Now you can fit
continua and **absorption lines**
in your quasar spectra
automatically and **reliably**.

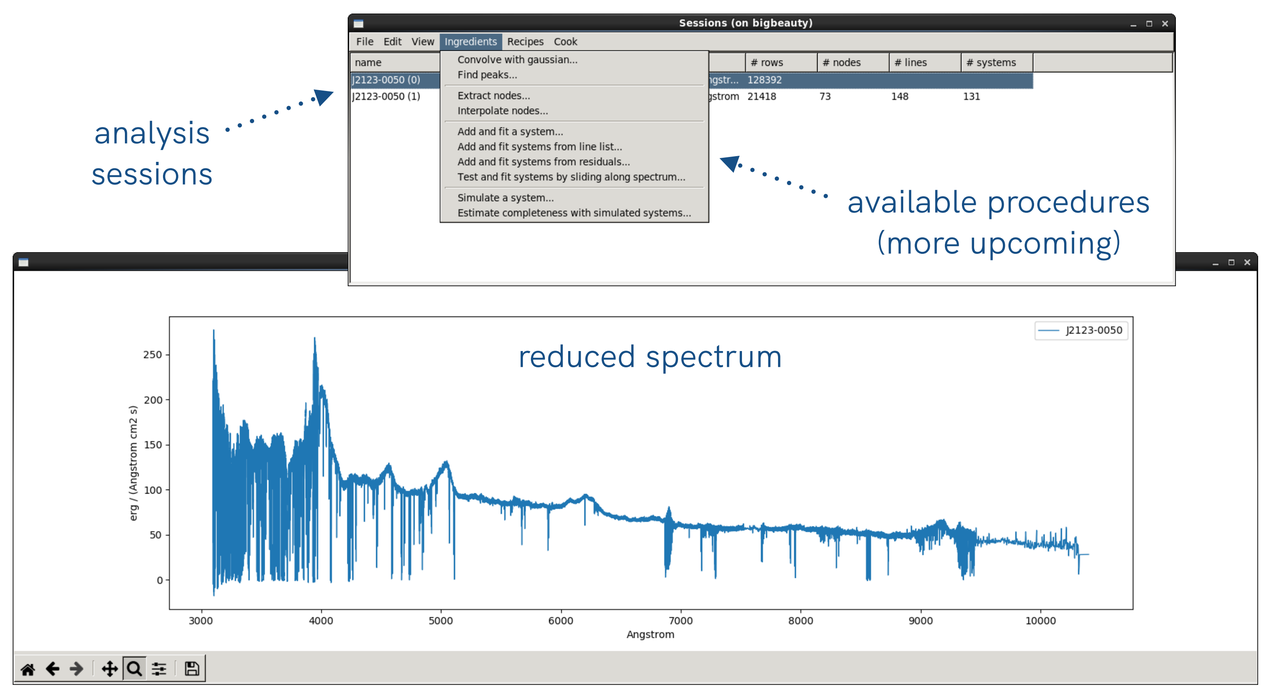
The tool

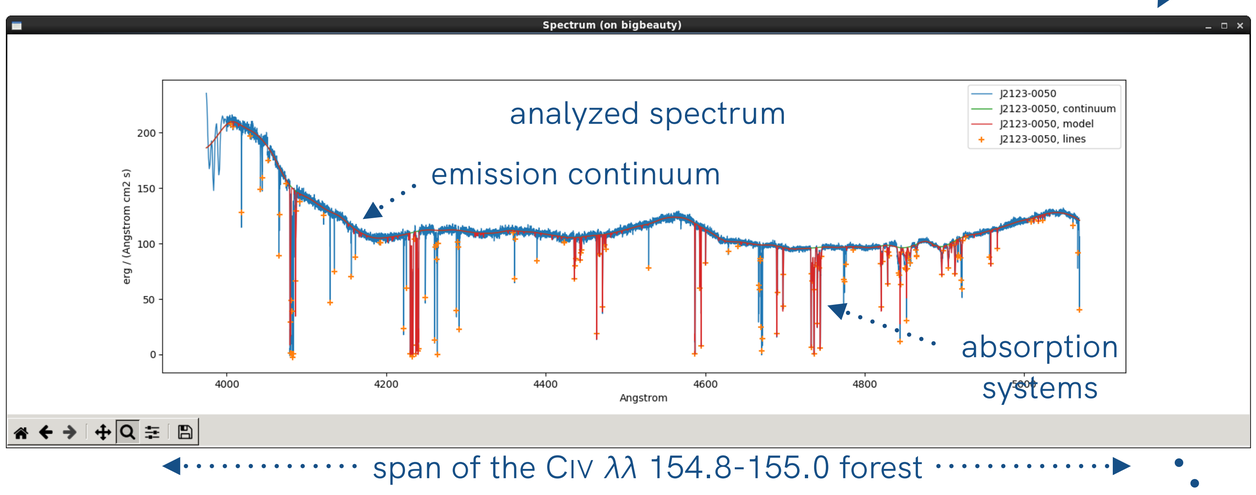
Astrocook is a Python package created to analyze medium to high-resolution quasar spectra in the near-UV to near-IR band. It allows you to:

- **select** and **mask** spectral regions;
- detect **absorption features**;
- interpolate the **emission continuum**;
- correlate absorption lines to **identify systems;**
- fit the systems with **Voigt profiles**.

Most algorithms were originally developed for the **ESPRESSO** spectrograph and are now available in an instrument-agnostic framework.

The code uses well-known libraries like **NumPy**, **Scipy** and **LmFit** and is seamlessly interfaced with **Astropy** objects.





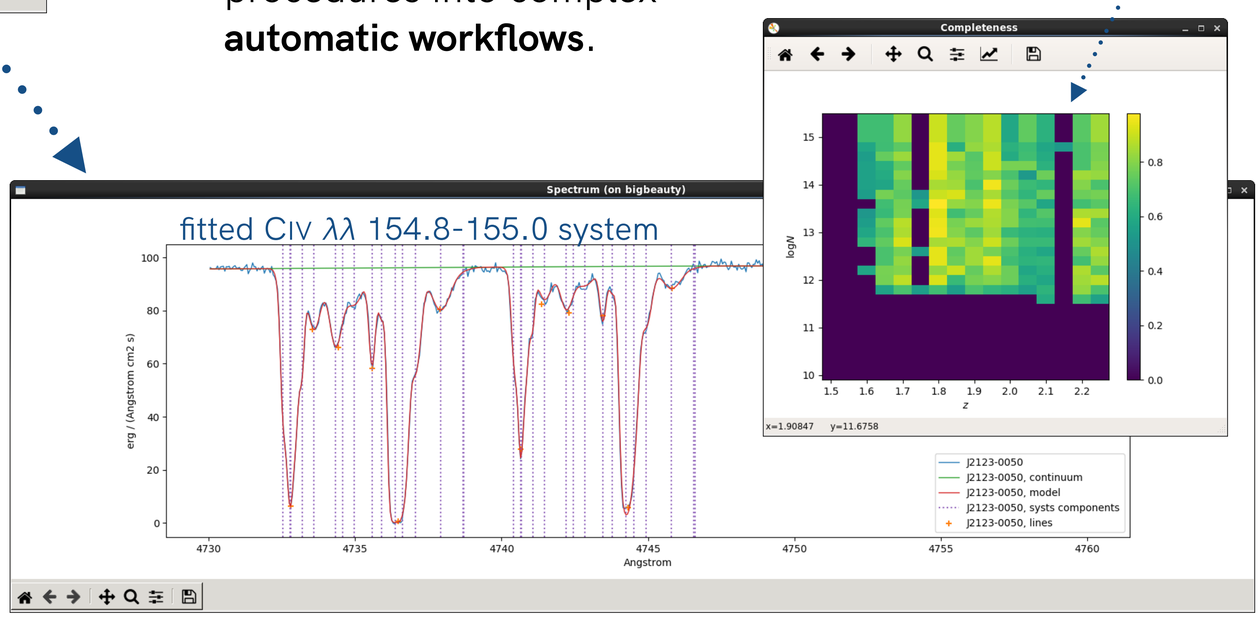
span of the C IV λλ 154.8-155.0 forest

The GUI

The Astrocook analysis sessions are handled by a dedicated **graphical user interface**, allowing to

- launch the procedures **interactively**;
- visually **inspect** the results;
- **validate** the results with different statistical tools (chi-squared test, completeness and correctness computation, …);
- combine the atomic procedures into complex **automatic workflows**.

detection completeness



The ecosystem

Astrocook is designed as an **environment to envelop** your existing code and **a playground to develop** new code. The next foreseen additions are:

- an **AI algorithm to improve the identification** of absorption systems;
- a tool to **create workflows interactively**.

You are strongly encouraged to bring your own ideas!

GitHub

SAO/NASA ADS

Interested?

Ask me

Guido Cupani
INAF-OATs