





# FIGUEROA Susely

Mathematics  
Researcher/Engineering

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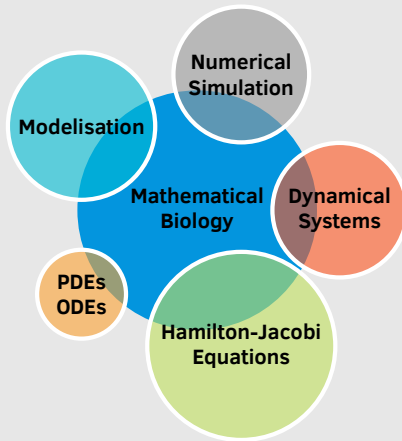
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## Skills

### Overview



### Programming

0 LOC → 5000 LOC

MatLab •  $\text{\LaTeX}$

Wolfram Mathematica

Python • GitHub

## Projects

**PhD** - Stochastic Vs Deterministic numerical simulations of HGT in Python.

**PhD** - A numerical study of models coming from biology in MatLab/

**M2** - A method to study the stability of a Hamiltonian System in Wolfram Mathematica.

**M1** - A code to study Hopf bifurcation in Gray-Scott systems in MatLab.

**Bachelor** - A pseudo-code to find steady states of parabolic systems in MatLab.

## Education

2016 - Present **PhD in Applied Mathematics** Université Paul Sabatier Toulouse, France

2015 - 2016 **MSc. Applied Mathematics** (GPA: 14/20) Paris Dauphine University, France

2012 - 2015 **MSc. Applied Mathematics** (GPA: 100/100) Havana University, Cuba

2008 - 2012 **Bachelor in Mathematics** (GPA: 4.76/5) Havana University, Cuba

## Research

2018 **CEMRACS'18 Project** CIRM, Marseille

**Proceeding:** Horizontal gene transfer: numerical comparison between stochastic and deterministic approaches

- Numerically determined the critical HT rate
- Stochastic and Deterministic simulations; AP Models
- **Tools:** Python, MatLab, GitHub

2016 **MSc. Candidate, Graduate Research** Paris-VI University UPMC

**Memory:** Convex Plates Rolling Without Slipping

- Obtained an essential characterization of the rolling of convex curves by proving that the only plate with smooth and analytic boundary which has a Hamiltonian without unstable equilibria is the circle
- **Tools:** MatLab, Wolfram Mathematica

2015 **MSc. Candidate, Graduate Research** Havana University

**Memory:** Sub-critical Hopf bifurcation for the nonlinear reversible Gray-Scott model

- Numerical approximation of the center manifold associated to the bifurcation
- Developed a method to compute the Lyapunov coefficient using LU matrix factorization
- **Tools:** MatLab, Wolfram Mathematica

## Publications

- **F-I, S.** "Impact of a climatic shift on the dynamics of phenotypically structured populations in time periodic environments", (in progress).
- Calvez, V., **F-I, S.**, Hivert, H., Méléard, S., Melnykova, A. and Nordmann, S. "Horizontal gene transfer: numerical comparison between stochastic and deterministic approaches", ESAIM: Proceedings and Surveys, (Submitted December 2018).
- **F-I, S.**, Mirrahimi, S. "Long time evolutionary dynamics of phenotypically structured populations in time periodic environments", SIAM Journal of Mathematical analysis 50(5):5537–5568, 2018.
- **F-I, S.**, Rodriguez Ricard, M. "Bifurcación de Hopf Subcrítica para el Modelo Reversible no Lineal de Gray-Scott con Difusión", Ciencias Matemáticas, vol. 29, no 1, pp. 53-59, 2015, Cuba.

## Experience

Sept 2012 - **Cryptography Specialist** Cryptography Laboratory UH  
July 2014

- Development of software in cryptography and supervision of graduate memories

Sept 2014 - **Assistant Professor** Faculty of Mathematics and Computer Science UH  
August 2015

- Lectures and practical courses in Mathematics for Pharmacy, Physics, Chemical and Mathematics Bachelor