Carllos Eduardo Holanda

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Personal

Name: Carllos Eduardo Alves de Holanda.

Birthplace: Maceió, Alagoas, Brazil.

Education

PhD. in Mathematics (with distinction) at Instituto Superior Técnico, University of Lisbon, 2018-2022, under the supervision of Luis Barreira.

M. Sc. in Mathematics at Federal University of Alagoas, 2016-2017, under the supervision of Krerley Oliveira.

B. Sc. in Chemical Engineering at Federal University of Alagoas, 2010-2015.

Professional Experience

Postdoctoral researcher at College of Science, Departament of Mathematics, Shantou University, Shantou, China, 2023-2025.

Visiting researcher - School of Mathematical Sciences, Fudan University, Shanghai, China, from 03-12-2023 to 13-12-2023.

Postdoctoral researcher at Institute of Mathematics and Computer Sciences (ICMC), University of São Paulo, São Paulo, Brazil, 2022-2023.

Member of the Laboratory of Statistics and Data Science at Federal University of Alagoas, Maceió, Brazil, 2022-2023.

Review services: refereed for Discrete and Continuous Dynamical Systems (Series A), Nonlinear Analysis, Journal of Difference Equations and Applications and reviewer for Mathematical Reviews (AMS).

Visiting student - Summer School at Institute for Pure and Applied Mathematics (IMPA), Rio de Janeiro, Brazil, 2017.

Visiting student - Colorado State University (CSU), Science without Borders Scholarship, Fort Collins, United States of America, 2014-2015.

Visiting student - Summer School at Institute for Pure and Applied Mathematics (IMPA), Rio de Janeiro, Brazil, 2014.

Scientific initiation scholarship in Mathematics at Federal University of Alagoas, Maceió, Brazil. Project: Numbers and Ergodic Theory, under the direction of Krerley Oliveira, 2013.

Teaching Assistant of the course Trasport Phenomena 2 (Chemical Engineering) at Federal University of Alagoas, Maceió, Brazil, 2013.

Scientific initiation scholarship in Mathematics at Federal University of Alagoas, Maceió, Brazil. Project: Ergodic Theory of Number Expansions, under the direction of Krerley Oliveira, 2012.

Teaching Assistant of the course Physics 2 at Federal University of Alagoas, Maceió, Brazil, 2012.

Talks and Participation in Events

Additive and asymptotically additive sequences of potentials are physically equivalent, presented in the Dynamical Systems Workshop at Shantou University, Shantou, China, 24-01-2023.

Some relations between additive and asymptotically additive sequences of potentials with respect to maps and flows, presented in the Dynamical Systems Seminar at Fudan University, Shanghai, China, 07-12-2023.

Some relations between additive and nonadditive sequences of potentials I and II, presented in the Dynamical Systems Seminar at Shantou University, Shantou, China, 23-11-2023 and 30-11-2-2023.

Some relations between additive and nonadditive sequences of potentials, presented in the Zoominar in Dynamical Systems at University of Porto, Portugal, held online on 31-03-2023.

Nonlinear thermodynamic formalism, presented in the Dynamical Systems Seminar at Federal University of Alagoas, Maceió, Brazil, 06-05-2022.

Nonadditive thermodynamic formalism and multifractal analysis for flows, presented in the Lismath Seminar, Instituto Superior Técnico, University of Lisbon, Portugal, held online on 21-04-2022.

Attendance to the Encontro Nacional da Sociedade Portuguesa de Matemática 2021 (ENSPM2021), Portugal, held online from 12-07-2021 to 16-07-2021.

Presentation of the work *Multifractal analysis for flows* in the Lisbon Young Mathematicians Conference, Portugal, held online on 24-4-2021.

Presentation of the work *Nonadditive thermodynamic formalism and multifractal analysis for flows* in Matfest, Federal University of Alagoas, Brazil, held online on 04-12-2020.

Attendance to the workshop Thermodynamical Formalism, Ergodic Theory and Geometry at University of Warwick, Coventry, United Kingdom, from 22-07-2019 to 26-07-2019.

Applications of ergodic theory to number theory, presented in the Lismath Seminar, Instituto Superior Técnico, University of Lisbon, Lisbon, Portugal, 10-10-2018.

Van der Waerden's theorem via Birkhoff's multiple recurrence, presented in the Dynamical Systems Seminar at Federal University of Alagoas, Maceió, Brazil, 15-12-2016.

Presentation of the work *Perron-Frobenius Theorem with Hyperbolic Metric and Applications in Cycling Strategy* in the Annual Academic Congress at Federal University of Alagoas, Maceió, Brazil, 2013.

Presentation of the work *Numbers and Ergodic Theory* in the Annual Academic Congress at Federal University of Alagoas, Maceió, Brazil, 2012.

Publications and preprints

1. *A Livšic-type theorem and some regularity properties for nonadditive sequences of potentials*, preprint arXiv: 2307.11322, submitted (2023).
   (C. E. Holanda and E. Santana)

2. *Asymptotically additive families of functions and a physical equivalence problem for flows*, preprint arXiv: 2210.05926, submitted (2022).
(C. E. Holanda).

3. *Nonlinear thermodynamic formalism for flows*, Dynamical Systems (2022).
(L. Barreira and C. E. Holanda).

4. *Higher-dimensional nonlinear thermodynamic formalism*, Journal of Statistical Physics **187**, 18 (2022).
(L. Barreira and C. E. Holanda).

5. *Dimension spectra for flows: future and past*, Nonlinear Analysis: Real World Applications **65** (2022), 103497.
(L. Barreira and C. E. Holanda).

6. *Almost additive multifractal analysis for flows*, Nonlinearity **34** (2021), 4283-4314.
(L. Barreira and C. E. Holanda).

7. *Hyperbolicity of delay equations via cocycles*, Journal of Difference Equations and Applications (2021), 1-24.
(L. Barreira, C. E. Holanda and C. Valls).

8. *Equilibrium and Gibbs measures for flows*, Pure and Applied Functional Analysis **6** (2021).
(L. Barreira and C. E. Holanda).

9. *Nonadditive topological pressure for flows*, Nonlinearity **33** (2020), 3370-3394.
(L. Barreira and C. E. Holanda).

Ongoing projects

1. *Relations between additive and nonadditive sequences and families of potentials*.

2. *Nonlinear phenomena: thermodynamics, multifractal analysis and ergodic optimization for maps and flows*.

3. *Symbolic dynamics and word embeddings: measuring distances between orbits*.

Awards and titles

1st place on the Chemical Engineering entrance examination for Federal University of Alagoas, 2010.

Languages

Portuguese: native speaker.

English: proficient.