



Precision Spectroscopy Towards Earth 2.0

Deriving abundances in medium resolution spectra

Andressa Ferreira

Supervisors
Sérgio Sousa
Vardan Adibekyan

U. PORTO

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The GAIA-ESO Survey

Spectroscopic survey

- Stellar parameters
- Chemical abundances

Main components of the galaxy

- Bulge, thick and thin disc, and halo
- Clusters

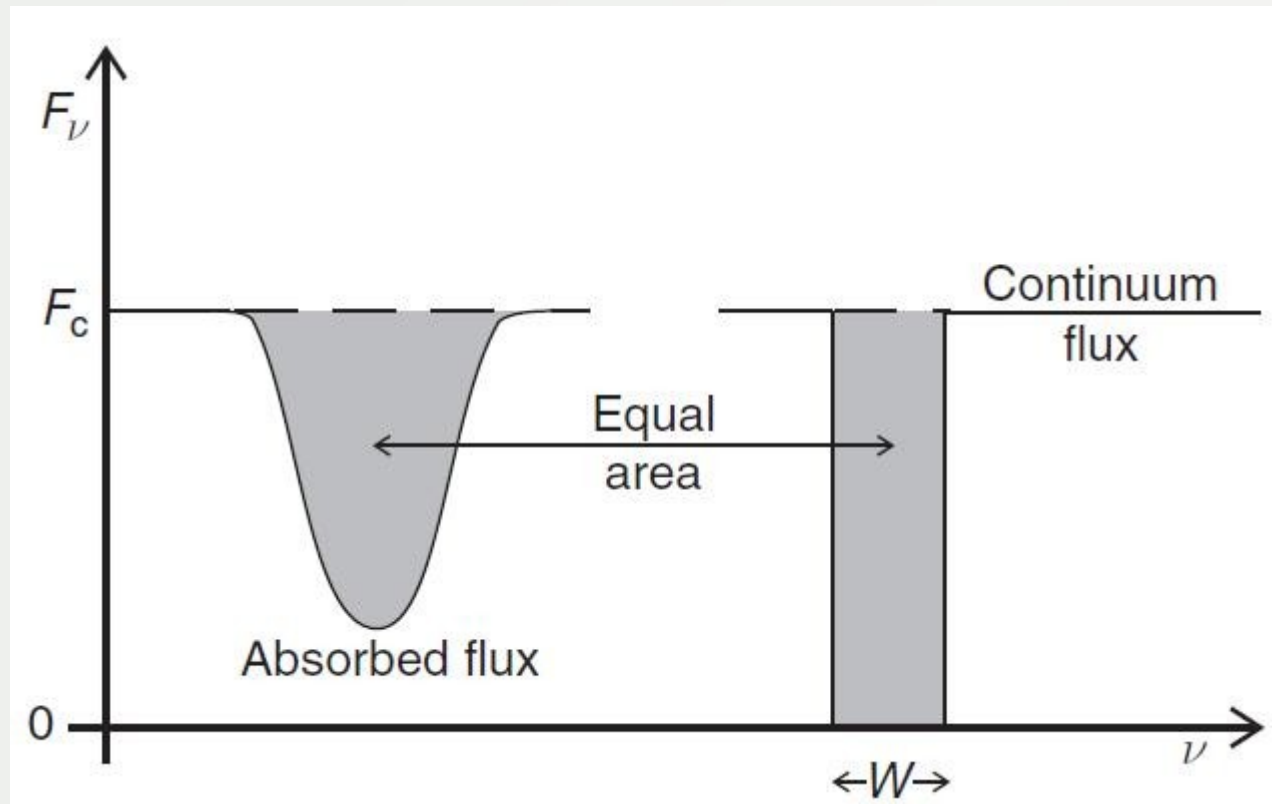
Observing with FLAMES:

- UVES (R~47 000): 5 000 stars
- GIRAFFE (R~20 000): 100 000 stars



Deriving the chemical abundances

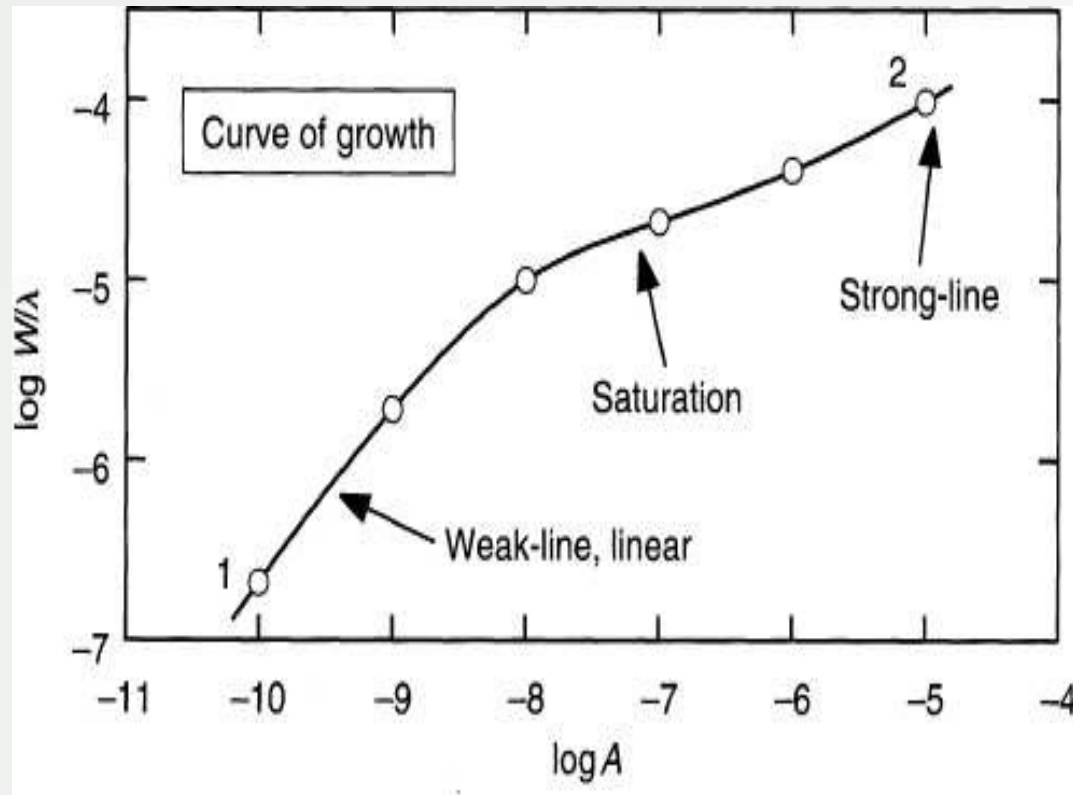
Equivalent width



Deriving the chemical abundances

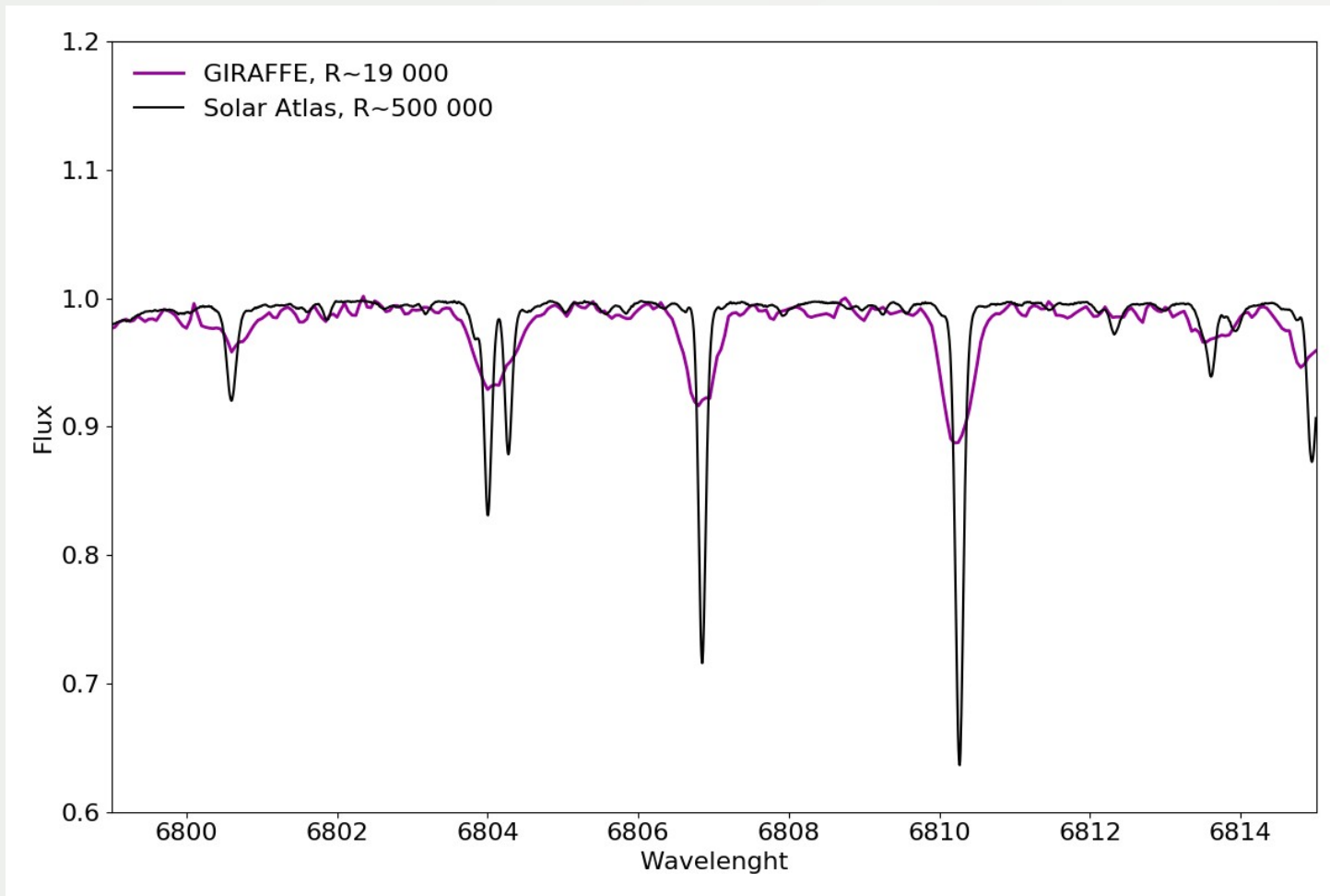
Curve of growth

The curve of growth is a mathematical relation between the EW and the chemical abundance



Deriving the chemical abundances

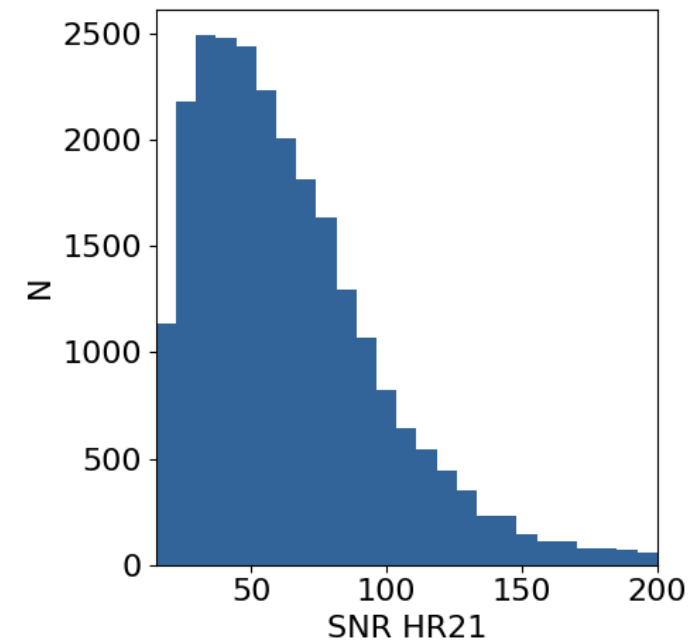
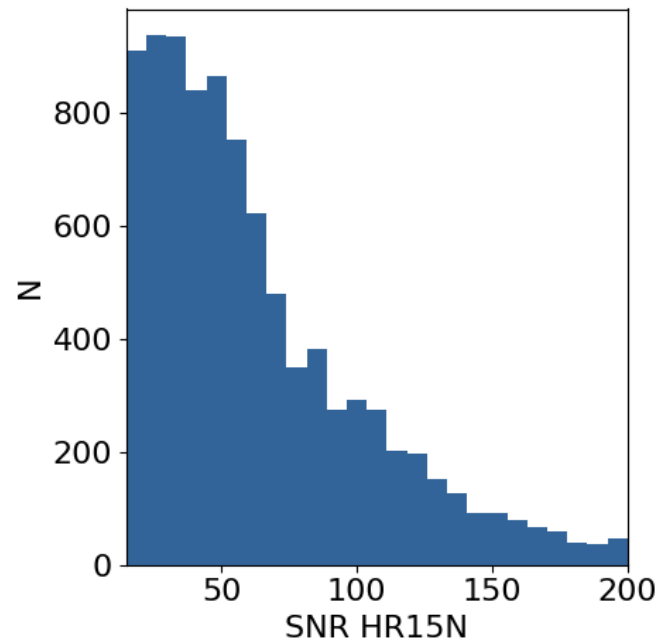
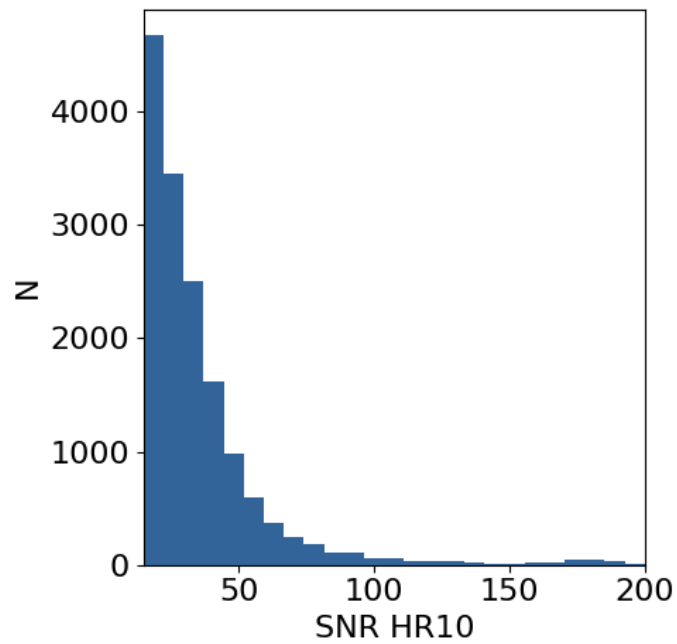
Medium resolution



Sun

Deriving the chemical abundances

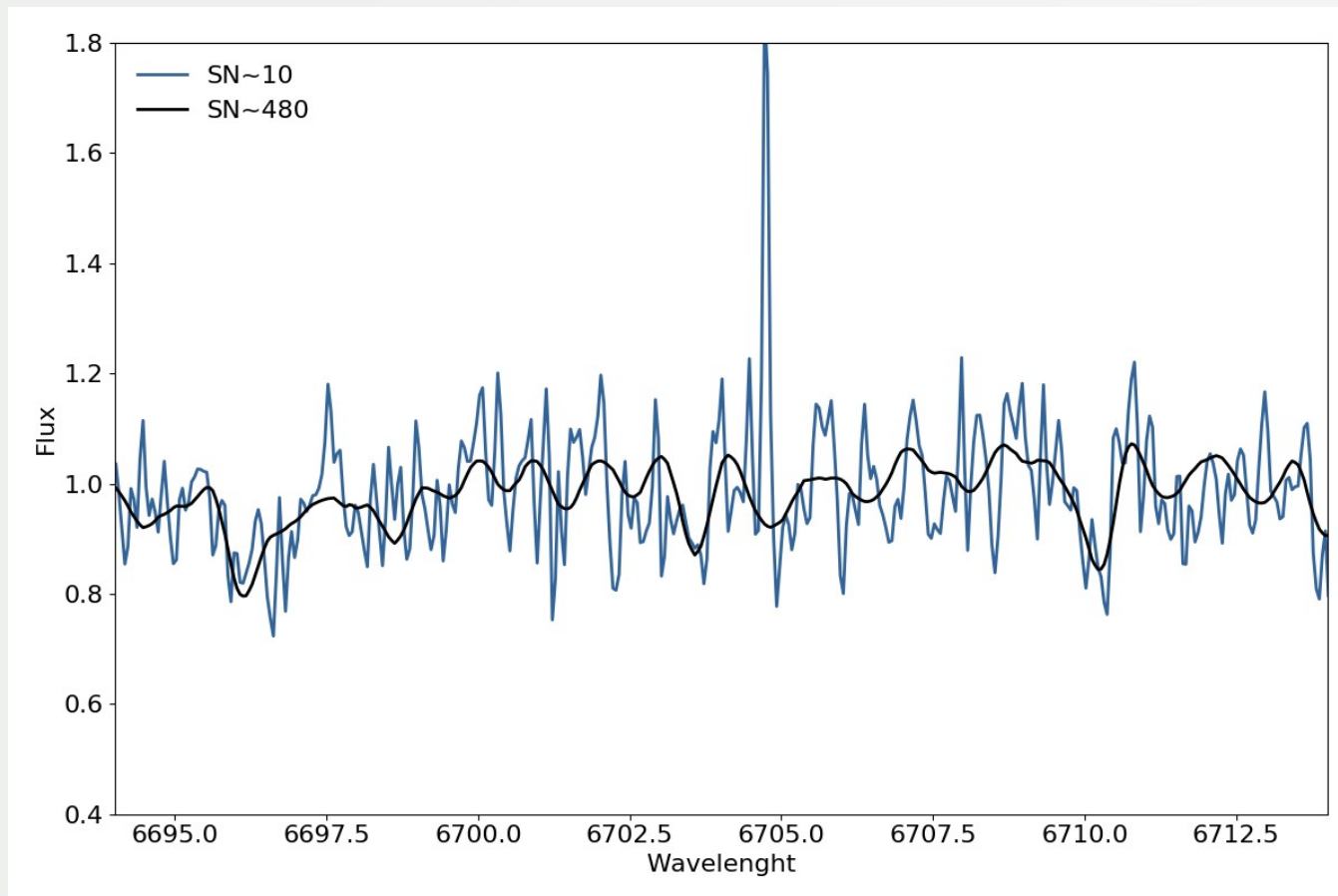
Low S/N in GES



Deriving the chemical abundances

Low S/N

alf Cet: GIRAFFE spectra R~19 000



Deriving the chemical abundances

Rigorous selection of spectral lines

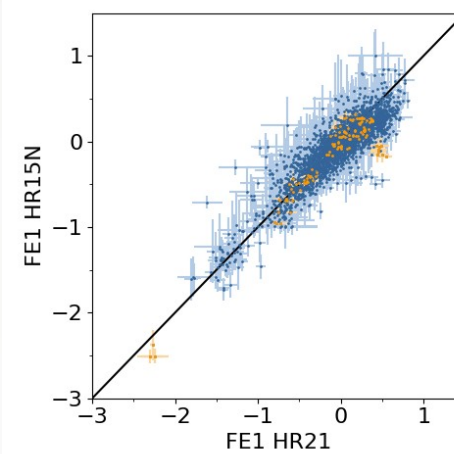
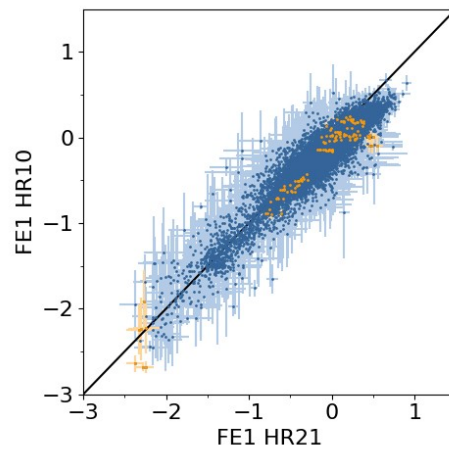
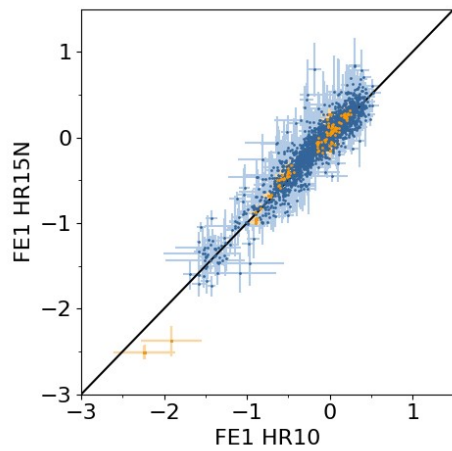
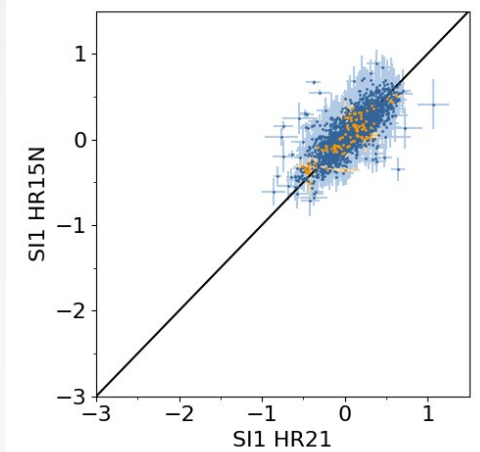
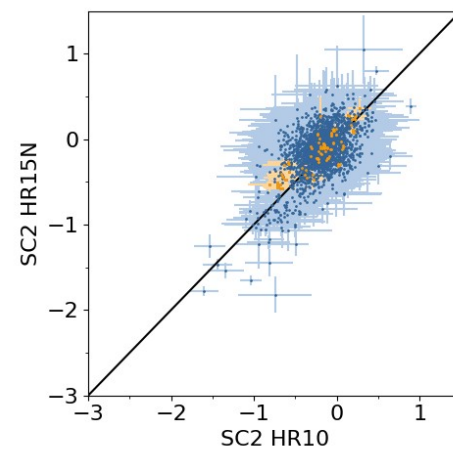
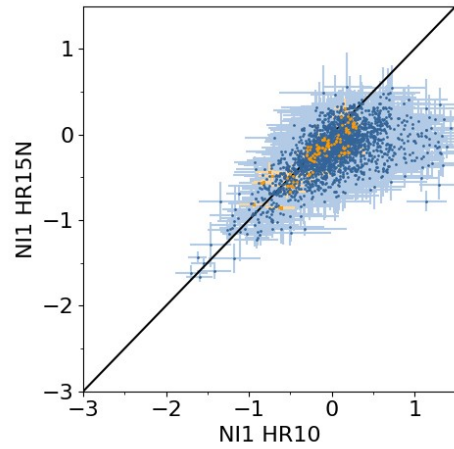
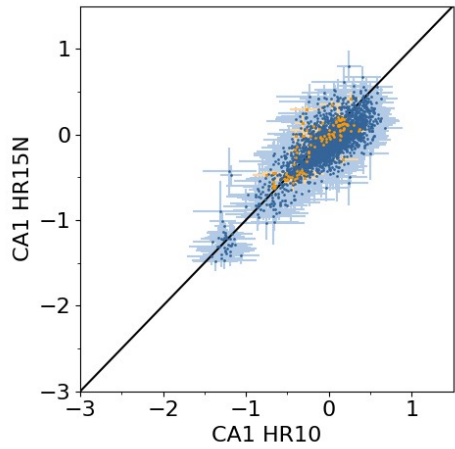
Normalization of the full spectra

ARES v2 (modified) + MOOG 2014 + MARCS model atmosphere

Abundances for setup:

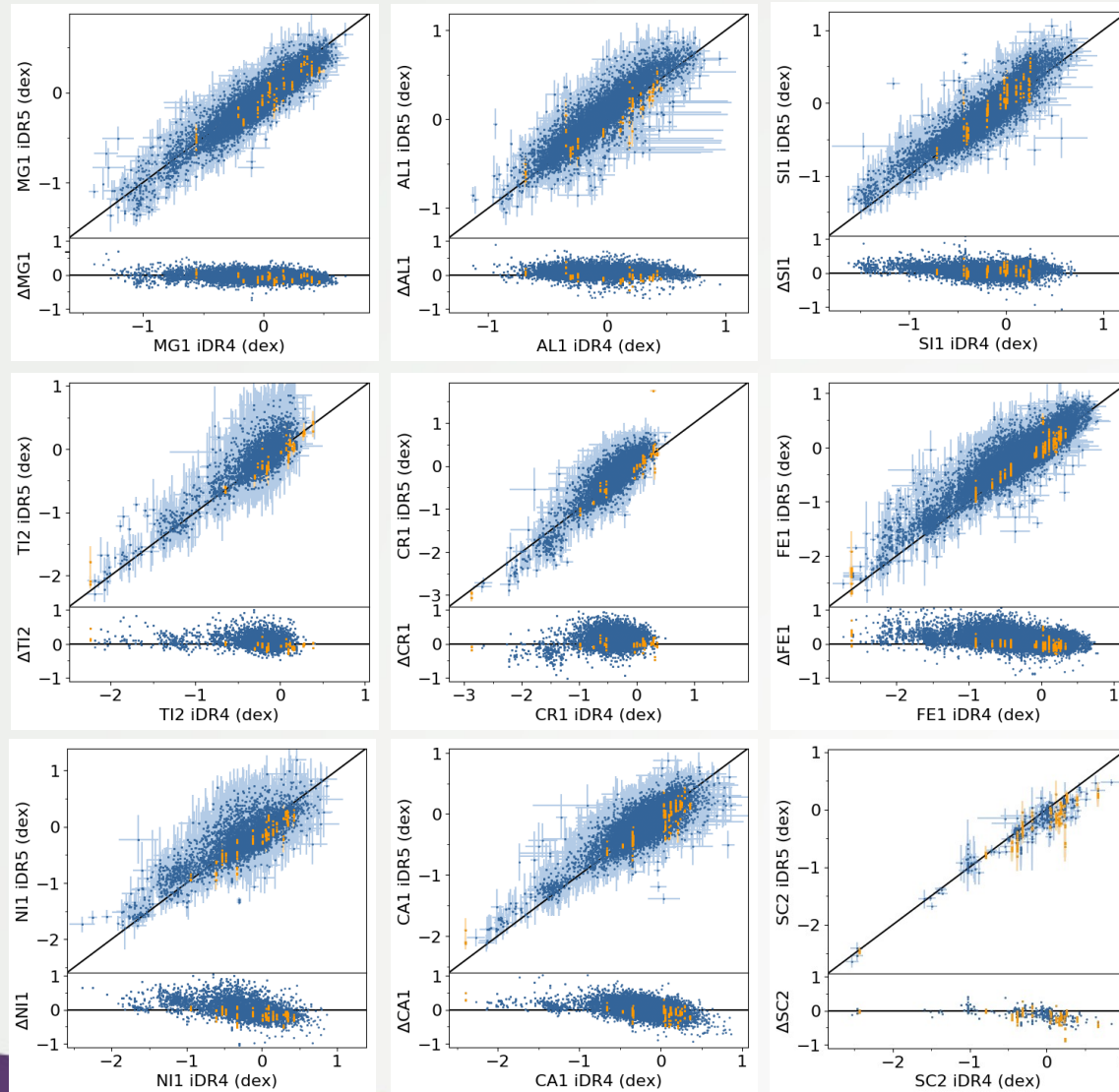
- HR10: CaI, ScII, CrI, FeI, and NiI
- HR15N: SiI, CaI, ScII, FeI, and NiI
- HR21: MgI, AlI, SiI, and FeI
- Total: 50 380 spectra analyzed

Comparing the setups

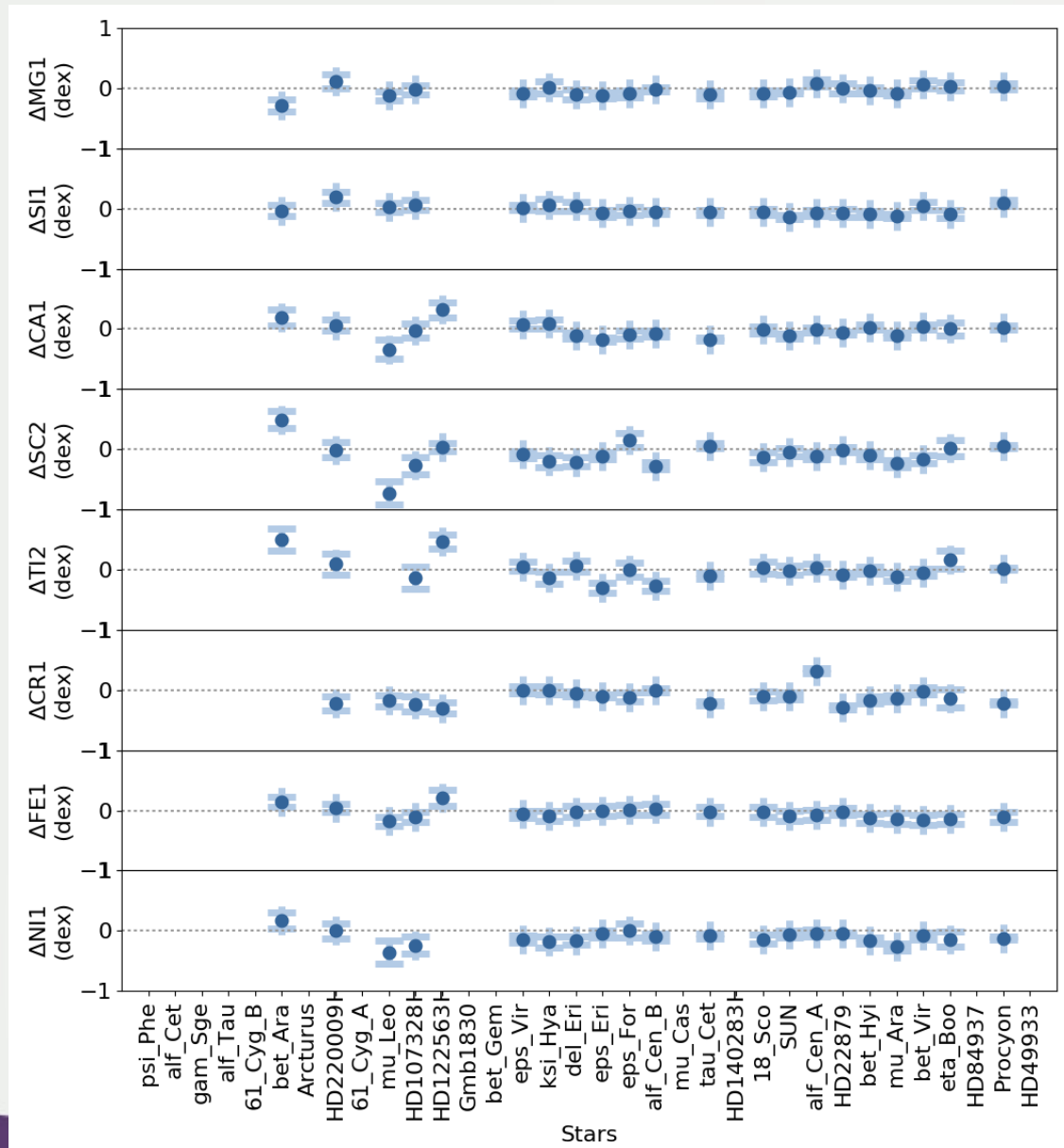


Comparing with previous results

GAIA-ESO Survey iDR4

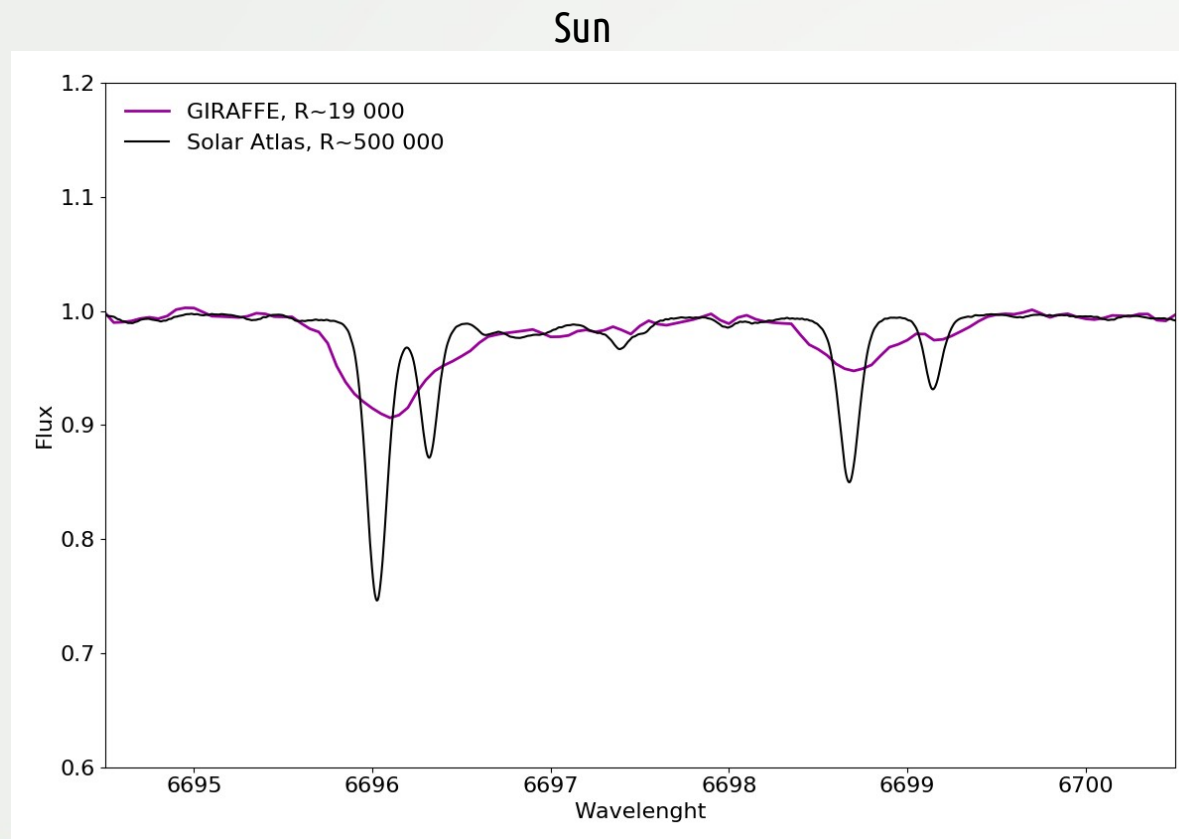


Comparing with the GAIA Benchmark



Future work

- Improve the process of deriving chemical abundances in medium resolution spectra



Thank you!