






# Siemen Burssens

Research Fellow,  
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
## Key Skills

Data analysis & visualisation  
Statistical inference & modelling  
Technical & professional writing  
Presentation & communication  
Project management Python  
numpy/scipy/pandas/plotly/seaborn  
Jupyter Notebook SQL Git/Github

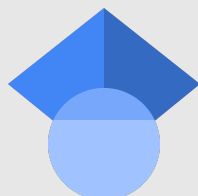
## Personal

I'm interested in the extraction of knowledge from data sets and the delivery of insights for stakeholders of varied backgrounds or to inform policy design. With my experience as a researcher and a data scientist I know how to work efficiently and autonomously in order to meet deadlines and complete project goals in a timely manner. As a result, I have the ability to learn new concepts and methods quickly, and possess strong interpersonal and presentation skills.

## Interests

-  Problem solving
-  Data visualisation
-  Machine learning
-  Sustainability and SMART cities
-  Astronomy and geophysics

## Profiles



## Education

- 2018 – 2022 **PhD in Astronomy and Astrophysics** KU Leuven, Belgium  
**Thesis title:** Massive star asteroseismology with TESS and K2.  
**Supervisors:** Dr. Dominic M. Bowman, Prof. Dr. Conny Aerts  
**Degree obtained:** 4 July 2022.  
**Link to thesis:** <https://tinyurl.com/3dbysvrv>
- 2017 – 2018 **M.Sc. in Medical Radiation Physics** KU Leuven, Belgium  
**Thesis title:** Knowledge-based treatment planning: a RapidPlan approach.  
**Supervisors:** Ir. Msc. Tom Depuydt  
**Grade:** 2:1
- 2015 – 2017 **M.Sc. in Astronomy and Astrophysics** KU Leuven, Belgium  
**Thesis title:** Molecular analysis of oxygen-rich AGB-star V1300 Aql.  
**Supervisors:** Prof. Dr. Leen Decin, Dr. Taissa Danilovich.  
**Grade:** 1st
- 2012 – 2015 **Bachelors degree in Physics** KU Leuven, Belgium  
with a minor in Biochemical Sciences

## Professional experience

### Key projects

- **H2OforAll: Increasing citizens' awareness and engagement regarding disinfection by-products and drinking water quality (2023-2024, University of Leeds).**

My role in this EU Horizon project includes using data-driven evidence to increase public awareness about disinfection by-products and engage citizens to take actions that protect water quality now and in the future. To achieve this I'm taking a two-way approach: developing a model that allows citizens to calculate their exposure and pollution profiles, and conducting a social study to determine which actions are most readily adopted and lead to overall behavioural change.

Project management Systematic literature reviews Social study design  
Survey data analysis Scientific modelling Software: Python, R, QGIS

- **MAMSIE/PARADISE: Statistical data modelling of neutron star progenitors (2020-2022, KU Leuven).**

Here, I developed up a Python-based statistical modelling framework to derive physical properties of neutron star progenitors. This included extracting data from large astronomy databases and the analyses of multiple data sets of different sources. I also performed simulations of stellar structure and evolution using high performance computing, and conducted an in-depth statistical analysis using a variety of computational methods and algorithms.

The results of this research were published as a research article in the peer-reviewed scientific journal *Nature Astronomy* (doi:10.1038/s41550-023-01978-y) .

Time-series data Multiphysics simulations High performance computing  
Statistical inference Bayesian analyses Software: Python, SQL, Fortran

- **MAMSIE/PARADISE: First scientific results of the novel TESS space mission telescope (2019-2020, KU Leuven).**

In this project I set up a Python-based data processing framework to combine data sets of 98 stars from different telescopes, including data sets from the recently launched TESS space telescope. I then used the framework to deliver new evidence-backed insights into the evolution of stars more massive than our Sun.

Resulted in the publication of a research article in the peer-reviewed scientific journal *Astronomy and Astrophysics* (doi:10.1051/0004-6361/202037700).

Data extraction Time-series data Scientific computing Data visualisation  
High performance computing Software: Python, SQL

# Languages

**Dutch** (Native language)

**English** (IELTS Band score 7.5)

**French** (10 years at Sec. school)

**Italian** (Resident for 10 years)

**German** (2 years at Sec. school)

**Spanish** (Intro classes A1)

## Other relevant experience

- **Four years of teaching experience in undergraduate university programs (2018-2022).**  
Assistant lecturer on courses in mechanics, electrodynamics, thermodynamics, and astronomy. My duties included the development of lesson plans, hands-on exercise sessions, mentoring students, and the design, supervision and correction of exams.
- **Speaker and participant at several international conferences and seminars (2019-2022).**  
This included conferences organised by the European Astronomical Society (EAS, [link](#)), and the International Astronomical Union (IAU361, [link](#)). Here, I obtained hands-on experience with proper data visualisation, presentation skills, and public speaking in front of large audiences.
- **Scientific outreach through a variety of channels (2019-2022)**  
This included organising and participating in open science days at the university for young students aged 6 through 16, dedicated visits to local high schools, and writing online blogs and articles. Here, I advanced my communication and presentation skills by presenting complex topics to non-expert audiences in a comprehensive way.
- **Experimental design and on-site observations with the Mercator telescope situated on the island of La Palma, Spain (2018-2022).**  
Principal investigator of HERMES observing programme 99, focused on the gathering of high-resolution spectroscopic data with the HERMES spectrograph mounted on the Mercator telescope (<http://www.mercator.iac.es>). Included two on-site solo observing runs of two weeks where I operated the telescope autonomously.
- **Member of the international IACOB project (2019-2022).**  
International collaborative project focused on the analysis and gathering of high-resolution spectroscopic data sets of massive stars in the Milky way. (<http://research.iac.es/proyecto/iacob/>).
- **Member of the local organising committee of the TASC6/KASC13 Astronomy conference, Leuven, Belgium, 11-15 July 2022 (300 participants).**  
In this role I developed both organisational and managerial skills as part of a team.