



Alexander van Meegen

Personal Details

Citizenship	German	Address	Hellenthaler Str. 22, 50937 Köln
Date of birth	23 April 1991	Phone	+49(0) 1573 8980198
Place of birth	Geldern, Germany	Email	a.van.meegeen@fz-juelich.de

Education

- Since 03/2018 **PhD in Computational Neuroscience**, *Forschungszentrum Jülich*, Germany.
Thesis: “Simulation and theory of large-scale cortical networks”.
Supervisors: Prof. Dr. Moritz Helias, Prof. Dr. Sacha J. van Albada.
Topics: Large-scale neural network modeling and simulation, spiking neural networks, mean-field theory, predictive connectomics, timescales, learning-to-learn, path integrals.
- 04/2015–09/2017 **MSc in Physics**, *Humboldt Universität*, Berlin, Germany.
Thesis: “Coloured Noise Problems in Neuroscience”.
Supervisor: Prof. Dr. Benjamin Lindner.
- 09/2015–01/2016 **Erasmus exchange semester**, *Université Paul Sabatier*, Toulouse, France.
- 09/2011–03/2015 **BSc in Physics**, *Ruprecht–Karls–Universität*, Heidelberg, Germany.
Thesis: “Structure Formation of Swimming Bacteria”.
Supervisor: Prof. Dr. Ulrich Schwarz.
- 08/2001–07/2010 **Abitur**, *Lise–Meitner–Gymnasium*, Geldern, Germany.
- 09/2008–02/2009 **Schülerstudium Physik**, *Universität Duisburg–Essen*, Germany.

Awards & Scholarships

- 2020 **Doctoral scholarship**, *Studienstiftung des deutschen Volkes e.V.*
- 2010 **Weltwärts scholarship**, *German Federal Ministry for Economic Cooperation and Development*.
- 2010 **Book price**, *German Physical Society*.

Work Experience

- Since 09/2017 **Research assistant**, *Forschungszentrum Jülich*, Germany.
- 04/2016–08/2017 **Working student**, *VDI/VDE Innovation + Technik GmbH*, Berlin, Germany.
Implementing a text mining framework (based on cosine similarity and tf-idf) to monitor and analyse research and development databases as well as relevant newsfeeds.
- 10/2014–05/2015 **Working student**, *EWC Weather Consult GmbH*, Karlsruhe, Germany.
Developing, implementing and evaluating a statistical method to improve energy-forecasts in solar parks.

- 09/2012–02/2015 **Tutor**, *Lernzentrum CAPiTO*, Heidelberg, Germany.
Tutoring high school students including preparations for the Abitur.
- 08/2013–10/2013 **Intern**, *EWC Weather Consult GmbH*, Karlsruhe, Germany.
Developing, implementing and evaluating a wake model to improve energy-forecasts in large wind farms.
- 03/2008–04/2008 **Intern**, *Data Village GmbH*, Geldern, Germany.
Implementing and evaluating a duplicate searching algorithm based on Levenshtein distance.
- 06/2007–07/2007 **Intern**, *Ag-Chem Europe BV*, Grubbenvorst, Netherlands.
Creating CAD drawings of sign plates.

Current Preprints

- 2020 **A. van Meegen**, T. Kühn, and M. Helias: *Large Deviation Approach to Random Recurrent Neuronal Networks: Rate Function, Parameter Inference, and Activity Prediction*, arXiv:2009.08889.
- 2019 **A. van Meegen** and S. J. van Albada: *A Microscopic Theory of Intrinsic Timescales in Spiking Neural Networks*, arXiv:1909.01908.

Peer-reviewed Publications

- 2018 **A. van Meegen** and B. Lindner: *Self-Consistent Correlations of Randomly Coupled Rotators in the Asynchronous State*, Phys. Rev. Lett. 121, 258302.

Talks at Conferences

- 07/2019 **A. van Meegen** and B. Lindner: *Self-Consistent Correlations of Randomly Coupled Rotators in the Asynchronous State*, plenary talk, CNS 2019, Barcelona, Spain.
- 04/2019 **A. van Meegen**, T. Kühn, and M. Helias: *A bridge from large deviation theory to statistical field theory*, invited talk, EITN Mean-Field Workshop, Paris, France.
- 07/2018 **A. van Meegen** and S. J. van Albada: *Intrinsic Timescales in Spiking Neural Networks – A Theoretical Approach*, plenary talk, INM/ICS Retreat 2018, Jülich, Germany.
- 03/2018 **A. van Meegen** and B. Lindner: *Self-consistent correlations of randomly coupled rotators in the asynchronous state*, DPG Spring Meeting, Berlin, Germany.

Poster Presentations at Conferences

- 02/2020 **A. van Meegen**, T. Kühn, and M. Helias: *Inferring random network parameters from continuous-time trajectories*, COSYNE 2020, Denver, United States.
- 02/2020 **A. van Meegen**, S. J. van Albada, and M. Helias: *On the path integral approach to random neural networks*, Heraeus Seminar: Quantum Thermodynamics for Young Scientists, Bad Honnef, Germany.
- 09/2019 **A. van Meegen**, T. Kühn, and M. Helias: *A bridge from large deviation theory to statistical field theory*, Bernstein Conference 2019, Berlin, Germany.
- 07/2019 **A. van Meegen** and S. J. van Albada: *A Theoretical Approach to Intrinsic Timescales in Spiking Neural Networks*, CNS 2019, Barcelona, Spain.

- 07/2019 **A. van Meegen** and S. J. van Albada: *Theory of neuronal timescales in balanced random networks*, 4th workshop on Advanced Methods in Theoretical Neuroscience, Göttingen, Germany.
- 06/2019 **A. van Meegen** and S. J. van Albada: *Analysis of Intrinsic Timescales in Spiking Neural Networks*, INM/ICS Retreat 2019, Jülich, Germany.
- 06/2018 **A. van Meegen**, M. Schmidt, J. Schücker, M. Diesmann, and S. J. van Albada: *Publishing a complex model code*, NEST Conference 2018, Ås, Norway.

Organization of Conferences & Workshops

- 01/2020 **Scientific committee**, *4th HBP Student Conference*, Pisa, Italy.
Organizing scientific program and hands-on workshop day.
- 05/2019 **Organizing committee**, *INM-6 Retreat 2019*, Heijen, Netherlands.
Organizing scientific and social program for the annual retreat of the institute.
- 02/2019 **Scientific committee**, *3rd HBP Student Conference*, Ghent, Belgium.
Organizing scientific program and hands-on workshop day.
- Since 01/2019 **Organizer**, *Python Module of the Week*, Jülich, Germany.
Organizing a bi-weekly workshop on Python related topics.
- 05/2018 **Organizing committee**, *INM-6 Retreat 2018*, Heijen, Netherlands.
Organizing scientific and social program for the annual retreat of the institute.

Teaching

- 2020 & 2021 **Lectures on Network Models**, part of the ‘Introduction to Computational Neuroscience’ lecture series, *RWTH Aachen*, Germany.
- 07/2019 **Introduction to the simulation of structurally detailed large-scale neuronal networks (using NEST)**, *CNS 2019*, Barcelona, Spain.
- 04/2019 **NEST simulator tutorial**, *EITN Spring School*, Paris, France.
- 02/2019 **NEST simulator tutorial**, *3rd HBP Student Conference*, Ghent, Belgium.
- 03/2018 **NEST simulator tutorial, NEST & TVB group project** ‘From local circuits to whole-brain models’, *EITN Spring School*, Paris, France.
- Summer 2020 **Teaching assistant: Theoretical Neuroscience**, *RWTH Aachen*, Germany.
- Winter 2016/17 **Teaching assistant: Statistical Physics**, *Humboldt Universität*, Berlin, Germany.

(Co-)Supervision of Students

- Current Hannah Vollenbröker (MSc), Kai Segadlo (MSc).
- Past Bastian Epping (BSc), Michael Dick (MSc), Georg Chechelnizki (MSc).

Reviewing Activity

Ad hoc reviewer for Physical Review Letters and Entropy.

Relevant Courses

- 09/2018 **Advanced Scientific Programming in Python**, G-Node & University of Camerino, Camerino, Italy.
- 08/2018 **Cajal Course in Computational Neuroscience**, Champalimaud Centre, Lisbon, Portugal.
- 06/2018 **SPP2041 Analytical Workshop**, FIAS, Frankfurt am Main, Germany.

Memberships

- Current Organization for Computational Neurosciences, Bernstein Network Computational Neuroscience, German Physical Society, NEST Initiative

Computer Skills

Python (data-processing & -analysis, scientific computing), C++ (scientific computing), NEST (neural network simulator), TensorFlow (machine learning library), RapidMiner (machine learning & data mining platform), Tableau (data visualisation), MySQL (databases).

Languages

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|-----------|---------------------|--|
| German | Native speaker | |
| English | Business proficient | <i>Daily use, both written and spoken.</i> |
| French | Fluent | <i>Stay in France for 1 semester.</i> |
| Kiswahili | Intermediate | <i>Stay in Kenya for 1 year.</i> |
| Dutch | Basic | <i>Dutch family (stepfather).</i> |

Voluntary Engagement

- Since 02/2019 **PhD representative INM-6**, Forschungszentrum Jülich, Germany.
Representing PhD student interests at institute meetings, keeping in touch with research centre committees, mediating in case of conflicts.
- 09/2014–03/2015 **Chair of regional group Baden-Württemberg**, ICJA Freiwilligenaustausch weltweit e.V., Berlin, Germany.
Helping with the first steps in Germany, organising monthly follow-up meetings, and mediating in case of conflicts.
- 08/2012–03/2015 **Mentor**, ICJA Freiwilligenaustausch weltweit e.V., Berlin, Germany.
Mentoring international volunteers in Germany.
- 12/2014 **Instructor**, ICJA Freiwilligenaustausch weltweit e.V., Berlin, Germany.
Co-organising and co-conducting a final seminar for international volunteers in Germany.
- 05/2013–12/2013 **Voluntary staff**, Heidelberg Institute for International Conflict Research e.V., Heidelberg, Germany.
Researching the state of violent conflicts in Eritrea for the annual ‘Konfliktbarometer’.
- 08/2010–08/2011 **Voluntary service**, CoWaRT and Kiptere.CH, Kiptere, Kenya.
CoWaRT: HIV education in the Kiptere area. Kiptere.CH: improvement of the socio-economic situation of young adults and farmers in the Kiptere area.
- 2008–2010 **Football coach and basketball referee**, SV GW Vernum e.V., Germany.