## CONTACT INFORMATION


*Office*: Faculty of Mathematics, University of Vienna
Oskar-Morgenstern-Platz 1, 1090 Vienna, Austria
*E-mail*: annalisa.iuorio@univie.ac.at
*Webpage*: `https://annalisaiuorio.com`
*Orcid*: `https://orcid.org/0000-0002-2297-4522`


Born on April 28, 1989. Italian citizenship.

## RESEARCH INTERESTS

- **Analytical:** PDEs; ODEs; applied dynamical systems; pattern formation; Geometric Singular Perturbation Theory; asymptotics; reaction-diffusion(-ODE) systems; bifurcations.
- **Numerical:** simulation (MATLAB); analysis (Mathematica); continuation (AUTO, pde2path).
- **Interdisciplinary:** vegetation dynamics; pedestrian dynamics; MEMS; microstructures; neuroscience.

## EMPLOYMENT

*Jan 2021–present*: **University of Vienna (Austria)**
**Principal Investigator** of the project "*Mathematical models to study toxicity effects on vegetation*" (FWF Firnberg-Programm T 1199)

*Apr 2021–Sep 2021*: **National Research Council (CNR) (Italy)**
**Occasional Collaborator** of the project "*Validation of hippocampal CA1 neurons models using GLIF formalism*" (HBP voucher 63)

*Nov 2019–Dec 2020*: **Radon Institute for Computational and Applied Mathematics (Austria)**
**Postdoctoral Researcher** in the group of Dr. Marie-Therese Wolfram

*Mar 2017–Oct 2019*: **Vienna University of Technology (Austria)**
**Scientific Manager** of the Doctoral School (DK) "*Dissipation and Dispersion in Nonlinear PDEs*" and **Postdoctoral Researcher** (from Jan 2018)

## EDUCATION

*2014–2018*: **Vienna University of Technology (Austria)**
**Ph.D** in **Mathematics** (with Distinction), Viva date: 24 January 2018
"*Geometric analysis of multi-scale solutions in regularized models of microstructures and touchdown phenomena in MEMS*"
Advisor: Peter Szmolyan

*2011–2013*: **University of Naples Federico II (Italy)**
**Master Degree** in **Mathematics** (110/110 cum Laude)
"*Mathematical Models for Vegetation Pattern Formation*"
Advisors: Addolorata Marasco and Francesco Giannino

*2007–2011*: **University of Naples Federico II (Italy)**
**Bachelor Degree** in **Mathematics** (110/110 cum Laude)
"*On nonparametric inference statistical methods: The Wilcoxon Test*"
Advisor: Maria Longobardi

## ACADEMIC HONOURS AND AWARDS

*2020*: **Hertha Firnberg Postdoctoral Fellowship** (243.K€)
*2019*: **Christiana Hörbiger Award**, travel grant (5.K€)
*2018*: **Christiana Hörbiger Award**, travel grant (1.1K€)

## ADDITIONAL FUNDING

*2022*: **ICMS Early-Career Workshop** (with V. Giunta, A. Manhart, C. Soresina), Edinburgh, UK (2023)
*2021*: **Hausdorff School** (with E. Daus, L. Kanzler, C. Soresina), Bonn, Germany (2022)
*2020*: **ICMS Early-Career Workshop** (with E. Daus, A. Manhart, C. Soresina), (2021, **online**)
*2019*: **Hausdorff School** (with E. Daus, C. Soresina) (2021, **online**)

## PUBLICATIONS


[1] A. Iuorio, C. Kuehn. *Single-spike solutions to the 1D shadow Gierer-Meinhardt problem.* AML, 132: 108147, 2022, https://doi.org/10.1016/j.aml.2022.108147.

[2] A. Iuorio, G. Jankowiak, P. Szmolyan, M.T. Wolfram. *A PDE model for unidirectional flows: stationary profiles and asymptotic behaviour.* JMAA, 510(2): 126018, 2022, https://doi.org/10.1016/j.jmaa.2022.126018.

[3] C. Kuehn, N. Berglund, C. Bick, M. Engel, T. Hurth, A. Iuorio, C. Soresina. *A General View on Double Limits in Differential Equations.* Physica D, 431:133105, 2022, https://doi.org/10.1016/j.physd.2021.133105.

[4] A. Iuorio, F. Veerman. *The influence of autotoxicity on the dynamics of vegetation spots.* Physica D, 427:133015, 2021, https://doi.org/10.1016/j.physd.2021.133015.

[5] A. Marasco, F. Giannino, A. Iuorio. *Modelling competitive interactions and plant-soil feedback in vegetation dynamics.* Ricerche mat., 2020, https://doi.org/10.1007/s11587-020-00497-6.

[6] A. Iuorio, N. Popović, and P. Szmolyan. *Singular perturbation analysis of a regularized MEMS model.* SIAM J. Appl. Dyn. Syst. (SIADS), 18(2):661–708, 2019, https://doi.org/10.1137/18M1197552.

[7] A. Iuorio, S. Melchionna. *Long-time behavior of a nonlocal Cahn-Hilliard equation with reaction.* Discrete Contin. Dyn. Syst., 38(8):3765–3788, 2018, https://doi.org/10.3934/dcds.2018163.

[8] A. Iuorio, C. Kuehn, and P. Szmolyan. *Geometry and numerical continuation of multiscale orbits in a nonconvex variational problem.* Discrete Contin. Dyn. Syst. Ser. S, 13.4:1269, 2020, https://doi.org/10.3934/dcdss.2020073.

[9] A. Marasco, A. Iuorio, F. Cartenì, G. Bonanomi, D.M. Tartakovsky, S. Mazzoleni, and F. Giannino. *Vegetation pattern formation due to interactions between water availability and toxicity in plant-soil feedback.* Bull. Math. Biol., 76(11):2866–2883, 2014, https://doi.org/10.1007/s11538-014-0036-6.

[10] A. Marasco, A. Iuorio, F. Cartenì, G. Bonanomi, F. Giannino, and S. Mazzoleni. *Water limitation and negative plant-soil feedback explain vegetation patterns along rainfall gradient.* Procedia Environ. Sci., 19: 139–147, 2013, https://doi.org/10.1016/j.proenv.2013.06.016.


## RESEARCH VISITS

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|---|---|
| *Sep-Dec 2022*: | **University of Leiden (Netherlands)**, collaboration with Frits Veerman and Arjen Doelman |
| *Nov 2021* & *Feb 2022*: | **University of Naples Federico II (Italy)**, collaboration with Laboratory of Applied Ecology and System Dynamics |
| *Jul 2019* & *Jan 2019*: | **Heidelberg University (Germany)**, collaboration with Frits Veerman |
| *Jul 2019*: | **University of Rostock (Germany)**, collaboration with Jens Starke |
| *Jun 2018* & *Nov 2021*: | **TU Munich (Germany)**, collaboration with Christian Kuehn |
| *May 2018* & *Sep-Dec 2016*: | **The University of Edinburgh (UK)**, collaboration with Nikola Popović |

## SEMINAR TALKS

*Sep 2022*: *Dynamical Systems Seminar*, University of Leiden, Netherlands
*Jan 2022*: *Advances in Socio-Epidemic Mathematical Modelling - UMI-MSE Online Seminar*, Italy
*Jun 2021*: *PDE Afternoon*, TU Wien/University of Vienna/IST Austria, Austria
*Jun 2021*: *Analysis Group Seminar*, University of Leiden, The Netherlands
*Apr 2021*: *ICTP-SAIFR Complex Systems and Statistical Mechanics*, ICTP-SAIFR, Brazil
*Jan 2020*: *Applied Math Seminar*, University of Warwick, UK
*Nov 2019*: *Seminar on Qualitative Theory of Differential Equations*, Comenius University Bratislava, Slovakia
*Sep 2019*: *Analysis Seminar*, University of Graz, Austria
*Aug 2019*: *Applied and Interdisciplinary Mathematics Seminar*, University of Bath, UK
*Jul 2019*: *GSPT Seminar*, Heidelberg University, Germany
*Jul 2019*: *Mathematisches Forschungskolloquium*, University of Rostock, Germany
*Mar 2019*: *Mathematisches Forschungskolloquium*, University of Rostock, Germany
*Jan 2019*: *Applied Analysis Seminar*, Heidelberg University, Germany
*Jun 2018*: *Oberseminar*, Technical University of Munich, Germany
*Sep 2016*: *PG (Post-Graduate) Colloquium*, The University of Edinburgh, UK
*Sep 2016*: *Applied and Computational Mathematics (ACM) Seminar*, The University of Edinburgh, UK

## CONFERENCES & WORKSHOPS

*Nov 2022*: *Workshop on "Topics in Multiple Time Scale Dynamics"*, Banff International Research Station, Canada **(Invited Speaker)**
*Sep 2022*: *ECMTB 2022*, Heidelberg, Germany **(Invited Speaker + Mini-Symposium Organiser)**
*Aug 2022*: *SIAM Conference on Nonlinear Waves and Coherent Structures (NWCS 22)*, Bremen, Germany **(Invited Speaker)**
*Jun 2022*: *MPDEE 2022*, Turin, Italy **(Invited Speaker + Mini-Symposium Organiser)**
*May 2022*: *MMSEOR 2022*, Palermo, Italy **(Contributed Talk)**
*Apr 2022*: *Spatial Ecology Workshop: Integrating mathematical theory and ecological applications*, Sheffield, UK **(Invited Speaker + Discussion Chair)**
*Mar 2022*: *SIAM Conference on Analysis of Partial Differential Equations (PD22)*, Berlin, Germany **(Invited Speaker)** **(online)**
*Nov 2021*: *Neuroscience 2021*, Chicago, USA **(Poster Presenter)** **(online)**
*Aug 2021*: *Dynamics Days Europe*, Nice, France **(Invited Speaker)**
*Aug 2021*: *Workshop on "Dynamics of Waves and Patterns"*, Oberwolfach, Germany
*Jun 2021*: *Workshop on "A PhD in Mathematics - career possibilities & gender aspects"*, online **(Invited Speaker)**
*May 2021*: *SIAM Conference on Applications of Dynamical Systems (DS21)*, online **(Talk + Minisymposium Organiser)**
*Feb 2021*: *12th Workshop on Dynamical Systems Applied to Biology and Natural Sciences (DSABNS2021)*, online
*Aug 2020*: *SMB 2020 Annual Meeting, e-Conference* **(Contributed talk)**
*Feb 2020*: *11th Workshop on Dynamical Systems Applied to Biology and Natural Sciences (DSABNS2020)*, Trento, Italy **(Contributed Talk)**
*Jan 2020*: *PDE-MANS 2020*, Granada, Spain **(Poster Presenter)**
*Sep 2019*: *Workshop "On growth and pattern formation"*, Oxford, UK **(Poster Presenter)**
*Jul 2019*: *Edinburgh Slow-Fast-Ival*, Edinburgh, UK **(Invited Speaker)**
*May 2019*: *SIAM Conference on Applications of Dynamical Systems (DS19)*, Snowbird, Utah, USA **(Invited Speaker)**
*Mar 2019*: *GFS follow on: Mathematics of form in active and inactive media*, Cambridge, UK **(Invited Speaker)**

*Feb 2019*: *First International Nonlinear Dynamics Conference (NODYCON2019)*, Rome, Italy **(Contributed Talk)**
*Feb 2019*: *10th Workshop on Dynamical Systems Applied to Biology and Natural Sciences (DSABNS2019)*, Naples, Italy **(Contributed Talk)**
*Jul 2018*: *European Conference on Mathematical Biology (ECMTB) 2018*, Lisbon, Portugal **(Invited Speaker)**
*Jun 2017*: *9th European Nonlinear Dynamics Conference (ENOC)*, Budapest, Hungary **(Invited Speaker)**
*Jul 2016*: *European Conference on Mathematical Biology (ECMTB) 2016*, Nottingham, UK
*Jun 2016*: *Vienna young Scientist Symposium*, Vienna, Austria (**Contributed Talk**)
*Jul 2015*: *Equadiff 2015*, Lyon, France (**Contributed Talk**)
*Jun 2013*: *Four decades of progress in monitoring and modeling of processes in the soil-plant-atmosphere system: applications and challenges*, Naples, Italy (**Contributed Talk**)

## TEACHING EXPERIENCE

*Winter Term 2021/22*: Linear Algebra for Computational Science (6 ECTS), University of Vienna, Austria
*Summer Term 2021*: Tutorials on Ordinary Differential Equations (2 ECTS), University of Vienna, Austria

## MENTORING AND SUPERVISION OF STUDENTS

*2021*: Advisor for the Bachelor thesis of Mr. Yehor Pospolit at the Faculty of Mathematics, University of Vienna.

## RESEARCH SCHOOLS

*Mar 2020*: *DK Winter School "Dissipation and Dispersion in Nonlinear PDEs"*, Baden, Austria **(Invited Speaker)** **(postponed)**
*Apr 2019*: *LMS-CMI Research School "PDEs in Mathematical Biology: Modelling and Analysis"*, Edinburgh, UK **(Poster Presenter)**
*Nov 2015*: *1st CENTRAL School on Analysis and Numerics for Partial Differential Equations*, Vienna, Austria
*Sep 2014*: *Summer School "Analysis and Applications of Partial Differential Equations"*, Graz, Austria

## OUTREACH EVENTS

*Jun 2022*: Podcast @ *ResearchPod* (**to appear**)
*Nov 2021*: Role model profile for the workshop "MINT erforschen" @ *KinderUni*, University of Vienna, Austria
*Jul 2021*: "The Turing Pattern Project" @ *KinderUni*, University of Vienna, Austria
*Dec 2016*: *Edinburgh Maths Circle*, The University of Edinburgh, UK
*Nov 2016*: Outreach event at *Flora Stevenson Primary School*, Edinburgh, UK

## ACADEMIC SERVICES

*2017-present*: **Organiser of Scientific Events**
*Sep 2023*: ICMS Early-Career Workshop *MoDiS - Modelling Diffusive Systems: Theory & Biological Applications: Part II*, Edinburgh, UK
*Sep 2022*: Mini-symposium "*Multi-scale phenomena in biology: modelling and analysis*" at ECMTB 2022, Heidelberg, Germany
*Apr 2022*: Hausdorff School *Diffusive Systems: Part II*, Bonn, Germany
*Sep 2021*: ICMS Early-Career Workshop *MoDiS - Modelling Diffusive Systems: Theory & Biological Applications*, online
*May 2021*: Mini-symposium *Recent Developments in Ecosystems' Resilience* at SIAM DS21, online

*Apr 2021*: Hausdorff School *Diffusive Systems: pattern formation, bifurcations, and biological applications*, online
*2017-2019*: DK Winter & Summer Schools
Seminar *PDE Afternoon*
*Jun 2019*: Workshop *Women in PDEs @ Vienna*, Austria
*Nov 2016*: Workshop *Nonlinear PDEs & Gradient Flows: Analytical and Numerical Aspects*, Vienna, Austria

*2018-present*: **Journal Referee**
SIAM Journal on Applied Mathematics
SIAM Journal on Applied Dynamical Systems
Physica D: Nonlinear Phenomena
Journal of Mathematical Biology
Mathematical Biosciences
International Journal of Bifurcations and Chaos
IEEE Control Systems
Mathematical Modelling of Natural Phenomena
Mathematical Problems in Engineering
Ricerche di Matematica
Mathematics
*2021*: **Journal Editor**
Guest Editor of the Special Issue on "*Mathematical and Data-Driven Computational Modelling in Neuroscience*", Mathematical Biosciences and Engineering

## PROGRAMMING & SOFTWARE SKILLS

*Languages*: Mathematica, MATLAB, Fortran
*Software*: AUTO, pde2path, Microsoft Office (ECDL license)
*Graphics*: Gimp, Xfig

## SCIENTIFIC TRAINING

*May 2022*: Situational leadership
*Oct 2021*: ERC Starting and Consolidator Grant Application Workshop
*Feb 2021*: Basic Qualification for Junior Staff - Teaching in STEM disciplines
*Jan 2017*: Proposal writing
*Jan 2016*: Career planning
*Jan 2015*: Scientific writing
*Jan 2014*: Presentation techniques

## WORK EXPERIENCE

*2012-2014*: **Book Reviser** for *Editorial Group SIMONE*, Italy
*2013-2014*: **Scientific Reviser** for *Progetto Matematika*, Italy

## MEMBERSHIPS

*Oct 2021–present*: *Society for Neuroscience (SFN)*
*Oct 2021–present*: *Sydic (System Dynamics Italian Chapter)*
*Sep 2021–present*: Gruppo UMI "*Modellistica Socio-Epidemiologica (MSE)*"
*Jul 2021–present*: *Società Italiana di Matematica Applicata ed Industriale (SIMAI)*
*Jul 2021–present*: *Unione Matematica Italiana (UMI)*

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| *Jul 2019–present*: | *European Women in Mathematics (EWM)* |
| *Feb 2019–present*: | *European Society for Mathematical and Theoretical Biology (ESMTB)* |
| *May 2019–Apr 2020*: | *Society for Applied and Industrial Mathematics (SIAM)* |

## LANGUAGES

**Italian**, mother tongue
**English**, fluent (TOEFL certificate, 112/120)
**German**, fluent (C1.2 certificate, 17/20)