou)

2022 **Common hypercyclic vectors and dimension of the parameter set**
Indiana University Mathematics Journal
(with F. Bayart and Q. Menet)

2022 **Common hypercyclic algebras for families of products of backward shifts**
Journal of Mathematical Analysis and Applications

2021 **Baire theorem and hypercyclic algebras**
Advances in Mathematics
(with F. Bayart and D. Papathanasiou)

2018 **The optimal multilinear Bohnenblust-Hille constants: a computational solution for the real case**
Numerical Functional Analysis and Optimization

Talks and short courses

International conferences

(Apr. 2024) **Hypercyclic algebras for shifts on trees**
New horizons in Linear dynamics
Oberwolfach research institute for mathematics, Germany

(June 2023) **Fractals and common hypercyclicity**
Advanced Courses in Operator Theory and Complex Analysis 2023
Aristotle University of Thessaloniki, Greece

(June 2023) **Self-similar fractals and common hypercyclicity**
45th Summer Symposium in Real Analysis
Università degli Studi della Campania "L. Vanvitelli", Caserta, Italy

(June 2023) **Self-similar fractals and common hypercyclicity**
Annual meetings of the FNRS group - Functional Analysis
Université de Mons, Mons, Belgium

(Dec. 2021) **Hypercyclic algebras: what we do and do not know**
Frontier of Operator Theory
CIRM, Marseille, France (Poster)

(June 2019) **Common hypercyclic algebras**
Advanced Courses in Operator Theory and Complex Analysis 2019
Université Gustave Eiffel, Champs-sur-Marne, France

Mathematical seminars

(Oct. 2023) **Introduction aux algèbres hypercycliques**
Algebra, Dynamics and Arithmetics Seminar, LMPA
Université du Littoral Côte d'Opale, Calais, France

(Oct. 2023) **Hypercyclicité simultannée en 2D**
Functional Analysis Seminar, Paul Painlévé Mathematics Laboratory
Université de Lille, Lille, France

(Sep. 2022) **Common hypercyclicity in several dimensions**
Analysis and Geometry Seminar, I2M
Aix-Marseille Université, Marseille, France

(June 2022) **The origins of Linear Dynamics**
Rauzy Seminar (FRUMAM), I2M
Aix-Marseille Université, Marseille, France

(Nov. 2021) **À la recherche d'une algèbre hypercyclique fermée**
Functional Analysis Seminar, Paul Painlévé Mathematics Laboratory
Université de Lille, Lille, France

(Nov. 2021) **Vecteurs et algèbres hypercycliques**
Dynamical Systems and Geometry Seminar, L.M.A.
Avignon Université, Avignon, France

(June 2021) **Convolution operators supporting hypercyclic algebras**
Functional Analysis Seminar, Paul Painlévé Mathematics Laboratory
Université de Lille, Lille, France

(Apr. 2019) **Une exposition de l'hypercyclicité**
Doctorate Students Seminar, LMBP
Université Clermont-Auvergne, Clermont-Ferrand, France

Mini-courses

(Aug. 2015) **Sistemas axiomáticos formais e aplicações,**
II Encontro de Matemática do Agreste Alagoano
Federal University of Alagoas, Alagoas, Brazil

(Aug. 2015) **Teoria dos números e a lei de reciprocidade quadrática**
II Colóquio de Matemática da Região Norte (SBM)
Federal University of Manaus, Manaus, Brazil

Popular science presentations

(June 2019) **Le travail d'un mathématicien, comment se passe-t-il ?**
Centre de Français Langue Étrangère et Universitaire en Région Auvergne
Université Clermont-Auvergne, Clermont-Ferrand, France

Student Supervision

Master's Students.

2024 – Mateus Vinicius Santos de Azevedo. Title: to be defined.

Languages

English (fluent), French (fluent), Spanish (debutant), Portuguese (native)

Hobbies

Reading, playing electric guitar, acoustic guitar, cavaco/banjo and batucada, hiking, running, climbing and swimming. I also like to play board and electronic games and am a big fan of the Lovecraftian universe and of the Souls-like games genre.