Bryan Félix

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PARTICULARS

EDUCATION

University of Minnesota - Twin Cities — Minneapolis, MN
Ph. D. Mathematics — *Current*

University of Texas at Austin — Austin, TX
B. S. Applied Mathematics — *May 2016*

CURRENT STATUS

U.S. Citizen.

RESEARCH INTERESTS

My research interests are in *mathematical modeling*, in particular *mathematical biology*. I'm interested in *cell signaling* processes, with an emphasis towards *polarization*, *cell motility* and *tissue dynamics*.

RESEARCH EXPERIENCE

- **NSF Graduate Fellow**, 2018 -2021
  University of Minnesota. Mathematical Biology.
- **Summer Research at the University of Minnesota**, Summer 2017.
  Under the guidance of Dr. Othmer, Hans, we study the aspects of several cell signaling processes and their connection to diseases (e.g. metastasis in cancer). In particular, we focused on the aspects of cell polarization, signaling pathways and cell motility to elaborate on already established mathematical models.
- **Research Experience for Undergraduates. Department of Mathematics, Texas A&M University, College Station, TX**, Summer 2015.
  We studied in depth Neural codes and Chemical Reaction networks. The main focus of our neural code research was to study particular instances were the codes manifest as open subsets in an arbitrary dimensional space in order to characterize them as convex. Our second topic approached the question of a family of sequestration networks with multiple non-degenerate equilibrium points. Based on a construction due to Craciun and Feinberg we found a proof that such family existed.

ACADEMIC HONORS

- NSF GRPF Fellowship 2018-2021
- University of Minnesota Summer Research Fellowship, 2017.
- University of Minnesota First Year Student Fellowship, 2017.
- Putnam Exam 2013, (10 pts), 2014 (21 pts).
- University of Texas at Austin Actuarial Scholarship, 2014.
- SOA Probability Exam, 2014.
- Honor Mention at Risky Business Magazine, November, 2014.
- Contestant at the Mexican Math Olympiad at Chihuahua (OMMCH).

WORK EXPERIENCE

- **TA at the University of Minnesota**, Fall 2016. Teacher Assistant responsible for two sections. Held discussions 6 hours per week as well as daily office hours. Responsible for the administration and grading of exams, quizzes and assignments. Responsible for partial grading of the final exam and collection of overall grades.
- **Learning Assistant at The University of Texas at Austin**, Fall 2015. Learning Assistant for the course M302 (Introduction to Mathematics) under the supervision of Dr. Hager, Amanda. Held weekly office hours to provide guidance to students.
- **Undergraduate Tutor at The University of Texas at Austin**, August 2014- May 2016. Tutor for undergraduate courses, including: Calculus, Discrete Mathematics, Differential Equations, Probability and Statistics. Tutoring in one-on-one and group sessions.
- **Learning Assistant at The University of Texas at El Paso**, Summer 2013. Assistant of Dr. Guthrie for Pre-Calculus. In charge of a weekly two hour workshop. Responsible for the collection of grades.
- **Undergraduate Tutor, The University of Texas at El Paso**, August 2012-December 2013. Tutor for undergraduate courses, including: Pre-Calculus, Calculus, Discrete Mathematics and Statistics. Tutoring in one-on-one and group sessions.

TEACHING EXPERIENCE

- **Teaching Assistant.**
  - M2373: Linear Algebra and Differential Equations, Prof. Natalie Sheils, Spring 2018, U. of Minnesota
  - M1271: Calculus I, Prof. Adil Ali, Fall 2016, University of Minnesota.
  - M1371: CSE Calculus I, Prof. Chester Miracle, Fall 2017, University of Minnesota.
- **Grader.** M4567: Fourier Analysis, Prof. Denis Hejhal, Spring 2017, University of Minnesota.

PUBLICATIONS

1. *Analyzing multistationarity in chemical reaction networks using the determinant optimization method*, with Anne Shiu and Zev Woodstock. Applied Mathematics and Computation. Volumes 287288, pp. 60-73 (2016).

TALKS

CONFERENCE TALKS

1. *An Infinite Family of Chemical Reaction Networks with Multiple Non-Degenerate Equilibria.* Presented at MathFest, Washington DC, August 2015.

OTHER TALKS

1. *Proofs Without Words.* Presented at Math-Club in the University of Minnesota. Minneapolis, MN, Spring 2017.
2. *Introduction to Neural Codes.* Presented at Texas A&M. Summer 2015.

PROFESSIONAL ACTIVITIES

- Society for Industrial and Applied Mathematics (SIAM) officer. Fall 2017.
- American Mathematical Society (AMS) officer. Fall 2017.

SOFTWARE

Proficient with MatLab, MatCont, SageMath and Python.

Familiar with Mathematica, AUTO, COMSOL multiphysics and Fenics.

LANGUAGES

Proficient in English and Spanish. Working knowledge in Italian.