AN OPEN SOURCE FRAMEWORK FOR ATOMIC DATA

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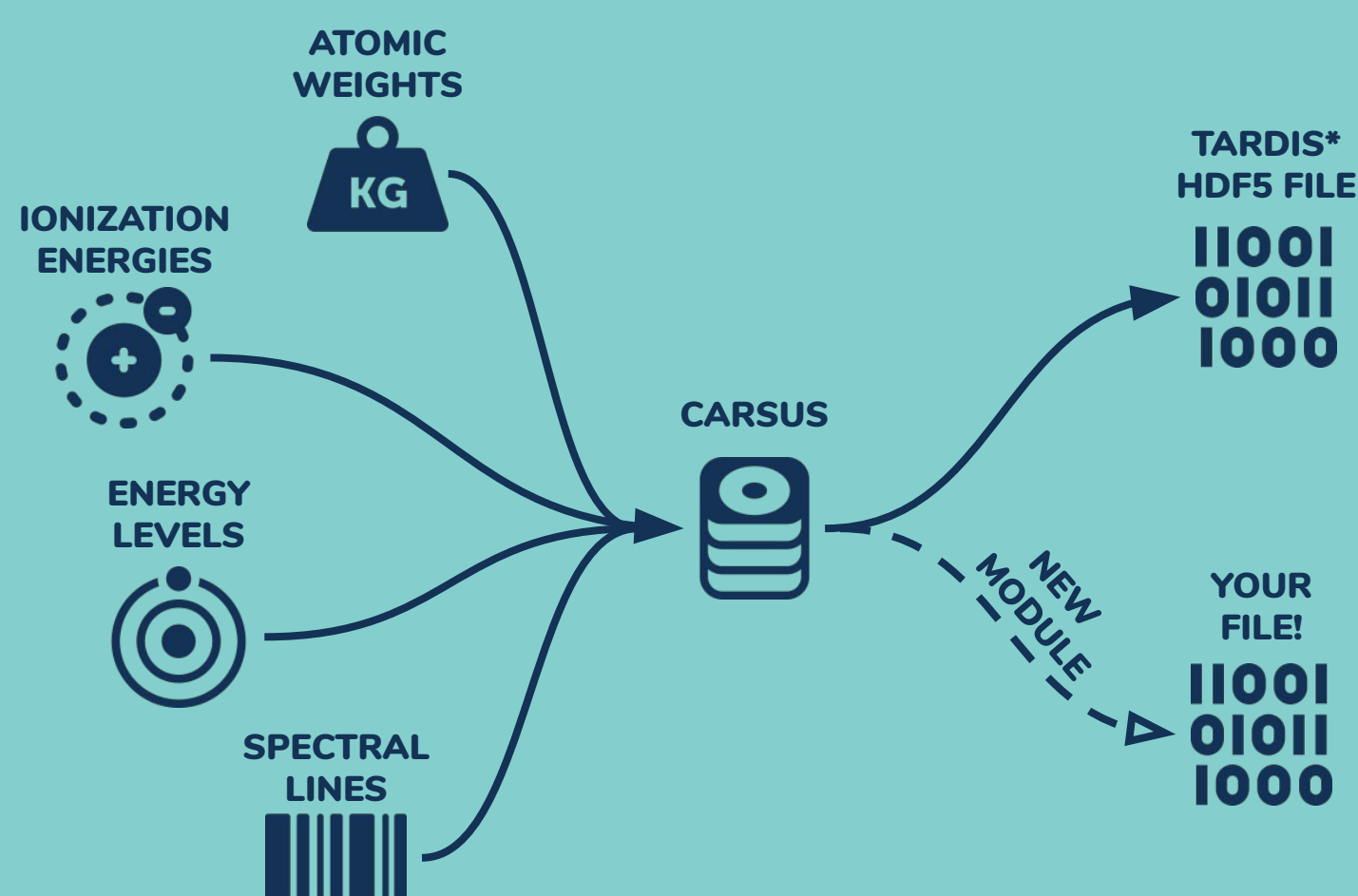
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Introducing Carsus

A database for astronomers who rely on atomic measurements on a daily basis.

ATOMIC WEIGHTS

KG

IONIZATION ENERGIES

ENERGY LEVELS

SPECTRAL LINES

CARSUS

TARDIS* HDF5 FILE
11001
01011
1000

NEW MODULE

YOUR FILE!
11001
01011
1000

DATASETS

NIST

KURUCZ

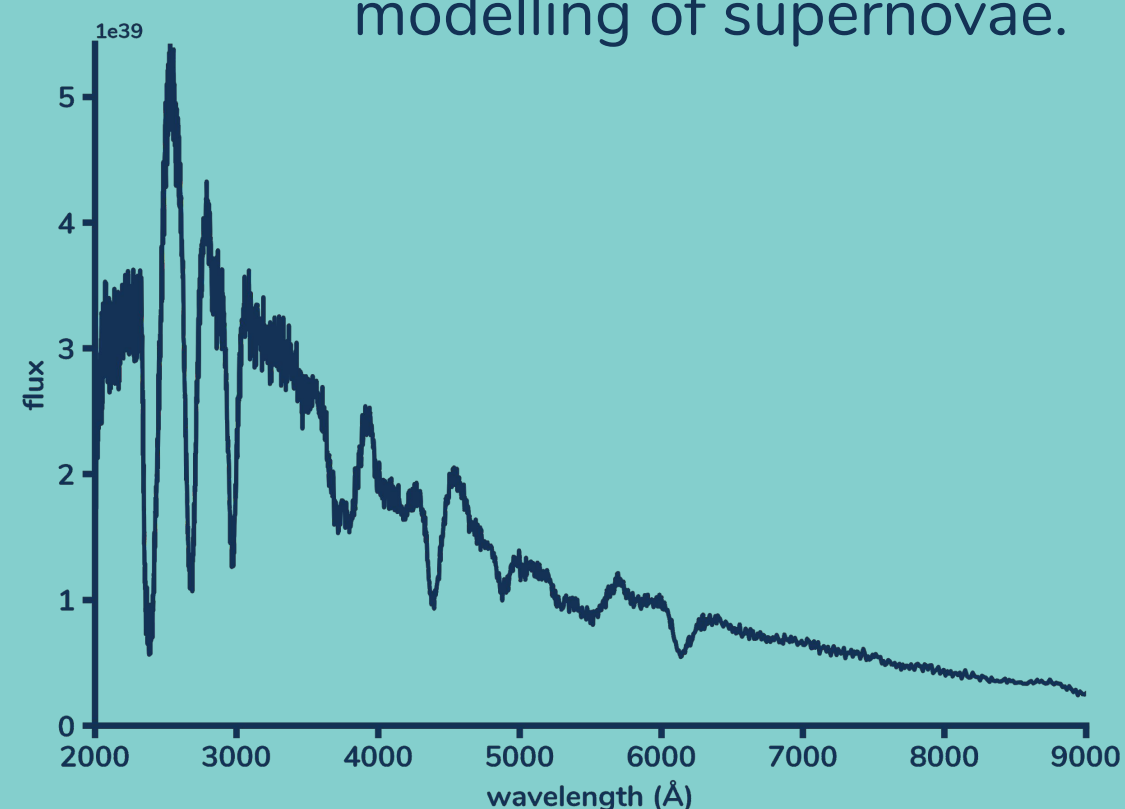CHIANTI

CMFGEN

*TARDIS is a Monte Carlo radiative transfer code for rapid 1D spectral modelling of supernovae.

flux vs wavelength (Å) plot; y-axis 1e39, x-axis 2000–9000

Recent work

We made many improvements to Carsus under the Google Summer of Code 2019 program. The most remarkable are:

- Ported the codebase to Python 3.x
- Extracted energy levels, oscillator strengths, collisional strengths and photoionization cross-sections from the CMFGEN database.

Get the code!

https://github.com/tardis-sn/carsus

Outlook

- TARDIS atomic files are signed with hashes for version control.
- Our future goal is to compare spectra obtained using different data sources and the same model.