Rafael Menezes

M.Sc. Physics

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About me

I am a Scientist with a Physics-backed formation and interest in ecological and biological questions.
Above all, I am interested in unravelling the complexities of nature through interdisciplinary reasoning, mathematical and computational models

Referees

Prof. Dr. Flora Bacelar
Federal University of Bahia
Bahia, Brazil
Contact: fbacelar@ufba.br

Prof. Dr. Suani Pinho
Federal University of Bahia
Bahia, Brazil
Contact: suani@ufba.br

Prof. Dr. Jan Hendriks
Radboud University Nijmegen
Nijmegen, Netherlands
Contact: a.j.hendriks@science.ru.nl

Skills

Dynamical Systems (Modeling)
Community Ecology
Statistical Analysis
Monte Carlo
Linear Algebra
Calculus
Python, Cython, C++
Linux, LaTeX

Education

2018-2020 M.Sc. in Physics — Federal University of Bahia (UFBA)

2012-2017 B.Sc. in Physics — Federal University of Bahia (UFBA)

Publications

2020 Mascarenhas, R., Ruziska, ... dos Santos, R. M., ... & Meirelles, P.M. (2020). Integrating Computational Methods to Investigate the Macroecology of Microbiomes. Frontiers in Genetics, 10, 1344.

2019 dos Santos, R. M., Hilbers, J. P., & Hendriks, A. J. In response to "An allometric tragedy of the commons: Response to the article 'Evaluation of models capacity to predict size spectra parameters in ecosystems under stress'". Ecological Indicators, 96, 747-749.

2017 dos Santos, R. M., Hilbers, J. P., & Hendriks, A. J. (2017). Evaluation of models capacity to predict size spectra parameters in ecosystems under stress. Ecological Indicators, 79, 114-121.

Projects

2018-now Viral Infections Rule Zooxanthellae Population Dynamics
Leading Author: MSc. Amanda Campos
Supervisor: Prof. Dr. Pedro Meirelles
Co-supervisor: Prof. Dr. Flora Bacelar

2018-2019 Impacts of climate change on microbiome, carbon fixation and water quality in aquifers — Serrapilheira Institute
Short description: co-occurrence networks and dynamical system.
Coordinator: Prof. Dr. Pedro Meirelles

2017-now Exploring Ecological Interactions Using the Generalized Lotka-Volterra Model: Coexistence and Resilience of Populations — MSc
Supervisor: Prof. Dr. Suani Pinho
Co-supervisor: Prof. Dr. Flora Bacelar and Prof. Dr. Pedro Meirelles

2016-now Mathematical Modeling of Leishmaniasis - Control Strategies: Leading Author
Supervisor: Prof. Dr. Suani Pinho and Prof. Dr. Flora Bacelar.

2016-2017 Dynamical Models of Vector-borne Diseases — FAPESB
Understanding Epidemics Through Mathematical Modeling: Zika, Dengue and Leishmaniasis.
Supervisor: Prof. Dr. Suani Pinho and Prof. Dr. Flora Bacelar.

2015 Trends expected in stressed ecosystems — Radboud University Nijmegen
Effects of ecological stressors upon the parameters describing the Individual Size-Density allometry.
Supervisor: Prof. Dr. Jan Hendriks

2013-2014 Maxwell Equations at Minkowsky Space — FAPESB
Supervisor: Prof. Dr. Alexandre Leite Gadelha

2012-2013 Galilean Relativivty: Inertial and Non-Inertial Systems — CNPq
Supervisor: Prof. Dr. Alexandre Leite Gadelha

Affiliations

2018-now Interdisciplinary and Transdisciplinary Studies in Ecology and Evolution - INCT - Integrative Project in Mathematical, computational and statistical modeling applied to ecology and evolution.
Coordinator: Charbel Nino El-Hani

2015-now Group of Statistical Physics and Complex Systems (FESC) - UFBA
Coordinator: Roberto Andrade

Grants and Awards

2017-2019	Exploring Ecological Interactions Using the Generalized Lotka-Volterra Model Scholarship Grant	CAPES
2017	Honorable Mention of the Scientific and Technological Initiation of UFBA 2016/2017, in the project Dynamic models of vector-borne diseases in the Student Seminars, Federal University of Bahia.	UFBA
2016-2017	Dynamical Models of Vector-borne Diseases Scholarship Grant	FAPESB
2014-2015	Exchange Student - Radboud University, Nijmegen Science Without Borders Exchange Program Grant	CAPES
2013-2014	Maxwell Equations at Minkowsky Space Scholarship Grant	FAPESB
2012-2013	Galilean Relativivty: Inertial and Non-Inertial Systems Scholarship Grant	CNPq
2010	Silver Medal at the Brazilian Physics Olympiad, State Coordination of the Brazilian Physics Olympics.	SBF - BA

Presentations

2020	School of Community Ecology: from principles to patterns Community Interactions: Integrating dynamical systems and network science	Student talk
2017	Congress of Research, Teaching and Outreaching at UFBA Understanding Epidemics Through Mathematical Modeling: Zika, Dengue and Leishmaniasis	Congress
2017	I Scientific Meeting on Modeling in Ecology and Evolution (ECMEE), Brazil Mathematical Modeling of Leishmaniasis: Control Through Collar with Insecticide	Meeting
2017	II National Meeting of Statistical Physics (ENFE), Brazil Mathematical Modeling of Leishmaniasis: Control Strategies	Conference
2015	Europhysics Conference of International Research Group on Physics Teaching Understanding Entropy: translating the technical into the intuitive	Conference
2015	International Conference of Physics Students (ICPS) Darwin in Silico: a simple model of evolution	Conference
2014	International Conference of Physics Students (ICPS) Philosophy of Time and a Proposal of a Physical Argument for it's Non Reversibility	Conference
2013	XXXII Student Research Seminar Galilean Relativity: Inertial, non-inertial systems and their relations	Seminar

Tutoring

2020	IX Southern Summer School of Mathematical Biology Tutoring groups on building and analysing mathematical models in biological systems. Tutored projects were: Microbial Matriarchy and Tasty Parasites. Organizers: Marcus Aguiar, Marcel Clerc, Roberto Kraenkel, Paulo Inácio Prado	Summer School
2019	VIII Southern Summer School of Mathematical Biology Tutoring groups on building and analysing mathematical models in biological systems. Tutored project were: Fear of the Crab and Bacteria Fight Dirty. Organizers: Marcus Aguiar, Marcel Clerc, Roberto Kraenkel, Paulo Inácio Prado	Summer School