

Michal Steiner

Data Scientist in astrophysics @University of Geneva

About me

I am a data scientist with an astrophysics background, currently finishing my PhD by the end of August 2025. I developed an open-source Python packages, analyzed and model large datasets. I have four years of experience as a data scientist, and I have been learning the basics of front-end development using JavaScript, HTML, and CSS. I am looking for a contract within the Czech Republic starting October 2025, focusing on data science.

Programming & IT skills

Python : 6+ years
LaTeX : 4+ years
MATLAB : 1 year
HTML : 1/2 year
CSS : 1/2 year
JavaScript : 1/2 year
IDL : 1/2 year
Pascal : 1/2 year

Languages

- **Czech**: Native language
- **English**: Expert
- **Japanese**: Intermediate (below N3 level)
- **German**: Basics

 [Webpage](#)
 [Twitter](#)
 [GitHub](#)
 [LinkedIn](#)
 [Email](#)

Nationality: **Czech**
Swiss work permit (type B)

WORK EXPERIENCE

2021–ongoing

Data scientist

OBSERVATORY OF GENEVA · Geneva, Switzerland

➔ **Created** an open source pipeline (RATS) in **Python** to analyze multiple large spectral datasets (each dataset **>10GB** about **40 000 000 datapoints**) to find hidden signals in the data and constraining their existence, by using common statistical approaches to data like **MCMC, cross-correlation, sigma-clipping, sliding windows** and more.

➔ I have been **managing observations** of a large program for ESO (European Southern Observatory; PI. V. Bourrier). As such, I have **automated multiple processes** that allowed us to **save human time and resources** and **ensured the validity** of incoming data. As part of it, I have developed an open-source tool (PTO) for planning the transit observations in Python.

EDUCATION

2021–ongoing

PhD candidate (4th year); Supervisors: **David Ehrenreich & Vincent Bourrier**

UNIVERSITY OF GENEVA · Geneva, Switzerland

PhD on the topic of high-resolution spectroscopy of exoplanetary atmospheres. Expected end August 2025.

2019–2021

Master degree; Thesis supervisors: **David Ehrenreich & Vincent Bourrier & Christophe Lovis & Julia Seidel**

UNIVERSITY OF GENEVA · Geneva, Switzerland

Master degree in the Exoplanetology specialization. Master thesis on the topic of high-resolution transmission spectroscopy.

2015–2019

Bachelor degree; Thesis supervisor: **Petr Harmanec**

CHARLES UNIVERSITY · Prague, Czech republic

Bachelor degree in General physics. Bachelor thesis on the topic of radial velocity measurements of Be stars.

PROGRAMING SKILLS

Programing languages

Backend development:

- **Python** - 6+ years

Data analysis packages: **numpy, scipy, pandas, astropy, specutils**

Visualization packages: **matplotlib, seaborn, bokeh, plotly**

- **IDL** - 1/2 year

Used mainly for a project in my Bachelor's degree, implementing Fourier Transform with FFT

- **MATLAB** - 1 year

Basic understanding of MATLAB functionalities

- **Pascal** - 1/2 year

Basic understanding of Pascal functionalities

Frontend development:

- **JavaScript** - 1/2 year

Basic understanding of its usage, components, and its ties to webpage development.

A few scripts integrated within the **bokeh** plots in my Python pipelines utilize JavaScript to provide more complex interactivity on the client side.

- **HTML** - 1/2 year

Basic understanding of its usage. Capable of creating simple webpages.

- **CSS** - 1/2 year
Basic understanding of styling webpages through CSS.

IT skills

- **LaTeX**
I have written multiple reports and papers in LaTeX and I am able to use it proficiently.
- **MS Office**
Fully proficient with the usage of the main applications within MS Office

Open-source code

RATS; (Python) - Revealing Atmospheres with Transmission Spectroscopy ([Github link](#))
PTO; (Python) - Planning of Transit Observations ([Github link](#))
Spyte; (Backend: Python, Frontend: JavaScript, HTML and CSS) - Simple app for translation and viewing of Japanese light novels ([Github link](#); in development)

SOFT SKILLS

Leadership

➔ **Leading and organizing** own projects spanning **up to 4 years**. These include leading analysis of specific datasets and proposition of projects for students under my supervision.

International collaborations

➔ **Member of international collaborations**, notably the ESPRESSO GTO science team. As part of this collaboration, I have been **championing several datasets**, effectively leading their analysis. I have also been **CoI** of multiple (30) **international proposals for observing time** at ESO telescopes.

Teaching

Supervision of students:

I have supervised **2 students** for one semester. I provided concise, achievable tasks and ensured the students would be able to deliver results on time and that they would adequately report the work done.

Public outreach

➔ I participated in various public outreach events, where we **demonstrated our work in non-technical terms** to the public.

- **Outreach events** as part of PlanetS booth at Fantasy Basel
Over **60 000** (2022), **72 000** (2023) and **88 000** (2024) visitors
- **Leading public visits** at the observatory of Geneva
Total of **5 visits** with around **150 visitors**, mostly high-school children

Conferences

- 2022-2024 **International conferences**
4 TALKS · 3 Poster
I have attended multiple international conferences with talk/poster contributions
- 2022-2024 **Domestic conferences**
3 TALKS ·
I have attended multiple conferences within Switzerland as part of the PlanetS project

Writing & Publications

I am (co-)author of multiple research papers:

First-authored papers (1 total; [NASA/ADS Library link](#))
Co-authored papers (4 total; [NASA/ADS Library link](#))
Latest publication: [Steiner et al. 2023: \(Link to abstract\)](#)

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