Charlotte Rodriguez

• /chrdz in /charlotte-rodriguez-50980493/ • chrdz.github.io/

Interests

- > Mathematical Modeling
- > Scientific Computing
- > Machine Learning and Data Analysis
- > Interdisciplinary problem solving

Contact and personal information

- > email: rdz.charlotte (at) gmail.com
- > Citizenship: French

Education

PhD in Applied Mathematics

07/2018 - 12/2021

Friedrich-Alexander University Erlangen-Nürnberg, Germany

- > Thesis: Control and stabilization of geometrically exact beams.
- > Supervisor: Pr. Günter Leugering.
- > Highest Honors.

M.Sc in Applied Mathematics

09/2016 - 06/2018

Université de Bordeaux, France

- > Analysis, Partial Differential Equations, Probability.
- > Highest Honors.
- > Master's thesis: Model order reduction via proper orthogonal decomposition and balanced truncation (supervisor: Pr. Marius Tucsnak).

B.Sc. in Applied Mathematics & Computer Science

09/2013 - 06/2016

Université de Bordeaux, France

- > Minor in Cognitive Sciences.
- > Highest Honors. Ranked 1st.

Additional training

Machine learning Coursera certificate

Online. 02/2022

- > Online non-credit course authorized by Stanford University.
- > Credential ID: BSPG56QR9LNL

Participant in the Piscine of 42

Paris, France, 26/08/2014 - 16/09/2014

- > I attended the so-called "Piscine d'été" of the Computer Science school "École 42". This was a one month-long training in C programming, and simultaneously a test to be admitted to this school.
- > Result : Admitted.

Professional experience

Friedrich-Alexander University Erlangen-Nürnberg

01/07/2018 - 31/08/2021

Research assistant, Erlangen, Germany

- I was Early Stage Researcher within the project "Control of Flexible Structures and Fluid-Structure Interactions - ConFlex" funded by the H2020 Marie Sklodowska Curie ITN programme.
- > My research was focused on nonlinear models for beams that may undergo large deflections (i.e., for highly flexible structures), which have a range of applications in aeroelastic and soft robots for instance.

Imperial College London

01/10/2019 - 31/11/2019

Research intern, United Kingdom

- > Visit at the Department of Aeronautics to work on nonlinear models for highly flexible beams, from the perspective of aeroelastics.
- > Our collaboration resulted in the publication [3] below.
- > Supervisors: Pr. Rafael Palacios and Dr. Andrew Wynn.

University of Deusto

01/10/2018 - 31/11/2018

Research intern, Bilbao, Spain

- > Visit at the Chair of Computational Mathematics led by Pr. Enrique Zuazua, to work on nonlinear models for highly flexible beams and their links with first-order hyperbolic systems.
- > Supervisor: Pr. Enrique Zuazua.

♥\$ Skills

</> Programming

- > Proficient in Python:
 - * Object Oriented Programming (multi-agent system, complex numbers library, intelligent vacuum cleaner),
 - * simulation of partial differential equations (PDE) using finite differences and finite elements methods,
 - * board games.

> Proficient in Matlab:

- * simulation of PDEs using finite differences and finite elements methods,
- * GUI handling EEG signals,
- * model reduction,
- * image processing using wavelet transformations.

CNRS (French National Center for Scientific Research)

01/02/2018 - 22/06/2018

Research intern, Bordeaux, France

- > As part of my master thesis, research on "Model order reduction via Proper Orthogonal Decomposition (POD) and Balanced truncation"
- > Supervisor: Pr. Marius Tucsnak.

IMB (Mathematics Institute of Bordeaux)

02/05/2017 - 27/06/2017

Research intern, Bordeaux, France

- > Research on Control Theory.
- > Supervisor: Pr. Marius Tucsnak.
- > Help in the organisation of the international workshop Control of Distributed Parameter Systems 2017.

Université de Bordeaux

01/06/2016 - 15/07/2016

Research intern, Bordeaux, France

- > Introduction to functional analysis.
- > Supervisor : Pr. Arnaud Ducrot.

Inria (French Institute for Research in Computer Science and Automation)

Research intern, Bordeaux, France

03/06/2015 - 28/07/2015

- > Development of a graphical user interface handling EEG signals in Matlab (https://goo.gl/F4vBEx), in a team of two.
- > Supervisor : Pr. Pierrick Legrand.

Université de Bordeaux

09/2014 - 06/2016

Mathematics tutor for first-year BSc students., Bordeaux, France

> Basic knowledge in C.

- Basic knowledge in dynamic website design: HTML, CSS, PHP, SQL.
- 🐧 Linux
- **Windows**
- **₡** MacOS

ETEX

G Git

Microsoft Office.

Languages

- > English: fluent
- > Spanish: basic
- > German: beginner
- > French: native.

Scientific publications

- [6] G. Leugering, C. Rodriguez, Y. Wang, "Exact controllability of networks of elastic strings springs and masses", in preparation.
- [5] C. Rodriguez, "Control and stabilization of geometrically exact beams", PhD Thesis, *Friedrich-Alexander-Universität Erlangen-Nürnberg*, **2022**, urn:nbn:de:bvb:29-opus4-180496, arXiv:2202.07531
- [4] C. Rodriguez, "Networks of geometrically exact beams: well-posedness and stabilization", *Mathematical Control and Related Fields* 12 (1), 49–80, **2022**, doi:10.3934/mcrf.2021002, arXiv:2009.07183
- [3] M. Artola, C. Rodriguez, A. Wynn, R. Palacios, G. Leugering, "Optimisation of Region of Attraction Estimates for the Exponential Stabilisation of the Intrinsic Geometrically Exact Beam Model", 60th IEEE Conference on Decision and Control (CDC), pp. 6043–6048, **2021**, doi: 10.1109/CDC45484.2021.9683680, arXiv:2110.06002
- [2] G. Leugering, C. Rodriguez, Y. Wang, "Nodal profile control for networks of geometrically exact beams", *Journal de Mathématiques Pures et Appliquées* 155, 111–139, **2021**, doi:10.1016/j.matpur.2021.07.007, arXiv:2103.13064
- [1] C. Rodriguez, G. Leugering, "Boundary feedback stabilization for the intrinsic geometrically exact beam model", SIAM Journal on Control and Optimization 58 (6), 3533–3558, **2020**, doi:10.1137/20M1340010, arXiv:1912.02543

Scientific presentations

at Workshops:

- > 1/10/2021, Mini-Workshop on Recent Advances in Analysis and Control, Chair Dynamics, Control and Numerics (DCN), FAU Erlangen-Nürnberg, Germany, virtual.
- > 4/08/2021, 4th workshop of the ConFlex consortium, Lacanau, France.
- > 12/10/2020, Mini-Workshop on Hyperbolic Problems, Chair Dynamics, Control and Numerics (DCN), FAU Erlangen-Nürnberg, Germany.
- > 30/06/2020, 3rd workshop of the ConFlex consortium, Imperial College London, UK, virtual.
- > 28/08/2019, 8th Workshop on PDE, Optimal Design and Numerics, Centro de Ciencias "Pedro Pascual", Benasque, Spain.
- > 20/02/2019, 2nd workshop of the ConFlex consortium, Bilbao, Spain.

at Seminars:

- > 13/02/2020, IIT Delhi India.
- > 3/10/2019, Load Control and Aeroelastics Lab, Imperial College London, UK.
- > 7/02/2019, IIT Delhi, India.
- > 22/10/2018, DeustoTech, Bilbao, Spain.