

Charlotte Rodriguez

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

Interests

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

Contact and personal information

- >  +33 6 50 53 34 29
- >  rdz.charlotte@gmail.com
- > Citizenship: French

Education

PhD in Applied Mathematics

07/2018 – 12/2021

Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), 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.

Professional experience

FAU 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 Skłodowska Curie ITN programme.

Imperial College London

01/10/2019 – 31/11/2019

Research intern, United Kingdom

- > Visit at the Department of Aeronautics (Load Control and Aeroelastics Lab) to work on geometrically exact beams from the perspective of aeronautics. Our collaboration resulted in the publication [3] below.
- > Supervisors: Pr. Rafael Palacios and Dr. Andrew Wynn.

DeustoTech, 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 geometrically exact beam models and their links with first-order hyperbolic systems.
- > Supervisor: Pr. Enrique Zuazua.

CNRS & Institut de Mathématiques de Bordeaux

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.

Additional training

Machine learning Coursera certificate

Online, 02/2022

- > Online non-credit course authorized by Stanford University.
- > Credential ID: [BSPG56QR9LNL](#)

École 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.

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.
- > Basic knowledge in **C**.
- > Basic knowledge in dynamic website design: **HTML**, **CSS**, **PHP**, **SQL**.

CNRS & Institut de Mathématiques de 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.

 Linux
 Windows
 MacOS
 TeX
 Git
Microsoft Office.

Université de Bordeaux 01/06/2016 – 15/07/2016

Research intern, Bordeaux, France

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

INRIA & Université de Bordeaux 03/06/2015 - 28/07/2015

Research intern, Bordeaux, France

- > 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

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](https://nbn-resolving.org/urn:nbn:de:bvb:29-opus4-180496), [arXiv:2202.07531](https://arxiv.org/abs/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](https://doi.org/10.3934/mcrf.2021002), [arXiv:2009.07183](https://arxiv.org/abs/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](https://doi.org/10.1109/CDC45484.2021.9683680), [arXiv:2110.06002](https://arxiv.org/abs/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](https://doi.org/10.1016/j.matpur.2021.07.007), [arXiv:2103.13064](https://arxiv.org/abs/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](https://doi.org/10.1137/20M1340010), [arXiv:1912.02543](https://arxiv.org/abs/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.