George Datseris

Curriculum Vitae

Academic appointments

10/2023 - present **Marie Sklodowska Curie Postdoctoral Fellow**, *University of Exeter*, Department of Mathematics and Statistics, Exeter, United Kingdom.
Mentors: Peter Ashwin, Geoffrey Vallis

01/2023 - 09/2023 **Royal Society Newton International Fellow**, *University of Exeter*, Department of Mathematics and Statistics, Exeter, United Kingdom.
Mentors: Peter Ashwin, Geoffrey Vallis

01/2020 - 12/2022 **Postdoc in climate science**, *Max Planck Institute for Meteorology*, Department of Atmosphere in the Earth System, Hamburg, Germany.
Supervisors: Bjorn Stevens, Hauke Schmidt

04/2016 - 09/2019 **PhD in physics: Ballistic electron transport in graphene nanodevices and billiards**, *Max Planck Institute for Dynamics and Self-organization*, Department of Nonlinear Dynamics, Göttingen, Germany.
Supervisors: Theo Geisel, Ragnar Fleischmann

10/2015 - 04/2016 **Research assistant**, *Max Planck Institute for Dynamics and Self-Organization*, Department of Nonlinear Dynamics, Göttingen, Germany.

2009 - 2016 **BSc and MSc in physics, majored in condensed matter**, *National and Kapodistrian University of Athens, Faculty of Physics*, Athens.
Thesis supervisors: Fotios Diakonos, Georgios Triberis

Awards and highlights

2023 **Cover Article & Featured Article in CHAOS**, Our paper *Estimating fractal dimensions* (Datseris et al. 2023) was selected as a Featured Article, which signifies that the editors felt that our article was one of the journal's best. The same article then became the cover article for the volume it was published in.

2023 **PhD Funding under GW4+**, awarded funding to supervise a PhD candidate under the NERC GW4+ DTP funding scheme (award: 79,427£). However, no successful applicant utilized the funding.

2023 **Featured Article in CHAOS and Showcase in AIP Publishing**, Our paper *Framework for global stability analysis of dynamical systems* (Datseris, Rossi, Wagemakers 2023) was selected as a Featured Article, which signifies that the editors felt that our article was one of the journal's best. The same article was showcased in the American Institute of Physics (AIP) Publishing Showcase on Kudos.

2023 **Marie Sklodowska Curie Postdoctoral Fellowship**, awarded by the European Commission, and funded by the UK Research and Innovation, to work on an individual project at the University of Exeter (award: 220,908.48€).

2022 **Walter Benjamin Fellowship**, awarded by the German Research Foundation (DFG) to work on an individual project at the University of Exeter (award: 74,004.72€) (declined).

2022 **Newton International Fellowship**, awarded by the Royal Society to work on an individual project at the University of Exeter (award: 131,250£).

2022 **Max Planck Institute for Meteorology Distinction**, awarded for my "exceptional performance in intellectual culture and community building". This award also came with a premium payout (6,000€).

2022 **Featured Article in Chaos**, Our paper *Effortless estimation of basins of attraction* (Datseris & Wagemakers 2022) was selected as a Featured Article, which signifies that the editors felt that our article was one of the journal's best.

2021 **Editor's Highlight in Eos.org**, Our paper *Earth's albedo and its symmetry* (Datseris & Stevens 2021, AGU Advances) was selected as an Editor's Highlight in Eos.org (fewer than 2% of AGU journal articles are featured in this way).

2020 **70$^{\text{th}}$ Lindau Nobel Laureate Meeting**, I was one of the few young scientists selected to participate in the meeting, which provided direct interaction with several Nobel Laureates.

2019 **Summa Cum Laude**, Awarded highest grade in my PhD defense.

2018 **DSWeb 2018 Dynamical Systems Software 1st place**, Award given by the Dynamical Systems division of SIAM for my submission **DynamicalSystems.jl** (award: 500€).

2018 **IMPRS Travel Grants**, For participating in JuliaCon2018, London, U.K. and deRSE19, Potsdam, Germany (award: 1,500€).

2016 - 2019 **International Max Planck Research School (IMPRS) Excellence Fellowship**, a competitive fellowship awarded by the IMPRS for the Physics of Biological and Complex Systems that covers a full PhD project (award: circa 1,800€/month).

Publications

For a full list of publications including citation related please metrics see my manually curated Google Scholar page:
`https://scholar.google.com/citations?hl=en&user=5U_llXcAAAAJ`

Books and book chapters

2022 **Nonlinear Dynamics: A concise introduction interlaced with code**, *Datseris & Parlitz*, Springer-Nature, Undergraduate Lecture Notes In Physics Series, `https://link.springer.com/book/10.1007/978-3-030-91032-7`.

Invited talks

This section lists invited talks, not contributed conference talks. I contribute on average 3 conference talks per year in international conferences.

11/2023 **Reproducibility in science: why it matters and how to achieve it**, *JuliaHEP (Erlangen Centre for Astroparticle Physics)*, invited by Tamas Gal.

10/2023 **[Colloquium] Cloud controlling factors and causal timeseries analysis**, *University of Utrecht*, invited by Swinda Falkena.

03/2023 **Finding and continuing attractors and their basin fractions for arbitrary dynamical systems**, *Max Planck Institute for Evolutionary Biology*, invited by Maria Alejandro Ramirez.

01/2023 **Cloud controlling factors and causal timeseries analysis**, *Stockholm University Meteorology Department (MISU)*, invited by Frida Bender and Rodrigo Caballero.

08/2022 **Stability indicators in DynamicalSystems.jl**, *Minisymposium "Stability indicators and machine learning" in Dynamics Days 2022*, invited by Nahal Sharafi.

08/2022 **Why you should do your agent based modelling with Agents.jl**, *University of Europe for Applied Sciences / Statista*, invited by Iris Lorscheid (UoE) and Jeremiah Lasquety-Reyes (Statista).

06/2022 **An open approach to nonlinear dynamics**, *Ray Juan Carlos University, Madrid*, invited by Miguel Sanjuan.

05/2022 **DynamicalSystems.jl - nonlinear dynamics software for everyone**, *Technical University Munich, weekly seminar of dynamics group*, invited by Niklas Boers.

04/2022 **An open approach to nonlinear dynamics**, *University of Oldenburg*, invited by Ulrike Feudel.

11/2021 **Earth's albedo and its symmetry**, *Max Planck Institute for Dynamics and Self-Organization, Göttingen*, invited by Michael Wilczek.

05/2021 **Earth's albedo symmetry and cloudiness**, *35^{th} CERES-NASA Science Team Meeting*, invited by Norman Loeb.

11/2019 **Phase space analysis of quantum transport in graphene**, *Technical University Vienna*, invited by Stefan Rotter.

09/2019 **Music timeseries analysis: universal structure and its impact on the listening experience**, *University of Nottingham*, invited by Philip Moriarty.

08/2019 **Fresh approach to dynamical systems software**, *8^{th} Recurrence Plot Symposium - Zhenjiang, China*, invited by Norbert Marwan.

07/2019 **Software to make your scientific life easier**, *New trends in biomedical imaging and data analysis*, invited by Ulrich Parlitz.

05/2019 **Music timeseries analysis: universal structure and its impact on the listening experience**, *Max Planck Institute for the Physics of Complex Systems*, invited by Holger Kantz.

04/2019 **Spatiotemporal timeseries prediction using locally reconstructed states**, *Potsdam Institute for Climate Impact Research*, invited by Norbert Marwan.

07/2018 **Fresh approach to dynamical systems software**, *TU Munich*, invited by Oliver Junge.

04/2018 **Nonlinear resonances and phase-space volume conservation lead to robust ballistic transport in antidot superlattices**, *Uni. Regensburg*, invited by Jonathan Eroms.

Education & outreach experience

Supervision

2023 **Advanced implementations for Attractors.jl**, *S. Vayl*, Google Summer of Code project.

2021 **Model Serialization and Pathfinding for Agents.jl**, *A. Sabharwal*, Google Summer of Code project, co-supervised with T. DuBois.

2021 **Music Transformer**, *V. M. Vasi*, Google Summer of Code project, co-supervised with A. Sengupta.

2021 **Albedo hemispheric symmetry as a result of static asymmetries**, *I. Baffour*, Master thesis co-supervised with H. Schmidt.

2018 **Statistical properties of musical time series**, *L. Jahn*, Bachelor thesis co-supervised with T. Geisel.

2018 **Observing and predicting complex dynamics using local modelling**, *J. Isensee*, Bachelor thesis co-supervised with U. Parlitz.

2018 **Lyapunov exponents vs. phase space restrictions in dynamical billiards**, *L. Hupe*, Bachelor thesis co-supervised with R. Fleischmann.

Teaching

2023 **Mathematics Group Project**, *University of Exeter*.
Teaching a group of 8 students working on using complexity measures for stock market timeseries analysis; part of module MATH3035 led by James Screen.

2020-2021 **A practical introduction to nonlinear dynamics**, *International Max Planck Research School for Earth System Modelling (Hamburg)*.
Full semester course for PhD and Master students where I was the only lecturer and also did the exercise tutoring sessions. The course is based on our Springer-published textbook *Nonlinear Dynamics*.

2021 **Agent based modelling with Agents.jl**, *SGH Warsaw School of Economics*.
One-day guest lecture for a course on Agent based modelling taught by B. Kaminski.

2016, 2017 **Introduction to the Physics of Complex Systems**, *University of Göttingen*.
Tutoring for the course (total amount of around 48 hours) taught by R. Fleischmann, U. Parlitz, K. Alim and A. Gholami. I tutored this course twice.

04/2014 - 06/2014 **Chaos in 1D and 2D Maps**, *University of Athens*.
Total of 9 hours guest lecture for the course "Non-linear dynamical systems" taught by T. Apostolatos and P. Ioannou.

2010 - 2014 **High school physics, chemistry and math**, *Private tutoring.*

Workshops, Videos, Outreach

2023 (twice) **DynamicalSystems.jl and Attractors.jl - hands-on workshop on a new paradigm of dynamical systems stability**, *First in Max Planck Institute for Evolutionary Biology, invited by Alejandra Maria Rodriguez; Then in "Non-autonomous Dynamics in Complex Systems: Theory and Applications to Critical Transitions" workshop, invited by Ulrike Feudel.*

2022 **Good Scientific Code Workshop**, *Online.*
A week-long block workshop on principles of good scientific code. Also available on YouTube with $\tilde{2}$,300 views.

2021 - present **Educational science videos**, *Online.*
Education-oriented videos about various scientific topics related with nonlinear dynamics available on YouTube channel "JuliaDynamics". For example, my video "Explanation of the butterfly effect and deterministic chaos using billiards" has ∼20,000 views (February 2022).

2021 **Open Science Panel Discussion**.
Participated as one of the four panelists of the "Open Science" Panel Discussion which took place during the 70$^{\text{th}}$ Lindau Nobel meeting. I co-hosted the panel with Dr. Jex and Nobel Laureates Prof. Blackburn and Prof. Schekman. It is available publicly, `https://www.mediatheque.lindau-nobel.org/recordings/39149/open-science`.

2020 **Julia: Zero-To-Hero**, *Göttingen / online.*
Intensive workshop about the programming language Julia and how can one start using it in scientific work. Also available on YouTube with ∼20,000 views.

2019 **Good scientific code**, *Göttingen.*
One-day long workshop on writing good scientific code.

2017 - present **Software video tutorials**, *Online.*
Multiple videos uploaded (or livestreamed) on YouTube educating on using specific software packages for the Julia language.

Software

Developed software

I am the lead developer of the JuliaDynamics and JuliaMusic GitHub software organizations which total more than 100 contributors and more than 50,000 users. Below I list the software packages I have spent the majority of my time, but I have generally contributed to many more, which one may find on my GitHub profile. *(all following software have already been used in published research)*

- Attractors.jl
- DynamicalBilliards.jl
- DrWatson
- MIDI.jl
- Agents.jl
- DynamicalSystems.jl
- TimeseriesPrediction.jl
- MusicManipulations.jl
- TimeseriesSurrogates.jl
- ClimateBase.jl

- DelayEmbeddings.jl
- ComplexityMeasures.jl

Community activity

Review I typically review 10 pull requests per month as my lead developer role.

Hacktoberfest Completed the Hacktoberfest challenge every year since 2017.

Support In the Julia discussion forums (discourse/Slack) and the GitHub Issues platform I answer questions from Julia users on a weekly basis.

Additional qualifications

Reviewer work Reviewed publications for the following journals: Journal of Open Source Software (x5); European Physics Journal B, Chaos (x4); PLOS ONE; PLOS ONE: Applied Mathematics; Journal of Climate (x2); Geophysical Research Letters (x2); New Journal of Physics (x2); IEEE Transcations on Systems, Man, and Cybernetics: Systems; Physical Review E; Physical Review E Perspectives; Journal of Open Research Software.

Editorial Editorial Advisory Board member for *Chaos, An Interdisciplinary Journal of Nonlinear Science* (Jan. 2024 to Dec. 2026).

Soft Skills Attended courses on networking, negotiation, conflict management, grant writing, career development, and a semester-long course on project management and productivity.

Professional Drummer Degree on modern drumset and Jazz music theory. Graduated from Philippos Nakas school of music in association with Berklee college of music with diploma grade: "Very Good" on July 2015.

Event Organizing Minisymposium on "multistability and global stability analysis" for the Dynamics Days 2024 conference; Hacktoberfest at the University of Exeter (2023); Hacktoberfest at the Max Planck Institute for Dynamics and Self-Organization (2019); Göttingen GGNB PhD School Debate club (2019); Bi-annual retreat of the PhD school for the Physics of Biological and Complex Systems (2018).

Languages Greek (mothertongue), English (exceptional), Spanish (B2 degree).