SEPPE STAELENS

CONTACT INFO

E-mail	ss3033@cam.ac.uk
Website	seppestaelens.github.io
GitHub	github.com/SeppeStaelens
LinkedIn	www.linkedin.com/in/seppestaelens

ABOUT ME

I am a motivated, young researcher with a profound interest in theoretical physics and astrophysics. My research is mainly computational, running simulations on HPC systems and analyzing data using various statistical and machine learning techniques. I am currently undertaking a machine learning internship at CRUK to expand my horizons. Furthermore, I enjoy teaching mathematics and physics, and I am involved in a summer camp association and the Cambridge University Belgian Society.

EDUCATION

PhD in Applied Maths. and Theoretical Physics **2023-2027**

University of Cambridge, DAMTP | *Cambridge, United Kingdom*

- Numerical relativity, gravitational waves, machine learning
- Funding: Centre for Doctoral Training in Data Intensive Science (courses on research computing, Bayesian statistics and machine learning)
- Under supervision of prof. U. Sperhake

MSc Astronomy & Astrophysics **2020-2023**

KU Leuven | *Leuven, Belgium*

- Graduated *summa cum laude* (87.00 %)
- Thesis topic: "Merging Compact Objects in the LISA Frequency Band" under supervision of P. Jonker, G. Nelemans. Grade: 17.8/20
- Erasmus exchange to Radboud Universiteit Nijmegen (2022-2023)
- Courses on gravitational waves, black holes, data analysis, machine learning

MSc Physics **2020-2022**

KU Leuven | *Leuven, Belgium*

- Graduated *summa cum laude with congratulations of the Board of Examiners* (90.63 %)
- Option Theoretical Physics: e.g. General Relativity, QFT, cosmology
- Thesis topic: "Black Hole Photon Rings beyond General Relativity" under supervision of T. Hertog, D. Mayerson, F. Bacchini. Grade: 18.1/20

TWIN BA Physics & Mathematics 2017-2020
KU Leuven | *Leuven, Belgium*

- Combination of two BA degrees for excelling students
- Graduated (phys.) with *magna cum laude* (84.42 %)
- Graduated (math.) with *summa cum laude* (85.17 %)

EXPERIENCE

RESEARCH INTERN 2025
CRUK Scotland Institute | *Glasgow, UK*

- DiRAC Innovation Placement (6 months)
- Project: *Multimodal data integration and analysis*
- Machine / Deep Learning in a GPU-accelerated HPC environment.

ACADEMIC TUTOR 2024,2025
Immerse Education | *Cambridge, UK*

- 2-week long summer school in Maths
- Designed own 40-hour course

SUPERVISOR / TEACHING ASSISTANT 2024,2025
University of Cambridge | *Cambridge, UK*

- Course: *General Relativity - Part II of the Math. Tripos*
- Course: *Numerical Relativity and Gravitational Waves - Part III of the Math. Tripos*

TEACHING ASSISTANT 2020-2022
Faculty of Science, KU Leuven | *Leuven, Belgium*

- Bachelor courses in Physics and Mathematics

SELECTED PUBLICATIONS

Articles

S. J. Staelens, D.R. Mayerson, F. Bacchini, B. Ripperda, and L. Küchler (June 2023). "Black hole photon rings beyond general relativity". In: *Phys. Rev. D* 107 (12), p. 124026. DOI: 10.1103/PhysRevD.107.124026.

S. J. Staelens and G. Nelemans (Mar. 2024). "Likelihood of white dwarf binaries to dominate the astrophysical gravitational wave background in the mHz band". In: *Astronomy & Astrophysics* 683, A139. DOI: 10.1051/0004-6361/202348429.

Marks, G. A., **S. J. Staelens**, T. Evstafyeva, and U. Sperhake (Sept. 2025). "Long-Term Stable Nonlinear Evolutions of Ultracompact Black-Hole Mimickers". In: *Phys. Rev. Lett.* 135 (13), p. 131402. DOI: 10.1103/lk48-7r2f.

Book Chapter

Lupsasca, A., D. R. Mayerson, B. Ripperda, and **S. J. Staelens** (2024). "A Beginner's Guide to Black Hole Imaging and Associated Tests of General Relativity". In: *Recent Progress on Gravity Tests: Challenges and Future Perspectives*. Ed. by Cosimo Bambi and Alejandro Cárdenas-Avendaño. Singapore: Springer Nature Singapore, pp. 183–237. ISBN: 978-981-97-2871-8. DOI: 10.1007/978-981-97-2871-8_6.

SKILLS

● ● ●	Python, LaTeX, Presenting, Time Management, Leadership
● ● ○	C++, Linux, HPC, PyTorch, Teamwork
● ○ ○	Mathematica, FORTRAN
Languages	Dutch (native), English (C2), French (B2)

ACHIEVEMENTS

Awards

- Prize for best Master's Thesis in Physics 2022 (400 EUR)

Certificates

- *Animator* (2016), *Hoofdanimator* (2018) and *Instructor* (2021) certificate issued by the Flemish government.
- Completion of *Teaching Assistent training* at the Faculty of Science, KU Leuven (2021)

EXTRACURRICULAR ACTIVITIES

Sporta

This is an organization for youth camps, of which I have been a part for 7 years. I have been camp leader at 20+ summer camps, which taught me teamwork and responsibility. Furthermore, I was an instructor at 5 animator courses, which taught me how to transfer knowledge in multiple ways.

CUBS

Cambridge University Belgian Society. Secretary 2023-2024, President 2024-2026

Hobbies

guitar, snowboard, ski, wakeboard, football, Ju Jitsu

REFERENCES

Ulrich Sperhake
Professor
Department of Applied Maths. and Theoretical Physics
Centre for Mathematical Sciences
University of Cambridge
01223 766861
us248@damtp.cam.ac.uk

Crispin Miller
Professor
CRUK Scotland Institute
University of Glasgow
Crispin.Miller@glasgow.ac.uk

Gijs Nelemans
Professor
Department of Astrophysics
Radboud University Nijmegen
+31 24 365 2983
nelemans@astro.ru.nl

Thomas Hertog
Professor
Institute for Theoretical Physics
Department of Physics & Astronomy
KU Leuven
+32 16 32 72 46
thomas.hertog@kuleuven.be