

# Davide Spalla

Data scientist with a background in theoretical physics and a PhD in computational neuroscience. Currently a researcher in computational neuroscience, applying machine learning to neural recordings.

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**Github:** [github.com/davidespalla](https://github.com/davidespalla)

**Website:** [davidespalla.github.io](https://davidespalla.github.io)

## RESEARCH EXPERIENCE

### **Radboud University, Nijmegen** — *Postdoctoral Researcher*

JANUARY 2021 - PRESENT

Researcher in the Neuronal Network of Memory Lab, working on machine learning methods for the analysis of neural recordings and computational models of memory and learning.

### **SISSA, Trieste** — *PhD student*

NOVEMBER 2016 - NOVEMBER 2020

PhD student in computational neuroscience, working on neural network theory, memory and learning models and the neural mechanisms of spatial cognition.

### **Center for Quantum Technologies, Singapore** — *Research assistant*

SEPTEMBER 2015 - DECEMBER 2015

Working on the implementation of efficient algorithms for the approximate solution of NP-hard problems in quantum many body systems.

### **ISI, Torino** — *Research assistant*

APRIL 2014 - OCTOBER 2014

Working on the development and application of topological data analysis algorithms to genomic data.

## EDUCATION

### **SISSA, Trieste** — *PhD in Computational Neuroscience*

NOVEMBER 2016 - NOVEMBER 2020

Graduated cum laude with thesis: "Space, time and memory in the medial temporal lobe"

### **Università degli Studi, Torino** — *MSc in Physics of Complex Systems*

OCTOBER 2014 - OCTOBER 2016

Graduated cum laude with thesis: "Gene regulation in functional brain networks"

## PROGRAMMING SKILLS

Python (ScikitLearn, Pandas, Tensorflow, PyTorch)

Matlab

R

SQL (BigQuery)

Bash, Linux OS, Git

## GENERAL SKILLS / EXPERTISE

Data analysis and visualization

Signal processing

Machine learning

Neural networks

Probability and statistics

Deep learning

Time series analysis

## LANGUAGES

English (Proficient)

Italian (Native)

Dutch (Basic)

## TEACHING & MENTORING

### **Teaching assistant** — 2021-2022, *Radboud university*

Instructor for the courses:

- Neural data analysis
- Neurophysics
- Advanced Computational Neuroscience

### **Thesis co-supervisor** — 2020, *SISSA*

Thesis co-supervisor of Isabel Maria Cornacchia for the M.Sc. in Physics of Complex Systems .

### **Thesis co-supervisor** — 2019, *SISSA*

Thesis co-supervisor of Lenonardo Battistelli for the B.Sc in Physics.

## PUBLICATIONS

### **Angular and linear speed cells in the parahippocampal circuits**

**Spalla D.**, Treves A. & Boccara C. (2022).

Nature Communications, doi: <https://doi.org/10.1038/s41467-022-29583-z>

### **Continuous attractors for dynamic memories**

**Spalla D.**, Cornacchia I.M. & Treves, A. (2021).

eLife, doi: [10.7554/eLife.69499](https://doi.org/10.7554/eLife.69499)

### **Can grid cells ensemble represent multiple spaces?**

**Spalla D.**, Dubreuil A., Rosay S., Monasson, R. & Treves, A. (2019).

Neural Computation, doi: [https://doi.org/10.1162/neco\\_a\\_01237](https://doi.org/10.1162/neco_a_01237)

## PROFESSIONAL TRAINING

### **Winter School in Quantitative Systems Biology: Learning and Artificial Intelligence**

ICTP, Trieste, 2018

### **FENS Winter School in Neural Control of Behaviour**

Obergurgl, 2017

## GRANTS

**eScience Center fellowship**  
2022