

Guido T. Meijer

guido.meijer@donders.ru.nl | guidomeijer.com | [guidomeijer](https://www.linkedin.com/in/guidomeijer/) | [guido-meijer](https://www.instagram.com/guido_meijer/) | [@guido_meijer](https://twitter.com/guido_meijer)

Work experience

Donders Institute, Radboud University

POSTDOCTORAL RESEARCHER

- Based in the lab of Francesco Battaglia
- I perform electrophysiological recordings in mice using Neuropixel probes during behavior.

Nijmegen, The Netherlands

April 2023 - PRESENT

Champalimaud Centre for the Unknown, International Brain Laboratory (IBL)

POSTDOCTORAL RESEARCHER

- Large international collaboration in which I was based in the lab of Zachary Mainen.
- I did acute Neuropixel recordings in behaving mice in while optogenetically stimulating serotonin release from the dorsal raphe nucleus.
- Close collaboration with theoretical neuroscientists while performing decoding analyses using machine learning and model fitting.
- I was elected as the representative of all researchers in the collaboration twice and through that role attended Executive Board meetings.

Lisbon, Portugal

2018 - 2023

University of Amsterdam, Cognitive and Systems Neuroscience lab

PHD CANDIDATE

- Under supervision of Carien Lansink and Cyriel Pennartz.
- Developed a novel behavioral paradigm to probe multisensory integration in mice.
- Set up chronic calcium imaging of the same neural population long timescales (~ one month).

Amsterdam, The Netherlands

2013 - 2017

Degrees

University of Amsterdam

Amsterdam, The Netherlands

PH.D. IN NEUROSCIENCE

2013 - 2017

• Defended my thesis "More than meets the eye: processing of visual and auditory information in the sensory cortex" on June 5th, 2019

B.S IN PSYCHOBIOLOGY AND M.S. IN COGNITIVE NEUROSCIENCE

2006 - 2013

• Internship at Harvard (Boston, MA, USA) in the lab of Mark Andermann.

Skills

Interpersonal

- I was elected as researchers representative for two consecutive terms in the IBL collaboration, acting as a bridge between the researchers and the Executive Board
- Good collaborative writing skills: I was part of the task force that wrote the first IBL collaboration-wide publication
- Excellent mentoring skills as indicated by positive feedback from two technicians and eight interns that I supervised over the years
- I am passionate about teaching; I was a lecturer and teaching assistant in several courses at the masters level

Experimental

- *In vivo* electrophysiological recordings using multiple Neuropixel probes in awake and behaving mice
- Optogenetic perturbation of neural activity
- Chronic *in vivo* two-photon calcium imaging and photometry over long time scales in mice
- Successfully developed several mouse behavioral paradigms
- Experience with integrating behavior, neural recordings and perturbations in a single experiment

Analytical

- I am specialized in analyzing high-dimensional neural data using dimensionality reduction and machine-learning techniques
- I am part of multiple large collaborative coding projects using Git for code sharing
- Well versed in advanced statistical methods like permutation testing and multi-level statistics

Programming Python, MATLAB, R, Git, LaTeX, MySQL

Publications

2025	Serotonin drives choice-independent reconfiguration of distributed neural activity Meijer, Catarino, Freitas-Silva, Laranjeira, International Brain Laboratory, and Mainen	bioRxiv
	Reproducibility of in-vivo electrophysiological measurements in mice The International Brain Laboratory, <i>et al</i>	eLife
	Power Pixels: a turnkey pipeline for processing of Neuropixel recordings Meijer and Battaglia	bioRxiv
2024	Lightning Pose: improved animal pose estimation via semi-supervised learning, Bayesian ensembling and cloud-native open-source tools Biderman, Whiteway, Hurwitz, Greenspan, Lee, Vishnubhotla, Schartner, Huntenburg, Khanal, Meijer , Noel, Pan-Vazquez, Socha, Urai, The International Brain Laboratory, Warren, Noone, Pedraja, Cunningham, Sawtell, and Paninski	Nature Methods
	Interactive data exploration websites for large-scale electrophysiology Birman, Chapuis, Faulkner, Rossant, International Brain Laboratory, Benson, Catarino, Churchland, Hu, Huntenburg, Khanal, Krasniak, Lau, Meijer , Miska, Noel, Pan-Vazquez, Roth, Schartner, Socha, Steinmetz, Urai, Wells, West, Winter	bioRxiv
2023	A Brain-Wide Map of Neural Activity during Complex Behaviour The International Brain Laboratory, <i>et al</i>	bioRxiv
	Brain-wide representations of prior information in mouse decision-making Findling, Hubert, International Brain Laboratory, Acerbi, Benson, Benson, Birman, Bonacchi, Carandini, Catarino, Chapuis, Churchland, Dan, DeWitt, Engel, Fabbri, Faulkner, Fiete, Freitas-Silva, Gercek, Harris, Häusser, Hofer, Hu, Huntenburg, Khanal, Krasniak, Langdon, Latham, Lau, Mainen, Meijer , Miska, Mrsic-Flogel, Noel, Nylund, Pan-Vazquez, Paninski, Pillow, Rossant, Roth, Schaeffer, Schartner, Shi, Socha, Steinmetz, Svoboda, Tessereau, Urai, Wells, West, Whiteway, Winter, Witten, Zador, Dayan, and Pouget	bioRxiv
	Dissecting the Complexities of Learning With Infinite Hidden Markov Models Bruijns, International Brain Laboratory, Bougrova, Laranjeira, Lau, Meijer , Miska, Noel, Pan-Vazquez, Roth, Socha, Urai, Dayan	bioRxiv
	A new family of statistical tests for neuronal spiking and autocorrelated timeseries data Heimel, Meijer, Montijn	bioRxiv
2021	A standardized and reproducible method to measure decision-making in mice The International Brain Laboratory, <i>et al</i>	eLife
	Neurons in the mouse brain correlate with cryptocurrency price: a cautionary tale Meijer	Peer Community Journal
2020	Neural Correlates of Multisensory Detection Behavior: Comparison of Primary and Higher-Order Visual Cortex Meijer, Marchesi, Montijn, Lansink, and Pennartz	Cell Reports
	Deep Graph Pose: a semi-supervised deep graphical model for improved animal pose tracking Wu, Estefany, Buchanan, Whiteway, Schartner, Meijer , Noel, Rodriguez, Everett, Norovich, Schaffer, Mishra, Salzman, Angelaki, Bendesky, The International Brain Laboratory, Cunningham, and Paninski	NeurIPS
2019	The circuit architecture of cortical multisensory processing: Distinct functions jointly operating within a common anatomical network Meijer, Mertens, Pennartz, Olcese, and Lansink	Progress in Neurobiology
	Co-administration of Anti microRNA-124 and -137 Oligonucleotides Prevents Hippocampal Neural Stem Cell Loss Upon Non-convulsive Seizures Bielefeld, Schouten, Meijer , Breuk, Geijtenbeek, Karayel, Tiaglik, Vuuregge, Willems, Witkamp, Lucassen, Encinas, and Fitzsimons	Front in Mol Neuroscience
2018	Audiovisual integration enhances stimulus detection performance in mice Meijer, Pie, Dolman, Pennartz and Lansink	Front in Behav Neurosci
	Conditioning sharpens the spatial representation of rewarded stimuli in mouse primary visual cortex Goltstein, Meijer, and Pennartz	eLife
2017	Audio-visual modulation in mouse V1 depends on cross-modal stimulus configuration and congruency Meijer, Montijn, Pennartz, and Lansink	Journal of Neuroscience

2016	Population-level neural codes are robust to single-neuron variability from a multidimensional coding perspective Montijn*, Meijer*, Lansink, and Pennartz Reward expectancy strengthens CA1 theta and beta band synchronization and hippocampal-ventral striatal coupling Lansink, Meijer, Lankelma, Vinck, Jackson, and Pennartz	<i>Cell Reports</i> <i>Journal of Neuroscience</i>
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Invited talks

2024-05	Karolinska Institute visit , Carlén lab meeting	<i>Stockholm, Sweden</i>
2023-11	Neuro OpenScience Workshop , "The International Brain Laboratory initiative"	<i>Paris, France</i>
2023-11	VNOP Research Days , Authorship and credit assignment in large collaborations	<i>Utrecht, N.L.</i>
2023-06	Dutch Neuroscience Meeting , Symposium "Electrophysiological investigation of large scale neural populations"	<i>Tiel, N.L.</i>
2022-03	Cosyne , Workshop "Understanding Variability in Neural Computations and Behaviors"	<i>Lisbon, Portugal</i>
2021-08	Seminar on reproducibility in neuroscience , Catholic University of Bolivia, La Paz, Bolivia	<i>Remote</i>
2021-01	Webinar on data stewardship and open data , Istituto Italiano di Tecnologia, Genova, Italy	<i>Remote</i>
2018-07	FENS Forum , Workshop "Investigating Neural Substrates of Perception and Cognition with Large-scale Data"	<i>Berlin, Germany</i>
2017-12	University College London visit , Carandini & Harris lab meeting	<i>London, UK</i>
2017-04	Meeting "Optogenetics and other Genetic Approaches in Systems Neuroscience" , Netherlands Institute for Neuroscience	<i>Amsterdam, N.L.</i>
2017-04	'TED-Style' talk on optogenetics , CogniTALKS	<i>Amsterdam, N.L.</i>
2016-02	Science-Art collaboration 'New Realism' , Rietveld Academy of Art and Design	<i>Amsterdam, N.L.</i>

Poster presentations

2024-06	FENS Forum , Three posters	<i>Vienna, Austria</i>
2024-05	Tools and Methods for Next Generation Electrophysiology	<i>Edinburgh, UK</i>
2023-10	Champalimaud Research Symposium	<i>Lisbon, Portugal</i>
2022-07	FENS Forum	<i>Paris, France</i>
2022-03	Simons Foundation meeting	<i>New York, USA</i>
2021-10	Champalimaud Research Symposium	<i>Lisbon, Portugal</i>
2019-10	SfN - Society for Neuroscience , Two posters	<i>Chicago, USA</i>
2019-03	Cosyne	<i>Lisbon, Portugal</i>
2017-09	European Visual Cortex Meeting	<i>London, UK</i>
2017-11	SfN - Society for Neuroscience	<i>Washington, USA</i>
2015-11	SfN - Society for Neuroscience , Two posters	<i>Chicago, USA</i>

Honors, Awards & Grants

2017	Honorary member , Student union 'Congo' for Biology, Psychobiology & Biomedical Sciences	<i>Amsterdam, N.L.</i>
2016	Best talk , ONWAR Graduate School for Neurosciences annual meeting	<i>Zeist, N.L.</i>
2012	Bekker-la Bastide fund , Internship abroad grant	

Additional activities

2019	Post-doc representative (1 yr) , International Brain Laboratory	<i>Lisbon, Portugal</i>
2016	Chair of the Board (2 yrs) , Alumni association for Neuroscience graduates	<i>Amsterdam, N.L.</i>
2007	Member of the Board (1 yr) , Student union 'Congo' for Biology, Psychobiology & Biomedical Sciences	<i>Amsterdam, N.L.</i>