

Emmanuel T. Fleurantin

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AREAS OF INTEREST

Dynamical systems, computational mathematics (numerical methods for boundary value problems, computation of smooth invariant manifolds), computer assisted proofs in dynamics, mathematical biology.

TEACHING AND MENTORSHIP

- Graduate Teaching Assistant* June 2015- Present
Florida Atlantic University, Boca Raton, FL
- Duties: teaching, grading, tutoring for the department of Mathematical Sciences.
 - Courses taught: College Algebra, Methods of Calculus, Trigonometry, Introductory Statistics, Precalculus Algebra, Calculus I, Calculus III (TA), Engineering Math I (TA), Matrix Theory (TA).
- Undergraduate Mentor* August 2016 – July 2018
Florida Atlantic University, Boca Raton, FL
- Participated in The Mentoring Project - mentor for 3 undergraduate students (Fall-2016, Spring 2017, Fall 2017, Spring 2018, Summer 2018).
- Adjunct Faculty/ School of Science, Technology and Engineering Management* August 2016-August 2017
Saint Thomas University, Miami, FL
- Courses taught: Introduction to Computer Science, Microcomputer Applications.
- Instructor* April 2014 – October 2015
International Education Corporation, Miami, FL

EDUCATION AND CERTIFICATES

- PhD in Mathematics* May 2022 (Expected)
Florida Atlantic University, Boca Raton, FL
- Advisors: Dr. Jason Mireles-James, Dr. Vincent Naudot.
- Masters of Science in Mathematics (thesis option)* August 2015-May 2018
Florida Atlantic University, Boca Raton, FL
- Advisor: Dr. Jason Mireles-James. Report title: On the study of the Aizawa system. Successful defense March 29, 2018.
- Graduate Certificate in Cyber Security* August 2016-May 2018
Florida Atlantic University, Boca Raton, FL
- Masters of Science in Mathematics Education* August 2008-August 2010
Nova Southeastern University, Davie, FL
- Bachelors of Arts in Economics* August 2002-May 2007
University of South Florida, Tampa, FL

SCHOLARLY ACTIVITIES:

Journal Referee, Communications in Nonlinear Science and Numerical Simulation (CNSNS), International Journal of Bifurcation and Chaos (IJBC).
President, Society of Industrial and Applied Mathematics local student chapter (2020-present).

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS:

College of Science Graduate Association (CSGA), American Mathematical Society (AMS), Society for Industrial and Applied Mathematics (SIAM).

COMPUTER SKILLS:

I have experience in programming with MATLAB, Python, C++, LaTeX.

LANGUAGES:

I can communicate in English, French, and Creole effectively.

WORKSHOPS, SUMMER SCHOOLS AND RESEARCH MEETINGS ATTENDED:

- Visit to Université Lille 1, Département Mathématiques Cité Scientifique, Villeneuve-d'Ascq, France, December 2018.
- NSF-CBMS Regional Research Conference: Fitting Smooth Functions to Data, hosted at the University of Texas at Austin, August 2019.
- 39th Southeastern-Atlantic Regional Conference on Differential Equations (SEARCDE), hosted at ERAU-Daytona Beach, October 2019.
- 45th Annual New York Regional Graduate Mathematics Conference (Virtual), hosted at Syracuse University, March 2020.
- Summer School on Dynamics, Data and the COVID 19 Pandemic (Virtual), hosted at the American Institute of Mathematics (AIM), June-July 2020.
- Mathematical Models for Prediction and Control of Epidemics (Virtual Workshop), hosted by the Mathematical Sciences Research Institute (MSRI), August 2020.
- 2nd SIAM Knights Conference (Virtual), hosted by the SIAM student chapter at University of Central Florida (UCF), December 2020.
- AMS Spring Southeastern Sectional Meeting (Virtual), formerly at Georgia Institute of Technology, March 2021.
- SIAM Conference on Applications of Dynamical Systems (Virtual), formerly in Portland, Oregon, May 2021.

RESEARCH:

Preprints:

- “Frontline Communities and SARS-CoV-2 - Multi-population Modeling with an Assessment of Disparity by Race/Ethnicity Using Ensemble Data Assimilation,” with C. Sampson, D. Maes, J. Bennett, T. Fernandes Nunez, S. Marx, and G. Evensen, submitted.

Publications:

- “A mathematical model based on IC50 curves to predict tumor responses to drugs,” with Catherine I. Berrouet, Jacob Nadulek, Sunil Giri, Katarzyna A. Rejniak, and Necibe Tuncer. FAU Undergraduate Research Journal, Vol 7, pp. 18–32 (2018).
- “Resonant Tori, Transport Barriers, and Chaos in a Vector Field with a Neimark-Sacker Bifurcation,” with J.D. Mireles-James. Communications in Nonlinear Science and Numerical Simulation, Volume 85, 2020, 105226, ISSN 1007-5704.
- “Computer Assisted Proofs of Two-Dimensional Attracting Invariant Tori for ODEs,” with Maciej J. Capinski and J.D. Mireles-James. Discrete and Continuous Dynamical Systems-A, Vol. 40, No. 12, pp.6681-6707 (2020).

Selected Presentations, Talks and Posters:

- FAU Masters Thesis Defense – On the Study of the Aizawa System, March 2018.
- Graduate Student Seminar at FAU – Stable/Unstable Manifold Bubbles, Resonant Tori, and Torus-Chaos in the Aizawa System, January 2019.
- Florida Atlantic University Graduate and Professional Student Association Research Day – Transport Barriers, Resonance Tori, and Torus-Chaos in a Vector Field with a Neimark-Sacker Bifurcation (poster), April 2019.

- 45th Annual New York State Regional Graduate Mathematics Conference – Resonant Tori in a Vector Field with a Neimark-Sacker Bifurcation, March 2020.
- Summer School on Dynamics, Data and the COVID 19 Pandemic – Interpopulation Mixing with Applications in a Two-Population SEIR Model: Using Age Stratification as a Proxy for Racial Disparity in COVID-19 Spread Within a Region (with Nonlinear Ensemble Data Assimilation), July 2020.
- CRM CAMP in Nonlinear Analysis – Computer-assisted proofs of two-dimensional attracting invariant tori for ODEs, December 2020.
- 2nd SIAM Knights Conference (UCF) – High order approximation of the center manifold for the Henon-Heiles system, December 2020.
- AMS Spring Southeastern Sectional Meeting – Computing Lyapunov Subcenter Manifolds (LSMs) for Hamiltonian Systems, March 2021.
- Florida Atlantic University Graduate and Professional Student Association Research Day – Multi-population Modeling with an Assessment of Disparity by Race/ Ethnicity Using Ensemble Data Assimilation (poster), April 2021.

References available upon request