

# Marius Schneider

PHD STUDENT · INTERNATIONAL MAX PLANCK RESEARCH SCHOOL

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## Education

### Ph.D. in Neurophysics

DONDERS CENTRE FOR NEUROSCIENCE, RADBOUD UNIVERSITY

Title: Mechanisms of inter-areal neuronal communication

Advisor: Martin Vinck. Committee: M Carlen, G Einevoll, W Singer.

Graduated with highest honors (top 5 %).

Nijmegen (NL)

02/2020 - 05/2024

### M.Sc. in Physics

GOETHE UNIVERSITY

Title: Biological complexity facilitates tuning of the neuronal parameter space

Advisor: Dr. Hermann Cuntz, Prof Dr. Peter Jedlicka.

German Grade - 1.1, American GPA - 3.9.

Frankfurt (DE)

10/2016 - 04/2019

### B.Sc. in Physics

GOETHE UNIVERSITY

Advisor: Prof. Dr. Reinhard Dörner.

German Grade - 1.7, American GPA - 3.3.

Frankfurt (DE)

10/2012 - 10/2016

## Professional Experience

2019-2024 **PhD student**, Ernst Strüngmann Institute for Neuroscience in Cooperation with Max Planck Society

- Leading several highly collaborative projects resulting in high-impact publications
- Large-scale data analysis of neural recordings in different species
- Biophysical and abstract modeling of neural circuits and LFP signals
- Mathematical analysis

2018-2019 **Research Assistant**, Justus Liebig University, Gießen

- Biophysical modeling of degeneracy in the hippocampus

2017-2018 **Research Assistant**, Frankfurt Institute for Advanced Studies

- Biophysical modeling of hippocampal granule cells
- Teaching and supervision of undergraduate students

2017-2018 **Accelerator Operator**, Goethe University, Frankfurt

- Operate a linear particle accelerator to carry out ion beam analyses

2016-2018 **Research Assistant**, Max Planck Institute for Empirical Aesthetics

- Perform MEG recordings
- Preprocessing of recordings
- Recruiting subjects

## Publications

### PUBLISHED

Spyropoulos G\*, **Schneider M\***, van Kempen J, Gieselmann MA, Thiele A, Vinck M. Distinct feedforward and feedback pathways for cell-type specific attention effects. *Neuron*, in Press.

**Schneider M**, Tzanou A, Uran C, Vinck M. 2023. Cell-type-specific propagation of visual flicker. *Cell Reports*, 42(5): e1011212.

**Schneider M**, Bird AD, Gidon A, Triesch J, Jedlicka P, Cuntz H. 2023. Biological complexity facilitates tuning of the neuronal parameter space. *PLOS Computational Biology*, 19(7): e1011212.

Vinck M, Uran C, Spyropoulos G, Onorato I, Broggin AC, **Schneider M**, Johnson AC. 2023. Principles of large-scale neural interactions. *Neuron*, 111(7): 987-1002.

JR Dowdall, **Schneider M**, M Vinck. 2023. Attentional modulation of inter-areal coherence explained by frequency shifts. *NeuroImage*, 277: 120256.

**Schneider M**, Broggin AC, Dann B, Tzanoua A, Uran C, Sheshadri S, Scherberger H, Vinck M . 2021. A mechanism for inter-areal coherence through communication based on connectivity and oscillatory power. *Neuron*, 109(24): 4050-4067.

Cuntz H, Bird A, Beining M, **Schneider M**, Mediavilla L, Hoffmann F, Deller T, Jedlicka P. 2021. A general principle of dendritic constancy – a neuron’s size and shape invariant excitability. *Neuron*, 109(22): 3647-3662.

## IN REVIEW

Onorato I, Tzanou A, **Schneider M**, Uran C, Broggin AC, Vinck M. Distinct roles of PV and Sst interneurons in visually-induced gamma oscillations.

Vinck M, Uran C, **Schneider M**. Aperiodic processes explaining rhythms in behavior: A matter of false detection or definition?

\* These authors contributed equally

## Awards, Fellowships, & Grants

2024	<b>EBBS young investigator awards</b> European Brain and Behaviour Society
2019	<b>PhD research fellowship</b> , International Max Planck Research School for Neural Circuits
	<b>Travel Grant for CNS conference</b> , Organization for Computational Neurosciences
2018	<b>Travel Grant for Neural Dynamics Summer School</b> , University of Bristol
2016	<b>German National Student Scholarship</b>

## Invited Talks & Selected Conference Presentations

2024	<b>FENS Forum (Vienna, Austria)</b> , Poster: Mechanisms of attention in biophysiological realistic Daleian spiking neural networks
2022	<b>Bernstein Center of Computational Neurosciences (Berlin, Germany)</b> , Invited Talk: Do neurons communicate through coherence?
2022	<b>SFN (San Diego, USA)</b> , Poster: Cell-type specific entrainment during rhythmic visual flicker stimulation.
2022	<b>Bernstein (Berlin, Germany)</b> , Poster: Cell-type specific entrainment during rhythmic visual flicker stimulation.
2021	<b>Neuromatch Conference (Online)</b> , Selected Talk: A mechanism for inter-areal coherence through communication based on connectivity and oscillatory power.
2019	<b>CNS (Barcelona, Spain)</b> , Poster: High dimensional ion channel composition enables robust and efficient targeting of realistic regions in the parameter landscape of neuron models.
2018	<b>3R Centre Kick-off symposium (Giessen, Germany)</b> , Poster: Ion channel diversity enables robust and flexible targeting of realistic regions in the parameter landscape of dentate granule cell models.

## Reviewer

Nature Communications  
Journal of Neurophysiology

## Teaching Experience

2022	<b>Neuromatch Academy: Computational Neuroscience</b> , Teaching Assistant (Online)
2019	<b>7th Baltic-Nordic School on Neuroinformatics</b> , Teaching Assistant (Frankfurt Institute for Advanced Studies)
2018	<b>Computational Neurobiology Course</b> , Teaching Assistant (Goethe University, Frankfurt)

## Mentoring

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2019      Aysin Yildirim Bachelor Thesis, Goethe University

## Further Qualifications

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LANGUAGES : German (native speaker), English (fluent), French (basic)

CODING SKILLS : Python, Pytorch, Tensorflow, Matlab, C++, Psytoolbox, Neuron, Fieldtrip, LaTeX

OTHER SKILLS : Problem Solving, Teamwork, Mathematical Modelling, Data Analysis, Machine Learning, Adobe Illustrator