

# Fernando V. Costa Jr.

## Curriculum Vitae

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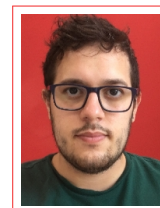
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Ph.D in Mathematics

ATER at LMA, Avignon, France

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### About me

Formed with focus on Analysis, I have a particular sympathy for Algebra, Number Theory and Logic. In my undergraduate project, I studied a number of integration theories and their interrelation with the aim to investigate the evolution process over time, from Newton and Cauchy to Lebesgue, Henstock-Kurzweil and its generalizations. In my Master's project I studied the extreme points of the closed unit ball in the space of multilinear forms and its applications to the inequalities of Bohnenblust-Hille and Grothendieck. After a successful implementation in Mathematica of a recent algorithm for the calculation of these points, we have found some unknown kinds of extreme points which served to corroborate a conjecture on the optimal constants of these inequalities. These discoveries were published as a short paper. During my doctoral studies, I've joined the exciting world of Linear Dynamics and worked on many topics related to hypercyclicity.

### Education

2018 **Ph.D. in Mathematics**, *Université Clermont Auvergne*.

- à 2021
- Title: « Vecteurs et algèbres hypercycliques ».
  - Advisor: Frédéric Bayart.

2016 **M.Sc in Mathematics**, *Universidade Federal da Paraíba*.

- à 2018
- Title: « A geometria de  $L(mRn)$  e aplicações ».
  - Advisor: Daniel Pellegrino.

2012 **Lic. in Mathematics**, *Universidade Federal de Alagoas*.

- à 2015
- Title: « Teorias de Integração ».
  - Advisor: Ornan Oliveira.

### Languages

**English** (fluent)

**French** (fluent)

**Portuguese** (native speaker)

### Teaching

2021-present **ATER** at *Université d'Avignon*, member of the *Dynamical Systems and Geometry group of the Laboratoire de Mathématiques d'Avignon*. Currently teaching: GENERAL ALGEBRA 1 for last year undergraduate students of Mathematics; ANALYSIS 1 and 2, ALGEBRA 2 and METHODOLOGY for first year undergrad. students in Mathematics/Physics/Informatics; Math II for first year undergrad students in Physics/ Chemistry; MATHEMATICS FOR PRIMARY EDUCATION for last year undergrad. students of Humanities.

- 2019-2021 **Teaching assistant** of the course COMMON CORE IN MATHEMATICS during the first semester and of the course MATHEMATICS APPLIED TO THE OTHER SCIENCES during the second semester at Clermont-Auvergne University in France. I integrated the same teaching program for two years, 64 hours per year.
- 2016 **Monitor** of the course ALGEBRAIC STRUCTURES I for third year students of mathematics at the Federal University of Alagoas in Brazil.
- 2015 **Monitor** of the course INTRODUCTION TO NUMBER THEORY for second year students of mathematics at the Federal University of Alagoas in Brazil.
- 2014 **Monitor** of the courses ANALYTICAL GEOMETRY and LINEAR ALGEBRA I for first and second year students in mathematics at the Federal University of Alagoas in Brazil.
- 2013-2015 **Internships** in public schools of the city I lived in Brazil (two months per year as the teacher) during the last three years of my undergraduate course.

## Publications

- In preparation "Fractal geometry and common hypercyclicity". In collaboration with S. Charpentier.
- In preparation "Hypercyclic algebras for backward shifts on directed trees". In collaboration with A. Abbar.
- [1] "Common hypercyclic algebras for families of products of backward shifts." Journal of Mathematical Analysis and Applications 507.1 (2022): 125768.
- [2] "Common hypercyclic vectors and dimension of the parameter set." Indiana University Mathematics Journal 71.4 (2022): 1763-1795. In collaboration with F. Bayart and Q. Menet.
- [3] "Disjoint and common hypercyclic algebras." Israel Journal of Mathematics 250.1 (2022): 211-264. In collaboration with F. Bayart and D. Papathanasiou.
- [4] Bayart, Frédéric, Fernando Costa Júnior, and Dimitris Papathanasiou. "Baire theorem and hypercyclic algebras." Advances in Mathematics 376 (2021): 107419. In collaboration with F. Bayart and D. Papathanasiou.
- [5] "The optimal multilinear Bohnenblust–Hille constants: a computational solution for the real case." Numerical Functional Analysis and Optimization 39.15 (2018): 1656-1668.

## Talks

- Sep. 2022 "Common hypercyclicity in several dimensions." In: Analysis and Geometry Seminar, I2M, Marseille, France.
- June 2022 "The origins of Linear Dynamics." In: Rauzy Seminar (FRUMAM), I2M, Marseille, France.
- Dec. 2021 "Hypercyclic algebras: what we do and do not know" In: Frontiers of Operator Theory, CIRM, Marseille, France (poster).
- Nov. 2021 "In the search of a closed hypercyclic algebra" In: Seminar of Lille's Fonctional Analysis Group, Lille, France.
- Nov. 2021 "In the search of a closed hypercyclic algebra." In: Seminar of Lille's Fonctional Analysis Group, Lille, France.
- Nov. 2021 "Hypercyclic vectors and algebras." In: Dynamical Systems and Geometry group's seminar, Avignon, France.
- June 2021 "Hypercyclic algebras for convolution operators." In: Seminar of Lille's Fonctional Analysis Group, Lille, France (online talk).
- May 2021 Thesis defense, "Vecteurs et algèbres hypercycliques." In: Laboratoire de Mathématiques Blaise Pascal, Aubière, France.
- Sep. 2019 "Disjoint hypercyclic algebras." In: ANR Front Workshop, Clermont-Ferrand.

- June 2019 "Common hypercyclic algebras." In: Advanced Courses in Operators Theory and Complex Analysis, Paris.
- May 2019 "L'hypercyclicité et la théorie du Chaos." In: Séminaire des doctorants, Clermont-Ferrand.