

Dr. Rok Cestnik

Curriculum Vitae

Lund University (Sweden)
Applied mathematics
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Education

- 2016–2020 **Doctor of Natural Sciences**, *Free University Amsterdam (& University Potsdam)*, Potsdam & Amsterdam (Germany & Netherlands), part the innovative training network (ITN) under project COSMOS funded by Marie Skłodowska-Curie, [link_to_my_thesis](#).
- 2014–2015 **Master in Physics of Complex Systems**, *Institute for Cross-Disciplinary Physics and Complex Systems*, Palma de Mallorca (Spain).
- 2011–2014 **Bachelor in Physics**, *University of Ljubljana*, Ljubljana (Slovenia).

Work Experience

- 2023–present **Postdoc in nonlinear dynamics II**, *University Lund*, Lund (Sweden).
Independent scientific research; co-evolutionary oscillatory networks.
- 2019–2023 **Postdoc in nonlinear dynamics**, *University Potsdam*, Potsdam (Germany).
Independent scientific research; complex oscillatory systems, funded by the German Research Foundation, DFG.
- 2018 **Data Science Intern**, *Ambrosys GmbH (Ltd.)*, Potsdam (Germany).
Time series forecasting using artificial neural networks.
- 2013–2014 **Teaching assistant**, *University of Ljubljana*, Ljubljana (Slovenia).
Bachelor course on programming in C.

Awards

- 2022 Best talk from an early career researcher – Dynamics Days Europe, Aberdeen (Scotland).

Skills

- Mathematical analysis and modeling.
- Programming: C/C++, Python, Unix, Mathematica.
- Data analysis and visualization.
- Scientific writing (\LaTeX) and presentation.

Publications

- 2023 Rok Cestnik and Erik Martens, *Integrability of a globally coupled complex Riccati array: quadratic integrate-and-fire neurons, phase oscillators and all in between*, Physical Review Letters (Accepted 2023) - [arXiv](#).
- 2023 Bastian Pietras, Rok Cestnik and Arkady Pikovsky, *Exact finite-dimensional description for networks of globally coupled spiking neurons*, Physical Review E 107, 024315 - [link](#), [arXiv](#).

- 2022 Rok Cestnik, Erik Mau and Michael Rosenblum, *Inferring oscillator's phase and amplitude response from a scalar signal exploiting test stimulation*, New Journal of Physics 24, 123012 - [link](#), [arXiv](#).
- 2022 Rok Cestnik and Arkady Pikovsky, *Exact finite-dimensional reduction for a population of noisy oscillators and its link to Ott-Antonsen and Watanabe-Strogatz theories*, Chaos 32, 113126 - [link](#), [arXiv](#).
- 2022 Rok Cestnik and Arkady Pikovsky, *Hierarchy of exact low-dimensional reductions for populations of coupled oscillators*, Physical Review Letters 128, 054101 - [link](#), [arXiv](#).
- 2021 Gloria Cecchini, Rok Cestnik and Arkady Pikovsky, *Impact of network characteristics on network reconstruction*, Physical Review E 103 022305 - [link](#), [arXiv](#).
- 2020 Rok Cestnik, *Inferring oscillatory dynamics from data*, PhD Thesis - [link](#).
- 2019 Rok Cestnik and Markus Abel, *Inferring the dynamics of oscillatory systems using recurrent neural networks*, Chaos 29, 063128 - [link](#), [arXiv](#).
- 2018 Rok Cestnik and Michael Rosenblum, *Inferring the phase response curve from observation of a continuously perturbed oscillator*, Scientific Reports 8 13606 - [link](#), [arXiv](#).
- 2017 Rok Cestnik and Michael Rosenblum, *Reconstructing networks of pulse-coupled oscillators from spike trains*, Physical Review E 96 012209 - [link](#), [arXiv](#).

Conference presentations (since 2020)

- 2023 Organizing a minisymposium and oral contribution at the *Dynamics Days Europe*, Naples (Italy).
- 2023 Oral contribution at the *SIAM Conference on Applications of Dynamical Systems*, Portland OR (USA).
- 2022 Oral contribution at the *Dynamics Days Europe*, Aberdeen (Scotland).
- 2022 Presenting a poster at the *Chimera States: From Theory and Experiments*, Dresden (Germany).
- 2021 Oral contribution at the *Dynamics Days - XL*, Nice (France) - held online.
- 2020 Oral contribution at the *International Conference on Complex Systems*, Cambridge MA (USA) - held online.

Languages

Native **Slovene**
 Other **English, Spanish, Basic German**

Recommendations

Erik Martens *Lund University* (Sweden), erik.martens@math.lth.se
 Arkady Pikovsky *University Potsdam* (Germany), pikovsky@uni-potsdam.de
 Michael Rosenblum *University Potsdam* (Germany), mros@uni-potsdam.de
 Andreas Daffertshofer *Free University Amsterdam* (Netherlands), a.daffertshofer@vu.nl
 Victor Eguiluz *Inst. for Cross-Disciplinary Physics & Complex Systems* (Spain), victor@ifisc.uib-csic.es
 Markus Abel *Ambrosys GmbH (Ltd.)* (Germany), markus.abel@ambrosys.de