Andrea Carracedo Rodriguez

CONTACT INFORMATION

McBryde Hall 475
Department of Mathematics
Virginia Tech
Blacksburg, VA 24061

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RESEARCH INTERESTS

Applied mathematics; Numerical analysis; Dynamical systems; Scientific computing; Model reduction of parameterized dynamical systems; Model reduction of structured dynamical systems; Data fitting.

EDUCATION

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

Ph.D. Mathematics **August 2020**
- Dissertation Topic: "Model reduction of nonlinear parametric systems"
- Advisor: Serkan Gugercin

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

M.S. Mathematics **May 2016**
- Thesis Topic: "Mathematical models of Hepatitis B virus dynamics during antiviral therapy"
- Advisor: Stanca Ciupe

University of Oviedo, Oviedo, Spain

B.S. Mathematics **2013**
- Final Project: "Fluid Mechanics – Stars"
- Advisor: Bob Rogers (Virginia Tech)

AWARDS

Research
- Liming Yang and Fang-Lan Liu Research Fellowship,
  from the Math Department at Virginia Tech — Summer 2018

Teaching
- Outstanding Graduate Teaching Assistant of the Year,
  from the Math Department at Virginia Tech — 2018–2019
- Favorite Faculty Award,
  from the Division of Student Affairs at Virginia Tech — Spring 2016

RESEARCH EXPERIENCE

Virginia Tech, Mathematics Department, Blacksburg, VA
Research Assistant

- Rational approximation for nonlinear eigenvalue problems — Summer and Fall 2019
- Reduced order modeling of parametric quadratic dynamical systems — Spring and Summer 2018
- Reduced order modeling of parametric bilinear dynamical systems — Spring and Summer 2017
- Reduced order fire modeling for underground coal mines — Summer 2016

PUBLICATIONS   6. A Carracedo Rodriguez. Approximation of Parametric Dynamical Systems. Ph.D. Dissertation, Virginia Tech, September 2020.

5. A Carracedo Rodriguez and S Gugercin. The AAA Algorithm for Data Driven Modeling of Parameterized Dynamical Systems. Submitted, March 2020 (available at: arXiv:2003.06536)

4. A Carracedo Rodriguez, S Gugercin, and J Borggaard. Subsystem Interpolation for Parameterized Bilinear Dynamical Systems. MATHMOD 2018 Extended Abstract Volume, ARGESIM Report 55, p 75–76

3. A Carracedo Rodriguez, S Gugercin, and J Borggaard. Interpolatory Model Reduction of Parameterized Bilinear Dynamical Systems. J. Adv Comput Math, Volume 44, Issue 6, p 1887-1916, May 2018

2. A Carracedo Rodriguez, M Chung, and S Ciupe. Understanding the Complex Patterns Observed during Hepatitis B Virus Therapy. Viruses, Volume 9, Issue 5, Article 117, May 2017

1. A Carracedo Rodriguez. Mathematical Models of Hepatitis B Virus Dynamics during Antiviral Therapy. Masters Thesis, Virginia Tech, April 2016

PRESENTATIONS   **Talks**
Invited Minisymposium

2. SIAM Conference on Computational Science and Engineering, Spokane, WA, February 2019
1. Vienna International Conference on Mathematical Modeling, Vienna, Austria, February 2018

Other Conferences, Meetings, and Seminars
17. SWIMM research talk, Blacksburg, VA, March 2020
16. Machine Learning Seminar at Virginia Tech, Blacksburg, VA, January 2020
15. Joint Mathematics Meetings, Denver, CO, January 2020
14. Machine Learning Seminar at Virginia Tech, Blacksburg, VA, November 2019
13. SIAM Student Chapter at Virginia Tech, Blacksburg, VA, October 2019
12. Applied Numerical Analysis Seminar at Virginia Tech, Blacksburg, VA, September 2019
11. Applied Numerical Analysis Seminar at Virginia Tech, Blacksburg, VA, February 2019
10. Women's Intellectual Network Research Symposium, Charlottesville, September 2018
9. Graduate Student Conference in Computational Mathematics, Columbia, SC, February 2018
8. Applied Numerical Analysis Seminar at Virginia Tech, Blacksburg, VA, February 2018
7. SIAM Student Chapter at Virginia Tech, Blacksburg, VA, December 2017
6. Applied Numerical Analysis Seminar at Virginia Tech, Blacksburg, VA, December 2017
5. ICAM student conference, Blacksburg, VA, April 2017
4. SIAM Student Chapter at Virginia Tech, Blacksburg, VA, March 2017
3. SIAM Conference on Computational Science and Engineering, Atlanta, GA, February 2017
2. Applied Numerical Analysis Seminar at Virginia Tech, Blacksburg, VA, February 2017
1. Master's Thesis Defense, Blacksburg, VA, May 2016

Posters
2. College of Science Undergraduate Research Mixer, Virginia Tech, Blacksburg, VA, October 2018
1. SIAM Student Chapter at Virginia Tech, Blacksburg, VA, March 2017

TEACHING EXPERIENCE	**Math Instructor, Virginia Tech**	Fall 2020 - present

- Math 1226 course co-coordinator — present
- Math 4445: Numerical Analysis — present
- Math 1226: Calculus II — present
- Math 1225: Calculus I — Fall 2020

Math Graduate Teaching Assistant, Virginia Tech

Instructor of Record

• Math 2204: Intro Multivariable Calculus	Spring 2019
• Math 1226: Calculus II	Spring 2015, Spring 2016, Fall 2017, Fall 2018
• Math 1225: Calculus I	Fall 2014, Fall 2015, Fall 2016
• Math 1114: Elementary Linear Algebra	Summer 2014, Summer 2015
• Math 1525: Elementary Calculus with matrices	Summer 2016
• Math 1524: Business Calculus	Spring 2020

Teaching Assistant

• Senior Graduate Teaching Assistant	Fall 2019, Spring 2020
• Math 2114: Intro to Linear Algebra	Fall 2019
• Math 4445: Intro to Numerical Analysis	Fall 2019
• Math 4446: Intro to Numerical Analysis	Summer 2018
• Math Emporium, assistant for 6 online courses	Fall 2013, Spring 2014
• Math Emporium, assistant for 2 online courses	Spring 2020

SOFTWARE SKILLS	**Most experienced:** MATLAB
	Some experience: Mathematica, R, COMSOL

TRAVEL GRANTS	Student Travel Award, SIAM CSE, Spokane, WA, 2019
	Student Travel Award, JohnFest, Columbia, SC, 2018
	Student Travel Award, SIAM CSE, Atlanta, GA, 2017

ORGANIZATIONS	Computational Resources Committee, Math Department, Virginia Tech	Fall 2018-Spring 2020
	Society for Industrial and Applied Mathematics (SIAM)	
	• *Committee member of Student Chapter at Virginia Tech*	Fall 2014-Spring 2016
	Supporting Women in Mathematics through Mentoring (SWIMM)	
	Association for Women in Mathematics (AWM)	
	American Mathematical Society (AMS)	