SEPPE STAELENS

ABOUT ME

I am a motivated, young researcher with a profound interest in theoretical physics and astrophysics. I am especially excited about topics that combine both fields, like gravitational waves and black holes. Furthermore, I enjoy teaching mathematics and physics to both high school and Bachelor students.

EDUCATION

PhD in Applied Maths and Theoretical Physics 2023-2027
University of Cambridge, DAMTP | *Cambridge, United Kingdom*

- Numerical relativity and gravitational waves
- 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

BA PHYSICS 2017-2020
KU Leuven | *Leuven, Belgium*

- Graduated with *magna cum laude* (84.42 %)

BA MATHEMATICS 2017-2020
KU Leuven | *Leuven, Belgium*

- Graduated with *summa cum laude* (85.17 %)

Greek-Mathematics (high school) 2011-2017
Sint-Albertuscollege | *Haasrode, Belgium*

EXPERIENCE

SUPERVISOR 2024
University of Cambridge | *Cambridge, UK*

- Course: *General Relativity - Part II of the Math. Tripos*
- 2-on-1 supervision sessions

TEACHING ASSISTANT 2023
Cambridge Centre for International Research | *Online*

- Course: *The Astrophysics of High-Density Objects: Plasma Physics, General Relativity, and Quantum Electrodynamics*
- Exercise sessions for talented high school students

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

- Bachelor courses in Physics and Mathematics

STUDY SUPPORT SERVICES 2020, 2022
Faculty of Science, KU Leuven | *Leuven, Belgium*

- Helped shaping the preparatory Summer School for Physics and Mathematics for prospective students

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.

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

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)

PUBLICATIONS

Articles

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

A. Lupsasca D. R. Mayerson, B. Ripperda and **S. Staelens** (Feb. 2024). *A Beginner's Guide to Black Hole Imaging and Associated Tests of General Relativity*. arXiv: 2402.01290.

SKILLS

●●● LaTeX, Presentations, Time Management, Leadership

●●○ Programming (Python), Teamwork

●○○ Programming (C++, Mathematica), Linux, High-performance clusters

Languages

- Dutch (native), English (C2), French (B1)

REFERENCES

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