

Luuk Verhoeven

Curriculum Vitae

Berg en Dalseweg 193
6522 BJ, Nijmegen, the Netherlands
☎ +31 6 23271921
✉ luuk.verhoeven@ru.nl
🌐 www.luuksv.nl

Timeline

- Sep 2024–
current **Teacher Programming 1**, *Radboud University*, Nijmegen, (0.4 FTE).
This is a first-year course for mathematics and physics students. As sole teacher I am responsible for managing all aspects of the course.
- Nov 2023–
Oct 2024 **Outreach project lead**, *PUC of Science, Radboud University*, Nijmegen, (0.2 FTE).
Organised educational computer science activities for high school students at university and coordinated an extracurricular program at university for advanced high school students.
- 2019–2023 **Ph.D. in Mathematics**, *University of Western Ontario*, London, Ontario, *Supervisor: prof. Khalkhali*.
- 2016–2019 **Master of Mathematics (mathematical physics specialization)**, *Radboud University*, Nijmegen, *Graduated Summa Cum Laude*.
- 2013–2016 **Radboud FNWI Honours**, *Radboud University*, Nijmegen, *Grade: 9*.
The Honours programme provides additional experience with scientific work. It consists of writing a project proposal in an interdisciplinary setting and an expanded Bachelor thesis.
- 2012–2016 **Bachelor of Physics**, *Radboud University*, Nijmegen, *Graduated Summa Cum Laude*.
- 2012–2016 **Bachelor of Mathematics**, *Radboud University*, Nijmegen, *Graduated Summa Cum Laude*.

Publications

- 2024 **Large N limit of fuzzy geometries coupled to fermions**, M. Khalkhali, N. Pagliaroli, & L. S. Verhoeven, preprint, arXiv:2405.05056
- 2023 **Riemannian embeddings in codimension one as unbounded KK -cycles**, W. D. van Suijlekom, & L. S. Verhoeven, *Annals of K-theory*, vol. 8 no. 4 pp. 645-668
- 2022 **From noncommutative geometry to random matrix theory**, H. Hessam, M. Khalkhali, N. Pagliaroli, & L. S. Verhoeven, *Journal of Physics A: Mathematical and Theoretical*, 55(41), 413002.
- 2022 **Immersions and the unbounded Kasparov product: embedding spheres into Euclidean space**, W. D. van Suijlekom, & L. S. Verhoeven, *Journal of Noncommutative Geometry* 16 (2022), no. 2, pp. 489–511.

Ph.D. thesis

- title *Geometry in spectral triples: immersions and fermionic fuzzy geometries*
- supervisor Dr. M. Khalkhali
- co-supervisor Dr. W.D. van Suijlekom
- description From a codimension one Riemannian immersion we construct a family of unbounded KK -cycles representing the shriek class of the immersion. We show how to recover the geometric information from the unbounded product using an asymptotic expansion. We also construct a Dirac ensemble of $(0, 1)$ -fuzzy geometries with a fermionic contribution in the action and show that this ensemble has a well defined large- N limit. We investigate the spectral density of these models in this large- N limit.

Teaching experience

- 2021 Fall Term **Calculus Instructor**, *University of Western Ontario*, London, Ontario.
As instructor I was responsible for preparing and delivering lectures to supplement online material, help manage the online homework environment (Mobius) and help write the exams.
- 2019–2023 **Teaching Assistant**, *University of Western Ontario*, London, Ontario.
The TA duties consist primarily of running tutorial sessions and creating and grading exams or homework. I also have experience with Webwork.
- 2016–2018 **Instructor for NLT**, *Radboud University and SSgN*, Nijmegen.
NLT is a initiative by several local high schools to teach advanced subjects such as robotics and statistics at the Radboud University. I provided lectures and assisted with tutorials and experiments.
- 2016–2017 **Computer Science Teacher**, *Stedelijke Scholengemeenschap Nijmegen (SSgN)*, Nijmegen.
I taught Computer Science to the 5 HAVO, 5 VWO and 6 VWO classes, equivalent to grades 11, 12 in the American system.
The content of the course was SQL, basic database management, PHP and PHP-MySQL.
- 2014–2018 **Teaching Assistant**, *Radboud University*, Nijmegen.
As a teaching assistant at the Radboud University I was responsible for tutorials and grading. I assisted for the courses Introductory Statistics (2018), Curves and Surfaces (2015, 2018), Topology (2016), Discrete Mathematics (2014) and several general review sessions for bachelor students in 2017-2018.

Additional experience and Awards

- 2022–2023 **Graduate Seminar Organization**, *University of Western Ontario*, London, Ontario.
As a team of four graduate students we restarted the in-person graduate seminar of the mathematics department.
- 2021 **Graduate Student Teaching Award**, *University of Western Ontario*, London, Ontario.
Nominated based on reviews by the academic staff.
- 2015–2016 **Student Member of Education Committee**, *Radboud University*, Nijmegen.
As student member of the Education Committee I was involved in the feedback and evaluation process of courses and involved in decisions about the programme such as the transition to English as the main language.
- 2015–2018 **Invited Guest Teacher (High school level)**, *Stedelijke Scholengemeenschap Nijmegen (SSgN)*, Nijmegen.
I provided lectures on special relativity (2 lessons program) and the LHC (1 lesson) on several occasions.
- 2016 **Top three project and presentation at the Student Research Conference**.
Presentation on Honours project: Hearing the Shape of a Trapezoid Drum.
- 2013 **Jong Talent Aanmoedigingsprijs (Young Talent Encouragement Award)**.
Awarded by the Koninklijke Hollandse Maatschappij der Wetenschappen for the highest average grade in the first year of mathematics at the Radboud.

Languages

- Dutch **Native speaker** *Dutch is my native tongue.*
- English **Near native** *I am completely comfortable in English.*
- German **Reading: B2, writing and speaking: B1** *I can read most texts and hold very basic conversation.*