Curriculum Vitae

last updated: 27 August 2026

Personalia

Name:	Michiel *Jeroen Ria Herman* Rollier
Academic profiles:	ORCID | WoS | Google Scholar | ResearchGate | LinkedIn
Website:	www.michielrollier.be

Education

9/2021–9/2026 Joint PhD in Physics at **University of São Paulo** (BR), and Bioscience Engineering at **Ghent University** (BE)
Track: Computational Physics (USP), Mathematical Modelling and Data Analysis (UGent)
Thesis: "The rich landscape of iterated simplicity: cellular automata and network automata" (studying dynamical processes on complex networks)
Supervisors: Prof. Dr. Ir. Jan M. Baetens and Prof. Dr. Odemir M. Bruno
Co-supervisor: Dr. Aisling Daly
Doctoral Schools programme: Machine Learning *(17/20)*, Portuguese A1 *(17/20)*, Technology Entrepreneurship *(18/20)*
General Result: ongoing

10/2016–9/2018 Joint Master of Science in Physics at **University of Amsterdam** (UvA), **Vrije Universiteit Amsterdam** (VU), and **Nikhef** (NL)
Track: Gravitation and Astroparticle Physics Amsterdam (GRAPPA)
Master thesis: "Finding Echoes: The Characterisation of Gravitational-wave echoes and the Investigation of a Morphology-Independent Data Analysis Method"
Supervisor: Prof. Dr. Chris Van Den Broeck
Co-supervisor: Dr. Ka Wa Tsang
General Result: GPA 7.51/10 | *thesis: 8/10*

9/2011–9/2016 Bachelor of Science in Physics at **Catholic University of Leuven** (BE)
Bachelor project (1): "[...] Limits of Echolocation Recognition"
Supervisor: Prof. Dr. Christ Glorieux
Bachelor project (2): "Energy Transported Through Gravitational Waves"
Supervisor: Dr. Fridrik Freyr Gautason
General result: Cum Fructu | *project: resp. 15/20 and 17/20*

9/2014–9/2015 Master of Arts in Philosophy, **Catholic University of Leuven** (BE), incl. Erasmus exchange semester to **King's College London** (UK)
Master thesis: "Panpsychism: a Negative and a Positive Defence"
Supervisor: Prof. Dr. Markus I. Eronen
General result: Cum Laude | *thesis: 15.5/20*

9/2011–7/2014 Bachelor of Arts in Philosophy at **Catholic University of Leuven** (BE)
Bachelor project: "To Be and to Perish in Epicurus's Philosophy"
Supervisor: Prof. Dr. Pieter De Leemans†
General result: Cum Laude | *project: 14/20*

Effective Altruism

5/2025–now Board member of **Effective Altruism** Ghent: field building and event organisation

5/2025–now Ambassador for GiveWell-type charity advisor **Effectief Geven**

8–9/2026 Cohort student for the **BlueDot** Technical AI Safety course

Employment

9/2021–9/2026	Assistant at the faculty of Bioscience Engineering at **Ghent University** (during PhD) Supervisor: Prof. Dr. Ir. Jan M. Baetens
8/2020–9/2021	Academic researcher on spatiotemporal mathematical modelling of viral epidemics at **Ghent University** (before PhD) Part of RESTORE consortium for governmental advice on COVID-19 strategies Supervisor: Dr. Prof. Jan M. Baetens
10/2019–7/2020	Junior teacher in Experimental Physics at **University of Amsterdam** and **VU Amsterdam** for 1st and 2nd BSc Physics and Astronomy Supervisor: Dr. Gerrit J. Kuik
9–12/2018	Educational researcher on Michelson interferometry at **VU Amsterdam** Supervisor: Dr. Gerrit J. Kuik

Teaching

2021–2026	Assistant for I002428 Differential Equations (numerical methods) at **Ghent University** for 2nd BSc Bioscience Engineering Lecturer-in-charge: Prof. Dr. Ir. Michiel Stock
2024–2026	Assistant for I002907 Analysis I at **Ghent University** for 1st BSc Bioscience Engineering Lecturer-in-charge: Prof. Dr. Ir.Jan M. Baetens
2024–2026	Assistant for I700266 Calculus I at **Ghent University** for 1st BSc Bioscience Engineering Technology Lecturer-in-charge: Prof. Dr. Ir. Jan M. Baetens
2023–2024	Assistant for I700197 Programming I (Python) at **Ghent University** for 1st BSc Bioscience Engineering Technology Lecturer-in-charge: Prof. Dr. Ir. Jan Verwaeren
2021–2024	Assistant for I700208 Differential Equations (numerical methods) at **Ghent University** for 2nd BSc Bioscience Engineering Technology Lecturer-in-charge: Prof. Dr. Ir. Michiel Stock
2019–2020	Junior teacher of 5354ELSP6Y Electronics and Signal Processing at **University of Amsterdam** Lecturer-in-charge: Dr. Gerrit J. Kuik
2019–2020	Junior teacher of XBU_0013 Physics and Astronomy Practical 1 at **VU Amsterdam** for 1st BSc Physics & Astronomy Lecturer-in-charge: Dr. Gerrit J. Kuik
2019–2020	Junior teacher of 50922NSP6Y Physics and Astronomy Practical 2 at **University of Amsterdam** for 1st BSc Physics & Astronomy Lecturer-in-charge: Dr. Gerrit J. Kuik
2019–2020	Junior teacher of XB_0163 Physics Practical 2 at **VU Amsterdam** for 2nd BSc Medical Sciences Lecturer-in-charge: Dr. Gerrit J. Kuik
9/2019	Substitute teacher in Mathematics at **Sint-Jan Berchmanscollege, Mol** for 3rd grade high school adolescents School principal: Jelle Lodewijckx

Tutoring

2025–2026 Tutor for MSc thesis of **Afnan Theyathikandi Vazhayil**
Project title: "Spatially explicit wildfire spread modelling using cellular automata approach with Cell2Fire"
Co-tutor: Ir. Ruth Vanhaecht
Supervisor: Prof. Dr. Ir. Jan M. Baetens

2023–2024 Tutor for MSc thesis of **Ir. Lotte Landuyt**
Project title: "Development of a continuous and spatially explicit groundwater flow model for the nature area De Wilde Landen, Hulst, The Netherlands"
Supervisor: Prof. Dr. Ir. Jan M. Baetens

2023–2024 Tutor for MSc thesis of **Ir. Wannes Dewulf**
Project title: "Evolution and evaluation of non-uniform cellular learning automata"
Co-tutor: Dr. Milan Vispoel
Supervisor: Prof. Dr. Ir. Jan M. Baetens

2022–2023 Tutor for MSc thesis of **Ir. Matthias Gheysen**
Project title: "A behavioural analysis of non-uniform cellular automata: Explorations of the discrete universe"
Co-tutor: Dr. Milan Vispoel
Supervisor: Prof. Dr. Ir. Jan M. Baetens

2019–2020 Tutor of solar astronomy projects for multiple 1st BSc students in the context of 50921PRN4Y Project Physics/Astronomy 1
Supervisor: Rasjied M. R. Sloot

Scientific output

Overview metrics

metric	WoS Core Collection	Google Scholar	ResearchGate
h index	**5**	5	5
$i10$ index	**3**	5	–
# publications	**7**	12	20
# cited	**112**	187	184
# reads	–	–	3552
Interest Score	–	–	116.1

Published work

A1: article in Web of Science Core Collection. B2: book chapter. B3: book co-editor. P1: conference proceedings.

A1 **M. Rollier**, L. C. de Oliveira, O. M. Bruno, and J. M. Baetens. Essential metrics for Life on graphs. *Physica D: Nonlinear Phenomena*, 483:134950, 2025

A1 **M. Rollier**, M. Zielinski, K. C., A. J. Daly, O. M. Bruno, and J. M. Baetens. A comprehensive taxonomy of cellular automata. *Communications in Nonlinear Science and Numerical Simulation*, 140:108362, 2025

A1 T. W. Alleman, **M. Rollier**, J. Vergeynst, and J. M. Baetens. A stochastic mobility-driven spatially explicit SEIQRD COVID-19 model with VOCs, seasonality, and vaccines. *Applied Mathematical Modelling*, pp. 507–525, 2023

A1 **M. Rollier**, G. H. B. Miranda, J. Vergeynst, J. Meys, T. W. Alleman, and J. M. Baetens. Mobility and the spatial spread of SARS-CoV-2 in Belgium. *Mathematical Biosciences*, 360:108957, 2023

A1 T. W. Alleman, J. Vergeynst, L. De Visscher, **M. Rollier**, E. Torfs, I. Nopens, J. M. Baetens, and Belgian Collaborative Group on COVID-19 Hospital Surveillance. Assessing the effects of non-pharmaceutical interventions on SARS-CoV-2 transmission in Belgium by means of an extended SEIQRD model and public mobility data. *Epidemics*, 37:100505, 2021

A1 K. W. Tsang, **M. Rollier**, A. Ghosh, A. Samajdar, M. Agathos, K. Chatziioannou, V. Cardoso, G. Khanna, and C. Van Den Broeck. A morphology-independent data analysis method for detecting and characterizing gravitational wave echoes. *Physical Review D*, 98(2):024023, 2018

B2 **M. Rollier**, A. J. Daly, and J. M. Baetens. Convolutional neural networks for automated cellular automaton classification. In A. Adamatzky, G. Ch. Sirakoulis, and G. J. Martinez, editors, *Advances in Cellular Automata: Volume 2: Computation and Applications*, pp. 49–70. Springer Nature Switzerland, Cham, 2025

P1 **M. Rollier**, A. J. Daly, O. M. Bruno, and J. M. Baetens. Efficient simulation of non-uniform cellular automata with a convolutional neural network. In F. Bagnoli, J. Baetens, S. Bandini, and T. Matteuzzi, editors, *Cellular Automata*, pp. 121–131. Springer Nature Switzerland, Cham, 2024

Manuscripts currently under review

A1 **M. Rollier**, L. C. de Oliveira, O. M. Bruno, J. M. Baetens. Probing dynamical importance of network nodes under maximal agnosticism. XXXX, 2026

A1 L. C. de Oliveira, **M. Rollier**, J. M. Baetens, O. M. Bruno. Shape irregularity of Life-Like Network Automaton rules as an indicator of classification performance. XXXX, 2026

A1 **M. Rollier**, J. M. Baetens. Exact Lyapunov spectra of affine cellular automata and the parity rule on networks. XXXX, 2026

B3 J. Baetens, D. Falkiewicz, A. Nenca, **M. Rollier**, W. Vervust, B. Wolnik. *Cellular Automata: 17th International Conference on Cellular Automata for Research and Industry, ACRI 2026, Ghent, Belgium, July 8–10, 2026, Proceedings*. Lecture Notes in Computer Science, vol. XXXX. Springer Cham, 1st edition, 2026

P1 **M. Rollier**, L. Landuyt, J. M. Baetens. The MACCA-GW groundwater flow model: application to De Wilde Landen, the Netherlands. In J. Baetens, D. Falkiewicz, A. Nenca, M. Rollier, W. Vervust, B. Wolnik, *Cellular Automata*. Springer Nature Switzerland, Cham, 2026

Manuscripts currently being written

A1 **M. Rollier**. Exhaustive enumeration of symmetric still-life tiles in Life-like cellular automata via orbit-reduced SAT solving

A1 **M. Rollier**. Machine learning loses to simulation: rule reconstruction as the benchmark for reading cellular-automaton damage response

Public repositories

2026 `ea-benelux-map`. Simple JavaScript tool for mapping all BeNeLux-based EA-aligned organisations.

2026 `visualise-dj-tracklists`. Typescript app for music management and sentiment analysis.

2026 `exact-lyapunov-spectra`. Reproducibility package for the Chaos, Solitons & Fractals article.

2026 `game-of-life-mosaics`. Create intricate artistic mosaics from images using Conway's Game of Life Still Life patterns.

2025 `essential-metrics-life-on-graphs`. Contains all the scripts and data that were developed and used for the *Physica D* publication of the manuscript with the same name.

2024 `emulating-and-learning-CAs`. Contains classes of simple neural networks that are capable of perfectly emulating a number of 1-D CAs, including ECAs, NUCAs, and NAs.

Scientific engagement

Conferences

7/2026 Co-organiser and proceedings co-editor of the 17th International Conference and School "Cellular Automata for Research and Industry" (ACRI) & the 32nd International Workshop on Cellular Automata and Discrete Complex Systems (AUTOMATA)

Joint international conference at **Ghent University** (BE)
CONTRIBUTED TALK: "The MACCA-GW groundwater flow model: application to *De Wilde Landen*, the Netherlands"

2/2026 EA Summit: Brussels first conference organised by EA Belgium on AI safety and animal welfare (BE)

12/2025 EAGxAmsterdam conference on AI safety, global health, and animal welfare (NL)

8/2025 21st Conference on Complex Systems
International conference at the **University of Siena** (IT)
CONTRIBUTED TALK: "Impact maximisation: A network automaton perspective"

7/2025 31st International Workshop on Cellular Automata and Discrete Complex Systems (AUTOMATA)
International conference at the **University of Lille** (FR)
CONTRIBUTED TALK: "Small changes with maximal impact"

4/2025 16th International Conference on Complex Networks (CompleNet)
International conference at the **Federal University of Ceará** (BR)
CONTRIBUTED TALK: "Small changes with maximal impact"

9/2024 The 16th International Conference and School "Cellular Automata for Research and Industry" (ACRI)
International Conference at the **University of Florence** (IT)
CONTRIBUTED TALK: "Bridging the gap between cellular automata and deep learning"

8/2024 20th Conference on Complex Systems
International conference at the **University of Exeter** (UK)
CONTRIBUTED TALK: "Classifying Cellular Automata: A Deep Learning Approach"

4/2023 13th Summer Solstice Conference on Discrete Models of Complex Systems
International conference at the **University of Florence** (IT)
CONTRIBUTED TALK: "Pattern recognition for noisy 1D cellular automata with convolutional neural networks"

9/2022 The 15th International Conference and School "Cellular Automata for Research and Industry" (ACRI)
International conference at the **University of Geneva** (CH)

5/2018 7th Belgian-Dutch Gravitational Waves Meeting
Local conference on gravitational waves at **Nikhef**, Amsterdam (NL)

8/2017 Physics and Astrophysics at the eXtreme (PAX)
International conference on gravitational waves and multi-messenger astronomy at the **University of Groningen** (NL)

Fellowships, summer schools, and programmes

8–9/2026 **BlueDot** 6-week course on TECHNICAL AI SAFETY (remote)

7/2022 "Let's Talk Science" summer school on SCIENCE COMMUNICATION at **VUB Brussels University** (BE)

5/2022 Summer school on COMPLEX NETWORKS: theory, methods, and applications (6th ed.) at the **Lake Como School of Advanced Studies**, Como (IT)

8/2018 Summer School on GRAVITATIONAL-WAVE ASTRONOMY at the **International Centre for Theoretical Sciences**, Bangalore (IN)

Outreach

3/2026 Talk on Game of Life Still Lifes for Science Cafe at **Ghent University**

3/2020 Article "Waarom de aarde toch niet plat is" in **Quantum Universe**

3/2020	Article “Supermassieve zwarte gaten uit de vroege kosmos” in **Quantum Universe**
2/2020	Article “Het Mpemba-effect: hoe warm water sneller bevriest” in **Quantum Universe**
1/2020	Article “Pathologische wetenschap” in **Quantum Universe**
12/2019	Article “Een echografie van het universum” in **Quantum Universe**
12/2019	Lecture on GRAVITATIONAL WAVES for **Rotary Turnhout**
10/2019	Article “Speuren naar nieuwe werelden” in **Quantum Universe**
9/2019	Lecture on GRAVITATIONAL WAVES for **Lions Club Turnhout**
9/2019	Article “Superradiantie en zwartgatbommen” in **Quantum Universe**
1/2019	Article “Leven op een donut” in **Quantum Universe**
10/2018	Article “Het neutrino onder de loep: KM3NeT” in **Quantum Universe**
6/2018	Article “Het magnuseffect” in **Quantum Universe**
4/2018	Talk on GRAVITATIONAL WAVES in the TeD-talk series at **Sint-Jozefcollege Turnhout**
3/2018	Article “De zoektocht naar donkere materie” in **Quantum Universe**
1/2018	Article “Deining in de Ruimtetijd” in **Quantum Universe**
10/2017	Article “Een nieuw tijdperk voor de astronomie” in **Quantum Universe**

SKILLS

Natural languages

Dutch *(native)*	Listening ●●●●●	Reading ●●●●●	Speaking ●●●●●	Writing ●●●●●
English	Listening ●●●●●	Reading ●●●●●	Speaking ●●●●●	Writing ●●●●●
French	Listening ●●●○○	Reading ●●●●○	Speaking ●●●○○	Writing ●●●○○
German	Listening ●●○○○	Reading ●●●○○	Speaking ●○○○○	Writing ●○○○○
Portuguese	Listening ●○○○○	Reading ●●●○○	Speaking ●○○○○	Writing ●○○○○

Programming languages

Python	Full working proficiency. `pandas`, `TensorFlow`, `Matplotlib`, `PyTorch`
MATLAB	Teaching numerical methods for differential equations
MATHEMATICA	Teaching numerical methods for differential equations
C++	Experience from MSc course (2018)
C	Experience from MSc project (2018)
Bash	Basic experience from working with CLI
Processing	Basic experience from experimenting with creative coding

Tools

Claude Code	Daily use of Anthropic models and services for advanced research and development features
Le Chat	Daily use of Mistral’s chatbot for basic features
HPC	Remote parallel processing on workstation and high performance computing in a Linux environment
VS Code	My integrated development environment of choice
Google	Daily use of Drive, Colab, Google Sites
Proton	Sporadic use of email and cloud storage
MS Office	Daily use of Word, Excel, Teams, Outlook
Notion	Daily use for (automated) note taking and productivity

Canva	Creativity and design
Bullet Journal	Daily use for analogue habit-forming and productivity

Entrepreneurial experience

2025—now	Host and co-organiser of workshops and lectures for **Effective Altruism** Ghent, including ... – "Powerful AI is coming. How do we get it right?" – "Your Career as a Force for Good" – "An Evening on Effective Giving"
2021—now	Owner and manager of the co-housing community **BHL440**
2012—now	Self-employed jungle/tekno/tribe dj at parties, raves, record stores, and radio stations including Kompass Klub (be), Urgent.fm (be), Red Light Radio (nl)
2017—2019	Organiser and Manager of experimental electronic music events at **Zenevloed**, Amsterdam
2014—2019	Founder, manager and resident dj of industrial techno events at **Pinnacle**, Leuven