Eleonora Svanberg

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Research Interests

My PhD research is broadly on the interface of physics, number theory, geometry, and computation.
Keywords: computational number theory, applied mathematics, and physics

Education

Doctor of Philosophy in Mathematics — University of Oxford, UK
Magdalen College — 2024 - 2028
All Souls College Reader
Advisor: Prof. Xenia de la Ossa
Funding: STFC Scholarship, Saven European Scholarship
Outreach: DEI Student Representative, London Mathematical Society Committee for Women and Diversity in Mathematics (3 years)
Teaching: Mathematical Institute: Marking: *String Theory I HT25*, Tutor (Magdalen College): *Vector Calculus HT25, Discrete Functions TT25, Quantum Theory HT25*

Master of Advanced Study in Applied Mathematics — University of Cambridge, UK
Part III of the Mathematical Tripos, St John's College — 2022 - 2023
Essay: *Holographic* CFT_2: *Modular Forms Applied to Quantum Gravity*, project set by Dr. Alejandra Castro
Funding: Part III International Scholarship by the Faculty of Mathematics, Swedish Engineers Scholarship 2022 etc.

Bachelor of Science in Physics — Stockholm University, Sweden
Bachelor thesis: *Higher-order time derivative theories and the Ostrogradsky ghost* — 2019 - 2022
supervised by Dr. Fawad Hassan

Publications & Preprints (*In progress)

2026
3. *Candelas, P., de la Ossa, X., **Svanberg, E.**, Periods, semiperiods and counting points over finite fields.
2022 (Undergraduate papers)
2. **Svanberg, E**, Preprint ArXiV Higher-order time derivative theories and the Ostrogradsky ghost
1. **Svanberg, E.**; Cui, C.; Latter, H., MNRAS Wavelike nature of the vertical shear instability in global protoplanetary disks

Coding Skills

Languages: Python, Mathematica, LaTeX, Bash/ Zsh, C/C++/C#, SageMath, Pari/GP.
Libraries: numpy, matplotlib, snoopy, astropy, pandas, sympy, pyTorch.
Frameworks: PyROOT, HEASoft, PyXspec, Athena++.
Other: Experiences with Linux environments, parallel-programming and high-performance computing and simulations.

Talks & Posters (*scheduled)

Talks:
Part I: Introduction to p-adics. Part II: Counting points, periods and physics. — Oxford: Particle Theory Seminar 2026
Point Counting and Black Holes: How Physics Helps Us Understand Mathematics — Magdalen College: MCR-SCR Convivum 2025
Point Counting over $\mathbb{F}_q$ *and Periods of Calabi-Yau Manifolds* [link] — MITP Workshop: Arithmetic of Calabi-Yau Manifolds 2025

Posters:
**Periods, semiperiods and counting points of Calabi-Yau Threefolds* [link] — Edinburgh, UK 2026
**Periods, semiperiods and counting points of Calabi-Yau Threefolds* [link] — Uppsala, Sweden 2026
Periods, semiperiods and counting points of Calabi-Yau Threefolds [link] — Cambridge, UK 2026

Conferences, Schools & Workshops organised (*scheduled)

MITP Workshop: Physics and Number Theory [link] 4 days — Remote 2025

Conferences, Schools & Workshops attended (*scheduled)

*New connections between physics and number theory workshop [link] 1 week	Cambridge, UK 2026
*String Math 2026 [link] 1 week	Edinburgh, UK 2026
*Strings and Geometry [link] 1 week	Uppsala, Sweden 2026
Physics and automorphic L-functions: gravity, conformal field theory and number theory workshop [link] 3 days	Cambridge, UK 2026
Winter School on Number Theory and Physics [link] 2 weeks	Trieste, Italy 2025
Eurostrings 2025 [link] 4 days	Stockholm, Sweden 2025
MITP Scientific Program: The Arithmetics of Calabi-Yau Manifolds [link] 2 weeks	Mainz, Germany 2025
Nordita Winter School: "Physics of Machine Learning & Machine Learning for Physics" [link] 2 weeks	Remote 2025
Les Houches School: Quantum Geometry [link] 4 weeks; *selected for full funding*	Les Houches, France 2024
ICTP School of Number Theory and Physics [link] 1 week; *G-Research, Institute of Physics*	Trieste, Italy 2024
Strings 2024 [link]	CERN, Switzerland 2024

Awards & Scholarships

Anders Wall's Foundation Young Scientist Scholarship (£15,000)	2025
University of Oxford STFC Studentship for PhD studies (£150,000)	2024
University of Oxford Saven European Scholarship for "Europe's brightest graduate students" (£30,000)	2024
Nordic Safe Cities Nordic Pioneer Award (£1,800)	2024
Les Houches School Funding to participate in school (£2,100)	2024
G-Research Travel grant to ICTP School on Number Theory and Physics (£900)	2024
Institute of Physics Research Student Conference fund for ICTP School (£300)	2024
Fredrika Bremer Scholarship Fund Master's Studies Scholarship (£2,000)	2023
Dr. Felix Neubergh Fund Master's Studies Scholarship (£1,500)	2023
University of Cambridge Part III International Scholarship (£8,800)	2022
University of Oxford Saven European Scholarship for Master's Studies (£25,000) *Declined due to pursuing Part III*	2022
Handelsbanken Anna Whitlock Trust Master's Studies Scholarship (£8,000)	2022
The Society of Swedish Engineers in Great Britain/Swedish Embassy Master's Studies Scholarship (£5,000)	2022
SEB Foundation Master's Studies Scholarship (£4,500)	2022
VANBRUUN Master's Studies Scholarship (£950)	2022
Handelsbanken Gustaf Söderbergs Foundation Master's Studies Scholarship (£300)	2022
University of Cambridge Philippa Fawcett Internship Programme, for excellent students in mathematics (£4,000)	2021
Swedish Astronomical Youth Association Travel Grant (£300)	2021
The Swedish King's Foundation for Young Leadership Elected by H.M King for Compass Rose Scholarship (£4,500)	2021
The Swedish Federation of Young Scientists Member of the Year, for my work with Girls in STEM	2018
East Swedish Chamber of Commerce The Future Scholarship, for my high school thesis (£300)	2017
Swedish Astronomical Society Selected as the Swedish student for the annual ESO Astronomy Camp (£1,000)	2016
Oxford Royale Academy Thomas Garner bursary, covering fees for summer courses in mathematics (£3,000)	2016

Outreach and Extracurricular

I'm an author, founder (Girls in STEM) and presenter with access to STEM being my focus. I have over 500,000 followers on various social platforms.

UR, Swedish public service educational broadcast — Presenter
Presenter for an inclusive educational TV show called "Good to know" (Bra att veta). — June 2025

Studying STEM — You're smart enough for mathematics — Book
My debut book, best-selling, about studying mathematics, aimed at young people. Published by Fri Tanke. [link] — 2024

Example of organisations I've consulted or otherwise worked with include Nobel Prize Foundation, Google DeepMind, Isomorphic Labs, UNESCO, European Union, Swedish Royal Academy of Sciences, The British Royal Society, The UK's Government's Department for Science, Innovation and Technology, Swedish Parliament Department of Education, European Space Agency, University of Cambridge, University of Oxford, Stockholm University, Swedish Embassy in the UK and UK Embassy in Sweden.