

Tim Kamsma

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Education

- 2019–2022 **MSc Theoretical Physics**, *Utrecht University*
 - Cum Laude, GPA 4.0
 - Honours double MSc programme
- 2019–2022 **MSc Mathematical Sciences**, *Utrecht University*
 - Cum Laude, GPA 4.0
 - Honours double MSc programme
 - Track: Applied Mathematics, Complex Systems and Scientific Computing
- 2016–2019 **BSc physics and astrophysics**, *Utrecht University*
 - Cum Laude, GPA 4.0
- 2016–2019 **BSc mathematics**, *Utrecht University*
 - Cum Laude, GPA 4.0
- 2010–2016 **Gymnasium, N&G and N&T profile (natural sciences)**, *KSG De Breul, Zeist*
 - Cum Laude
 - Best Science Student award

Experience

Research

- 2022 – Present **PhD Candidate Theoretical Physics & Mathematics**, *Utrecht University*, Institute for Theoretical Physics & Mathematical Institute
 - Received a unique personal grant for my own proposal, allowing me to run my own research.
 - Instigated Neuromorphic Computing research at Utrecht University.
 - Supervised numerous students, leading to fruitful projects with some ending up as co-authors.
 - Became a [representative for research at Utrecht University](#), while also contributing to outreach at primary schools, department visitations, [podcasts](#), and more.
- 2025 **Visiting PhD Student**, *University of Cambridge*, Cambridge
 - Set up a new research collaboration with the group of Prof. Chris Pickard.
- 2022 **Visiting Graduate Student**, *University of Cambridge*, Cambridge
 - I was offered a fully funded PhD position with a Harding Distinguished Postgraduate Scholarship.
- 2019 **Research Intern**, *Netherlands Institute for Neuroscience*, Amsterdam
 - My work formed the basis for an ongoing research project.

Teaching

- 2017–present **Teaching Assistant**, *Utrecht University*
- 2013–present **Private Tutor**
- 2017–2021 **Teaching Assistant**, *SSL*, Leiden

Papers and talks

First-author papers

- [1] **Iontronic Neuromorphic Signaling with Conical Microfluidic Memristors**, *T. M. Kamsma, W. Q. Boon, T. Ter Rele, C. Spitoni, and R. Van Roij*, *Physical Review Letters*, Vol. 130, Issue 26 (2023)

- [2] **Unveiling the capabilities of bipolar conical channels in neuromorphic iontronics**, *T. M. Kamsma, W. Q. Boon, C. Spitoni, and R. van Roij*, *Faraday Discussions*, Vol. 246, 125-140 (2023)
- [3] **Brain-inspired computing with fluidic iontronic nanochannels**, *T. M. Kamsma, J. Kim, K. Kim, W. Q. Boon, C. Spitoni, J. Park, and R. van Roij*, *Proceedings of the National Academy of Sciences*, Vol. 121, Issue 18 (2024)
- [4] **Advanced iontronic spiking modes with multiscale diffusive dynamics in a fluidic circuit**, *T. M. Kamsma, E. A. Rossing, C. Spitoni, and R. van Roij*, *Neuromorphic Computing and Engineering*, Vol. 4, 024003 (2024)
- [5] **A simple mathematical theory for Simple Volatile Memristors and their spiking circuits**, *T. Kamsma, R. van Roij, and C. Spitoni*, *Chaos, Solitons & Fractals*, Vol. 186 (2024)
- [6] **Chemically Regulated Conical Channel Synapse for Neuromorphic and Sensing Applications**, *T. M. Kamsma, M. S. Klop, W. Q. Boon, C. Spitoni, B. Rueckauer, and R. Van Roij*, *Physical Review Research*, Vol. 7, Issue 1 (2025)
- [7] **Echo state and band-pass networks with aqueous memristors: leaky reservoir computing with a leaky substrate**, *T. M. Kamsma, J. J. Teijema, R. van Roij, and C. Spitoni*, *Chaos*, Vol. 35, 093133 (2025)
- [8] **Energy-efficient time series processing in real-time with fluidic iontronic memristor circuits**, *T. M. Kamsma, Y. Gu, C. Spitoni, M. Dijkstra, Y. Xie, and R. van Roij*, *Faraday Discussions*, (2025)

(Some of my) Talks

- Jan. 2026 **NWO Physics, Veldhoven**, Speaker at the Dutch national Physics conference in Veldhoven
- Nov. 2025 **Emerging Research Seminar, Christ's College, Cambridge University, Plenary Speaker**
- Sep. 2025 **Neuromorphic Computing Netherlands, University of Delft, Plenary Speaker**
- Jan. 2025 **NWO Physics, Veldhoven**, Speaker at the Dutch national Physics conference in Veldhoven
- Sep. 2024 **Liquid Matter Conference, Mainz**, Speaker at the large international LMC
- Jan. 2024 **NWO Physics, Veldhoven**, Speaker at the Dutch national Physics conference in Veldhoven
- Nov. 2023 **QBio Symposium, Invited, Utrecht University, Plenary Speaker**
- June 2023 **Faraday Discussions, University of Edinburgh, Plenary Speaker**
- May 2022 **UEA seminar, Invited, University of East Anglia, Norwich, Plenary Speaker**

Other experiences

- 2019–2021 **Rowing coach, A.U.S.R. Orca, Utrecht**
Along with three fellow coaches I selected, trained and coached the women's eight.
- 2021 **Flow Traders business course, Flow Traders, Amsterdam**
This highly selective event familiarizes the participants with trading and features a group assignment. My group was the only to finish the assignment and won the prize for best group.
- 2017–2019 **Student rower, A.U.S.R. Orca, Utrecht**
I rowed for the lightweight men's eight and regularly went to national regattas.

Awards and certificates

- GPS4S Grant The "Graduate Programme Science for Sustainability" grants are competitive unique grants awarded to only a handful of excellent students for their own research proposals. I was awarded the GPS4S grant for my proposal on Neuromorphic Computing.
- Best thesis presentation Out of all 41 presentations of my cohort, my bachelor thesis presentation got selected by a jury of academics as the best presentation.

Best science student At my high school, when graduating, I earned the award for the best science student out of all the graduating students (roughly 120 students).

U-Talent certificate This is a selective program of Utrecht University for talented high school students with an affinity for science.

— Languages

Dutch Native

English Fluent (CEFR: C2)

— Programming/Software

Excel Experienced
Mathematica Experienced
Machine learning Familiar with
LaTeX Experienced
Computer modelling Experienced

Python Experienced
C# Familiar with
C/C++ Familiar with
NEURON Experienced
COMSOL Experienced