The equivalent width of a line depends on the atomic line parameters and on temperature, metallicity (content of Iron), gravity and microturbulent velocity of the photosphere. Spectral lines store information about the stars.

A numerical Cross-Correlation Function is an average of lines. The spectrum is cross-correlated against a binary mask containing all the spectral lines that will compose the CCF.

Can we determine the stellar atmospheric parameters using CCFs?

### Temperature and metallicity: determined by using the stars in the sample to build the functions $f_1$ and $f_2$

#### Gravity:
Expected CCFs areas for different combinations of $T_{\text{eff}}, \text{[Fe/H]}$ and $\log(g)$ are derived from theoretical EWs. The mask is built using only Fell lines.

#### Results
With a Signal-to-Noise Ratio $= 50$ @550nm in the extracted spectra:
- $\sigma_{T_{\text{eff}}} = 85$ K (calibrators: 30 K)
- $\sigma_{\log(g)} = 0.17$ dex (calibrators: 0.06 dex)
- $\sigma_{\text{[Fe/H]}} = 0.04$ dex (calibrators: 0.03 dex)

Advantages: quick computation of atmospheric parameters at observing time.