

# Investigation of the MOONS range

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Resolution	Arm	Range	R
HR	RI	0.765-0.898	9200
HR	YJ	0.934-1.350	4300
HR	H	1.521-1.641	18300
LR	RI	0.647-0.955	4100
LR	YJ	0.934-1.350	4300
LR	H	1.521-1.641	6600

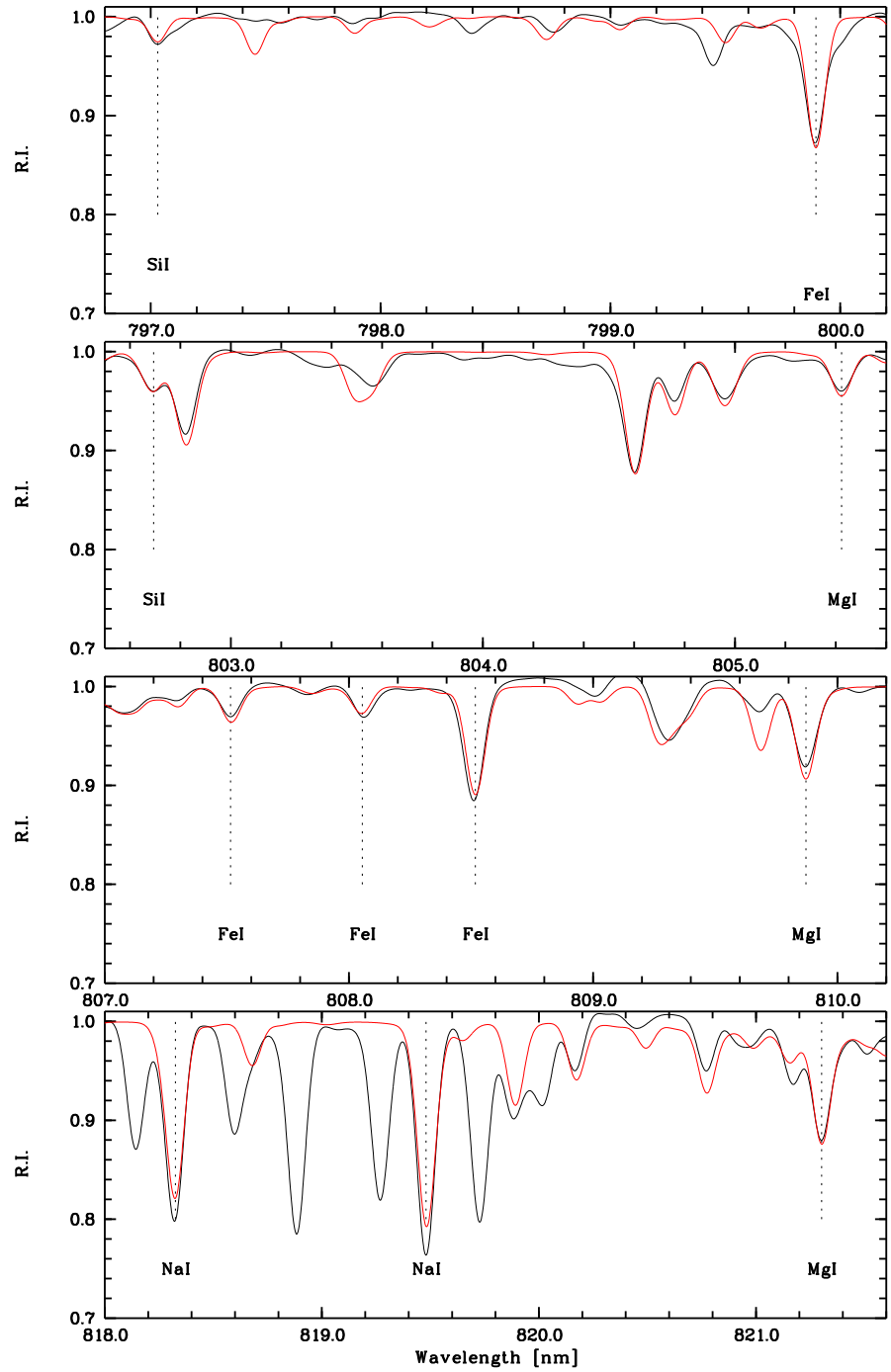
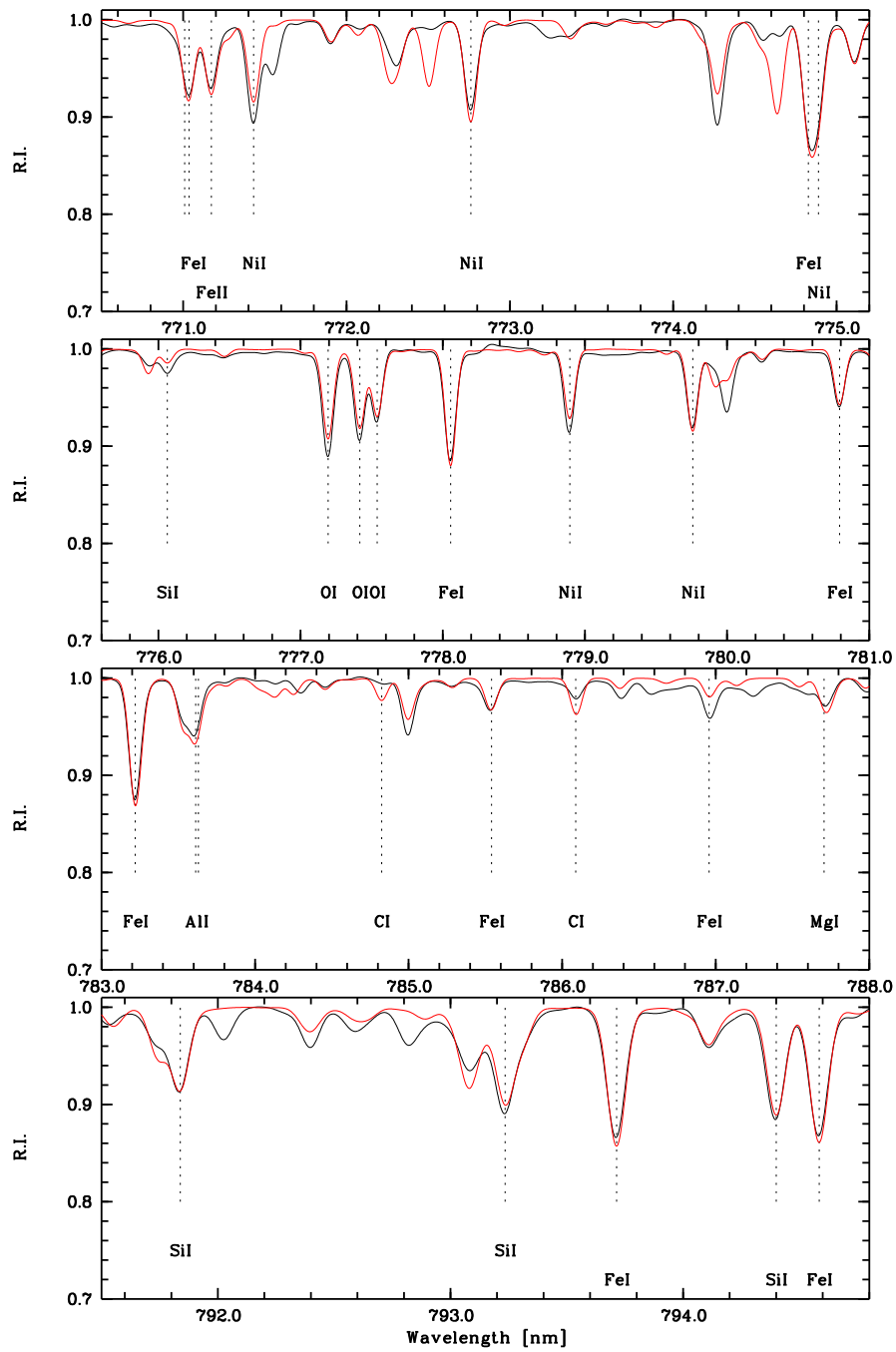
# HD 22484

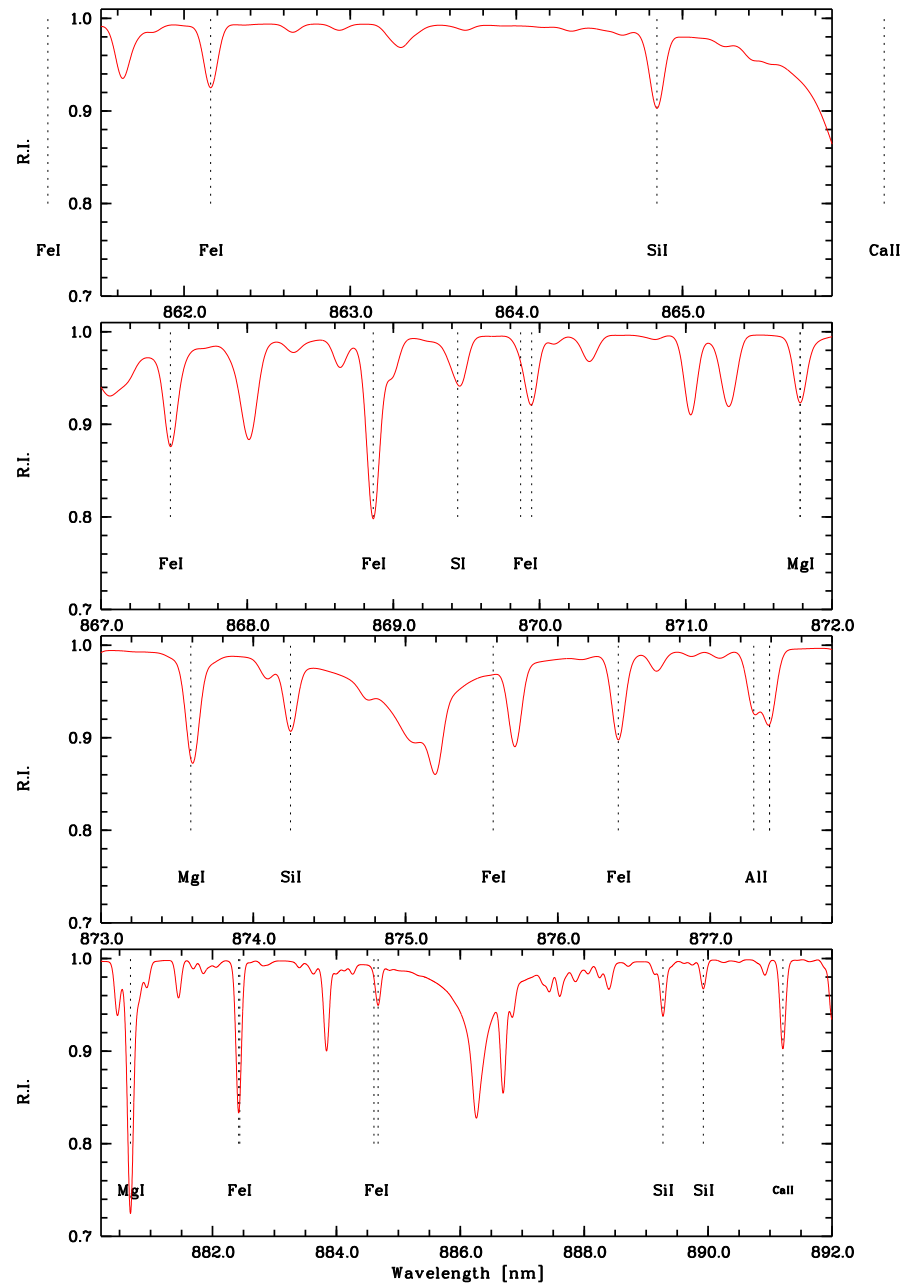
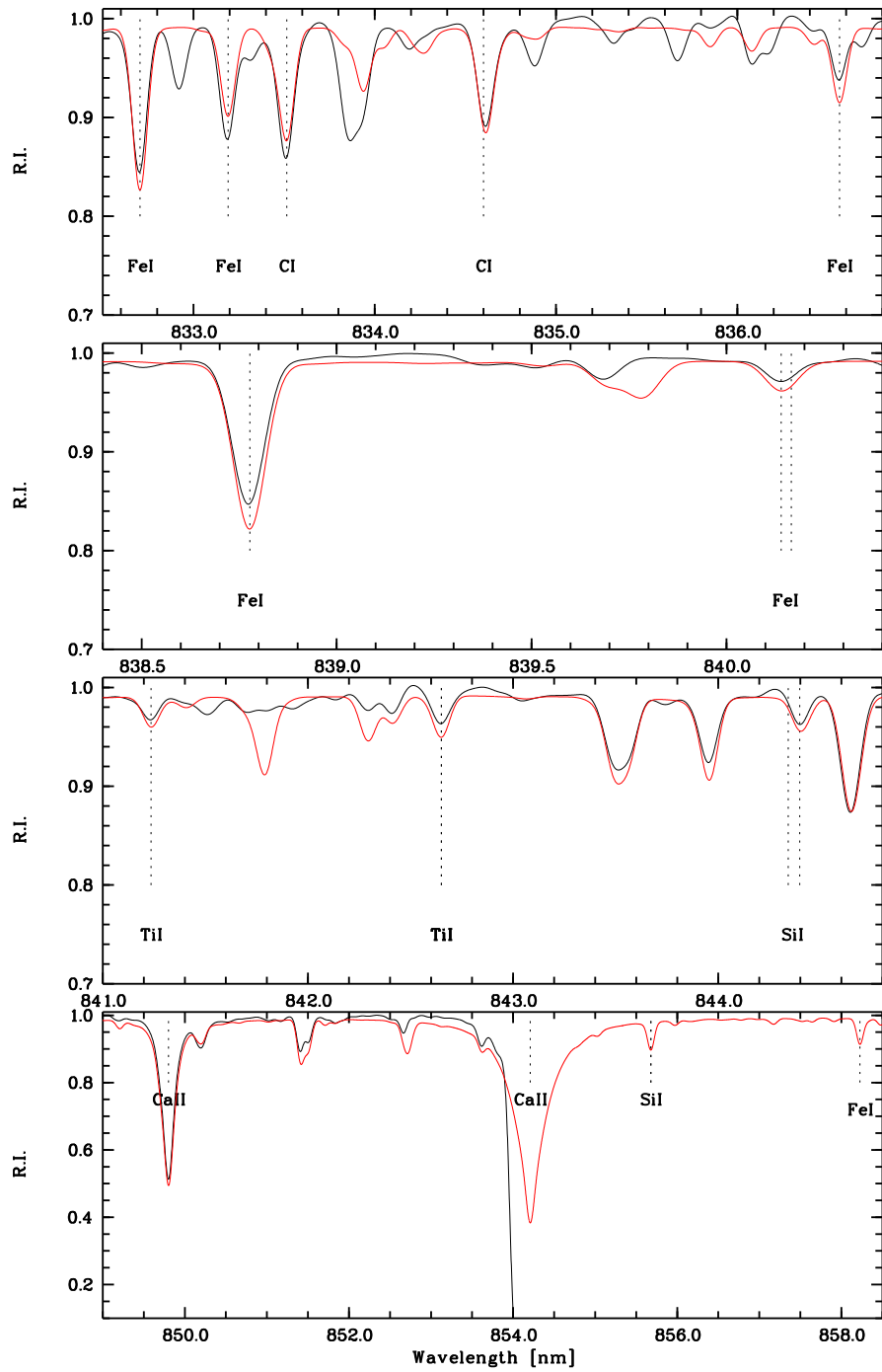
5960/4.02/-0.25

- **RI High-Resolution** 0.765-0.898  $\mu\text{m}$

- we compared

- UVES degraded spectrum of HD 22484 (5960/4.02/−0.25)
- **ATLAS+Synthe synthetic spectrum**
- elements detectable C, O, Na, Al, Mg, Si, S, Ca, Ti, Fe, Ni

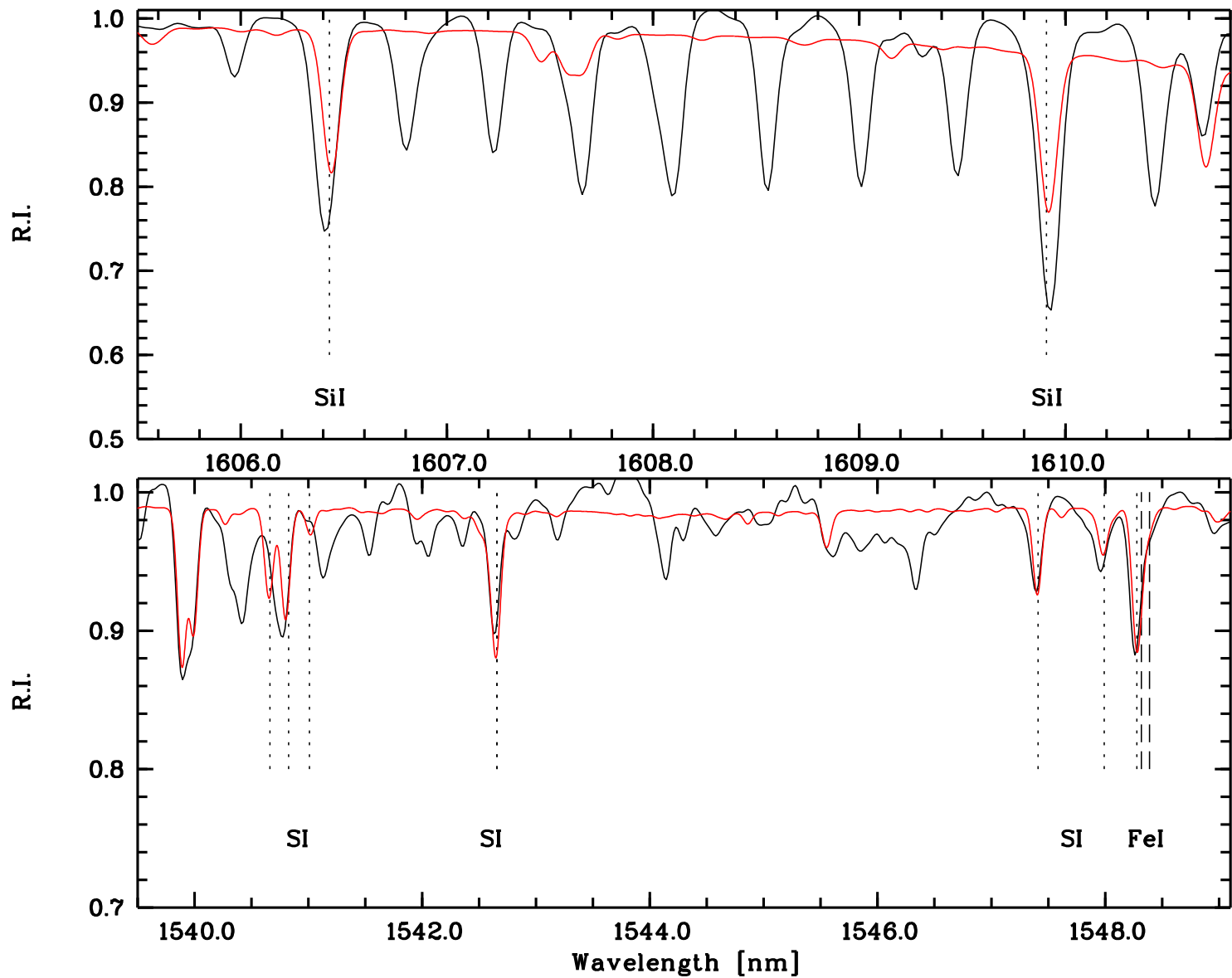




- **H High-Resolution** 1.521-1.641  $\mu\text{m}$

- we compared

- GIANO degraded spectrum of HD 22484 (5960/4.02/−0.25)
- **ATLAS+Synthe synthetic spectrum**
- elements detectable Mg, S, Si, Mn, Fe

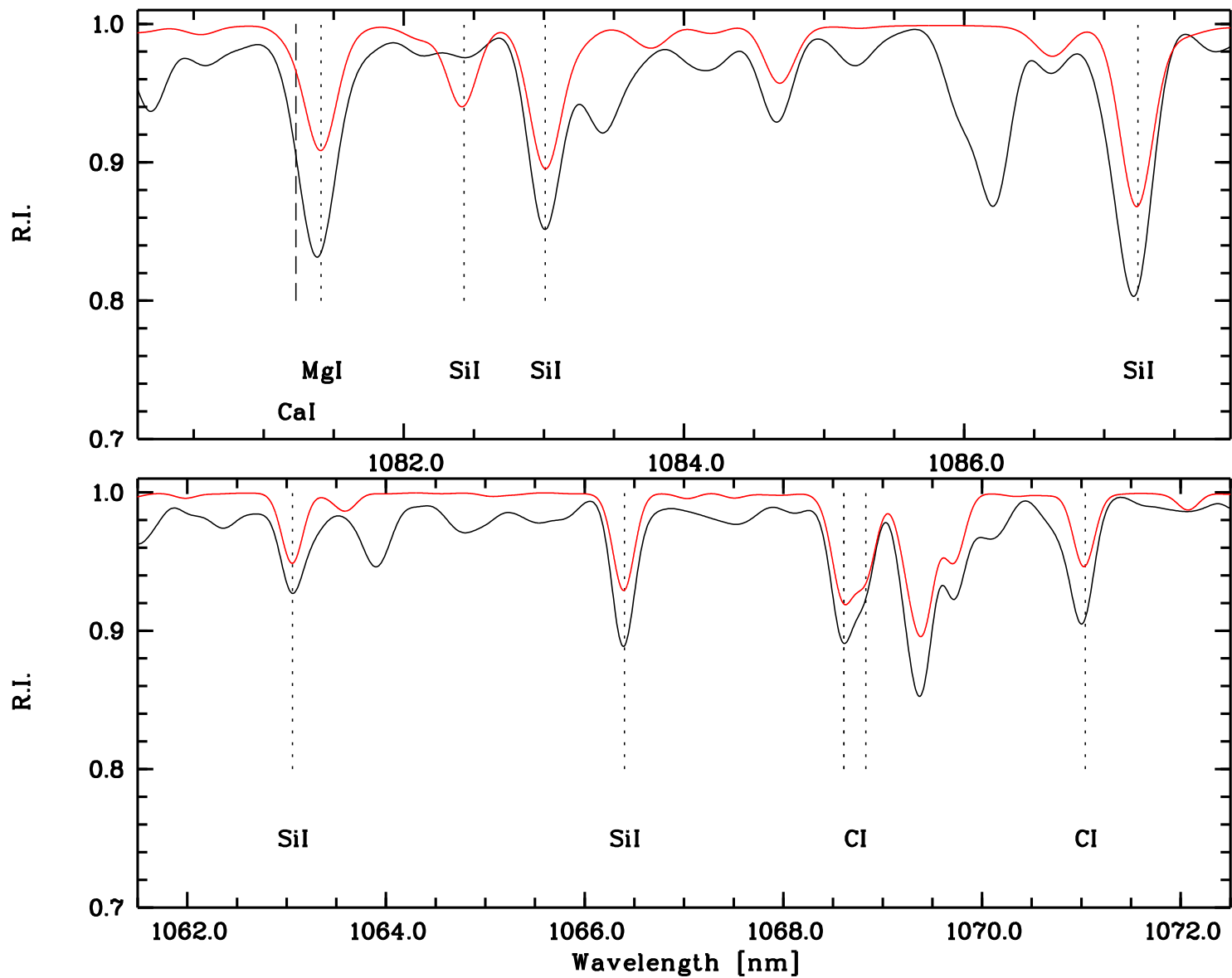




- **YJ Low-Resolution** 0.934-1.350  $\mu\text{m}$

- we compared

- GIANO degraded spectrum of HD 22484 (5960/4.02/−0.25)
- **ATLAS+Synthe synthetic spectrum**
- elements detectable C, Mg, Si, S, Fe, Sr



- Several cleaned lines in the spectrum
- Possible to derive abundance of  
C, O, Na, Al, Mg, Si, S, Va, Ti, Mn, Fe, Ni, Sr
- no FeII line

- Analysed an Apogee spectrum of a star with  $T_{\text{eff}} \approx 5800 \text{ K}$ ,  $\text{Logg} \approx 4.0$ , slightly sub-solar in metallicity.
- Wavelength range 1514-1694 nm
  - lines outside MOONS range 11 FeI, one CaI, three SiI, the AlI, one NiI, one Cl
- Resolution of about 9000
- Derived in the H MOONS range
  - C, Si, S, Ca, Mn, Fe and Ni
  - 45 FeI lines, line-to-line scatter of 0.12 dex
  - 7 lines of SiI, line-to-line scatter of  $< 0.04$  dex

HD 145892

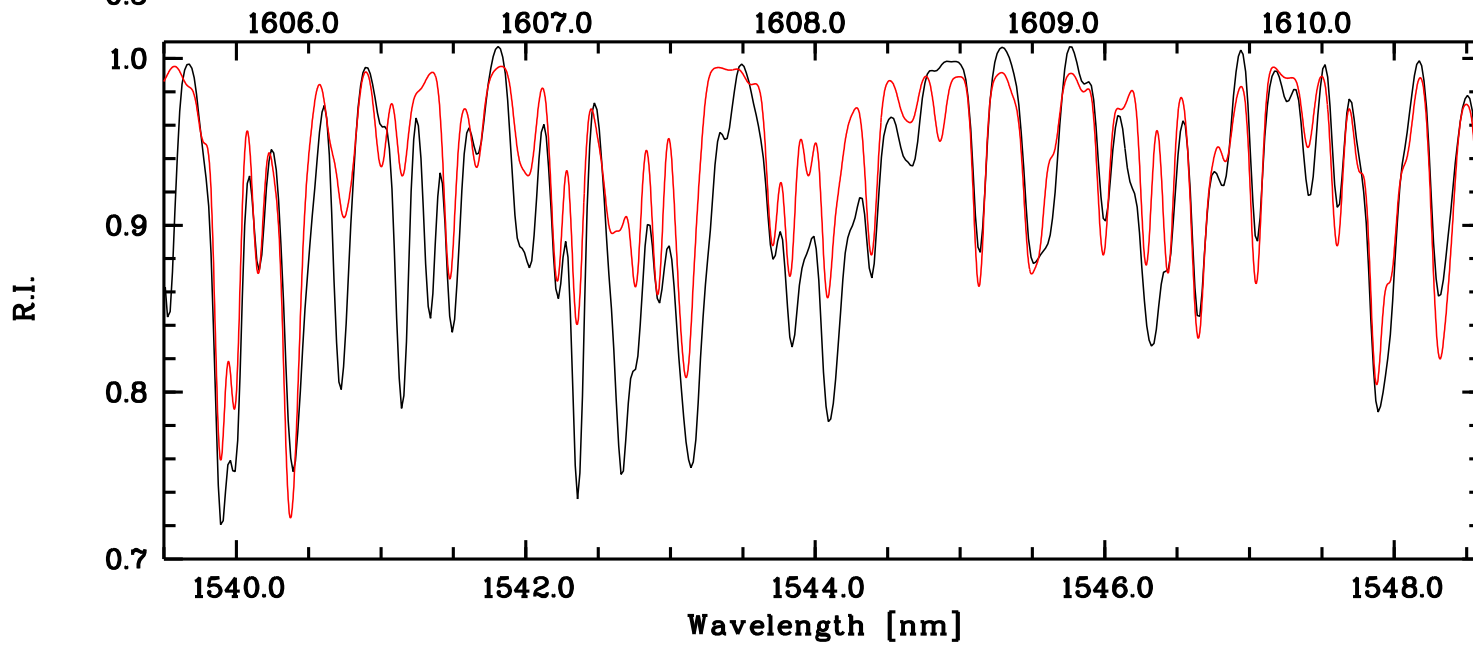
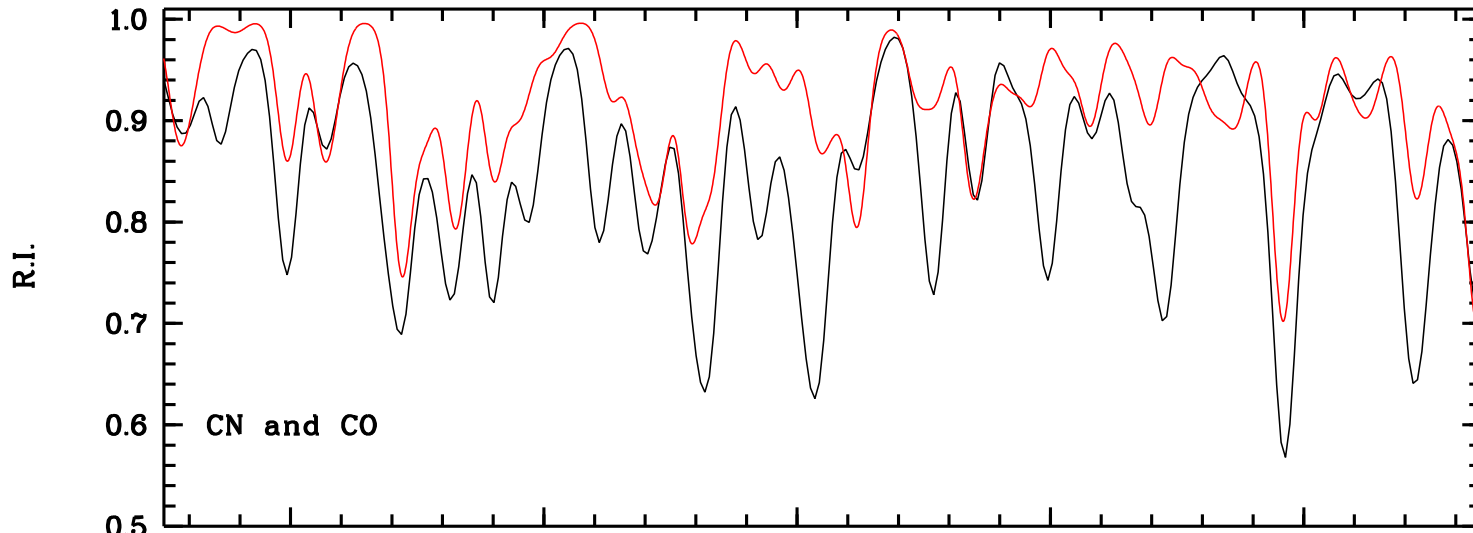
4000/1.8/-0.1

- **H High-Resolution** 1.521-1.641  $\mu\text{m}$

- we compared

- GIANO degraded spectrum of HD 145892 (4200/1.8/-0.10)
- **ATLAS+Synthe synthetic spectrum** (4200/1.80/0.0)
- several CN and CO features

HD 145892 - Giano (4000/1.8/-0.1)



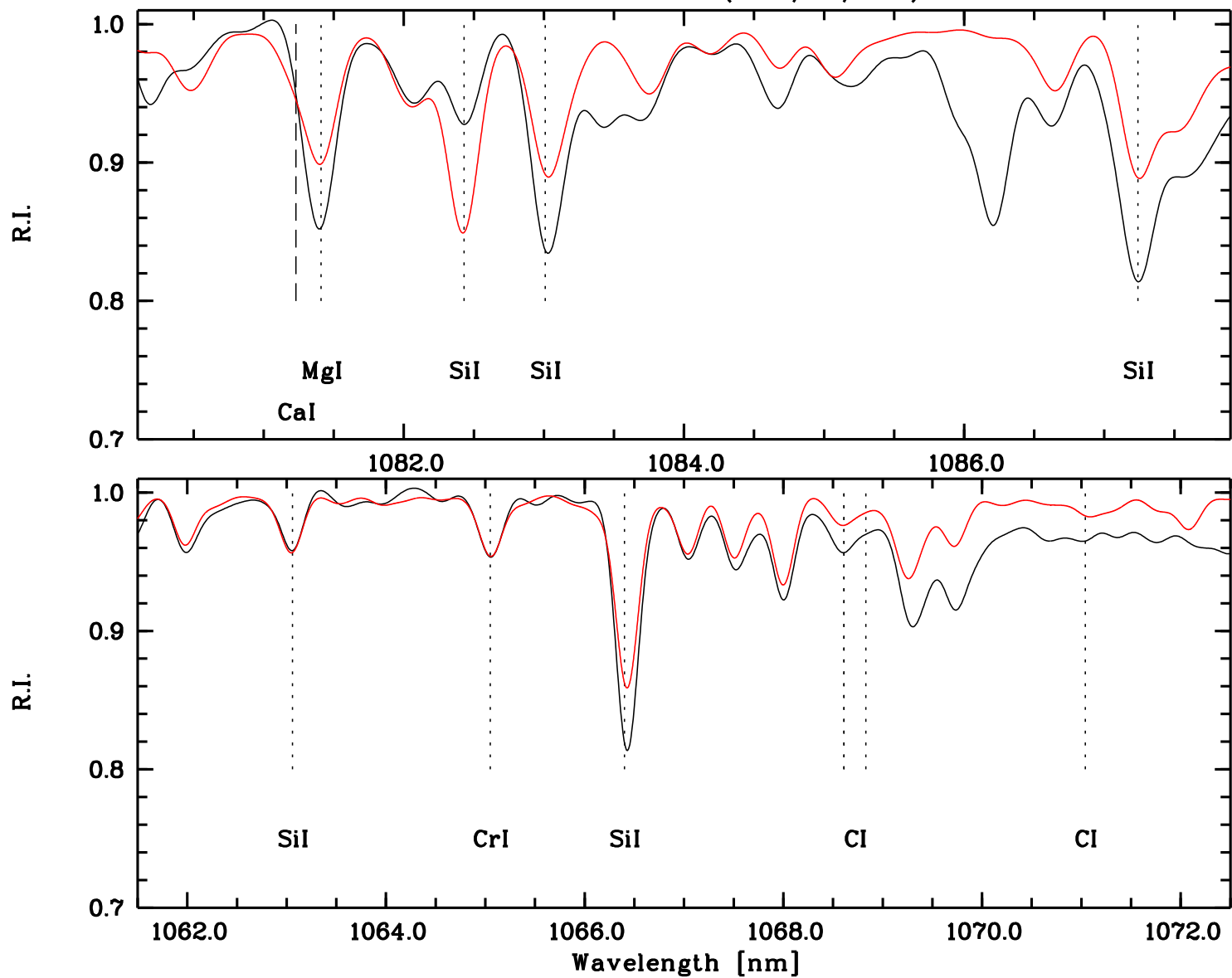
- **YJ Low-Resolution** 0.934-1.350  $\mu\text{m}$

- we compared

- GIANO degraded spectrum of HD 145892 (4000/1.8/-0.1)
- **ATLAS+Synthe synthetic spectrum**
- elements detectable Mg, Si, S, Fe, Sr



HD 145892 - Giano (4000/1.8/-0.1)



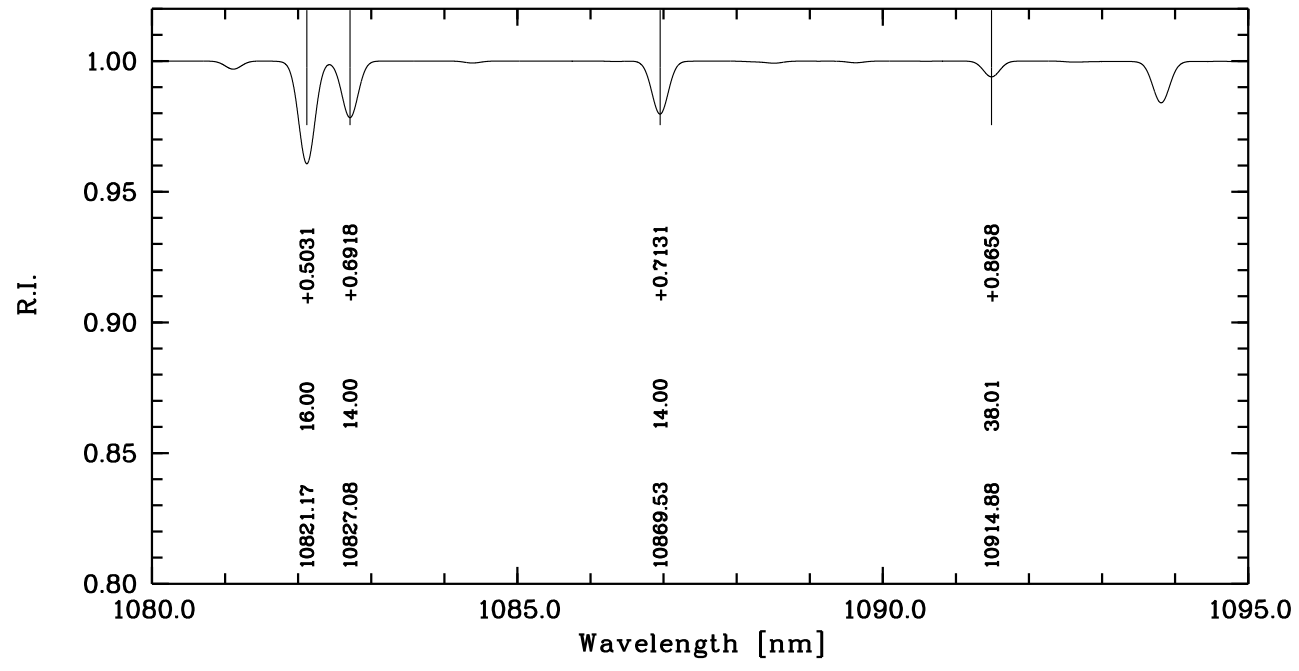
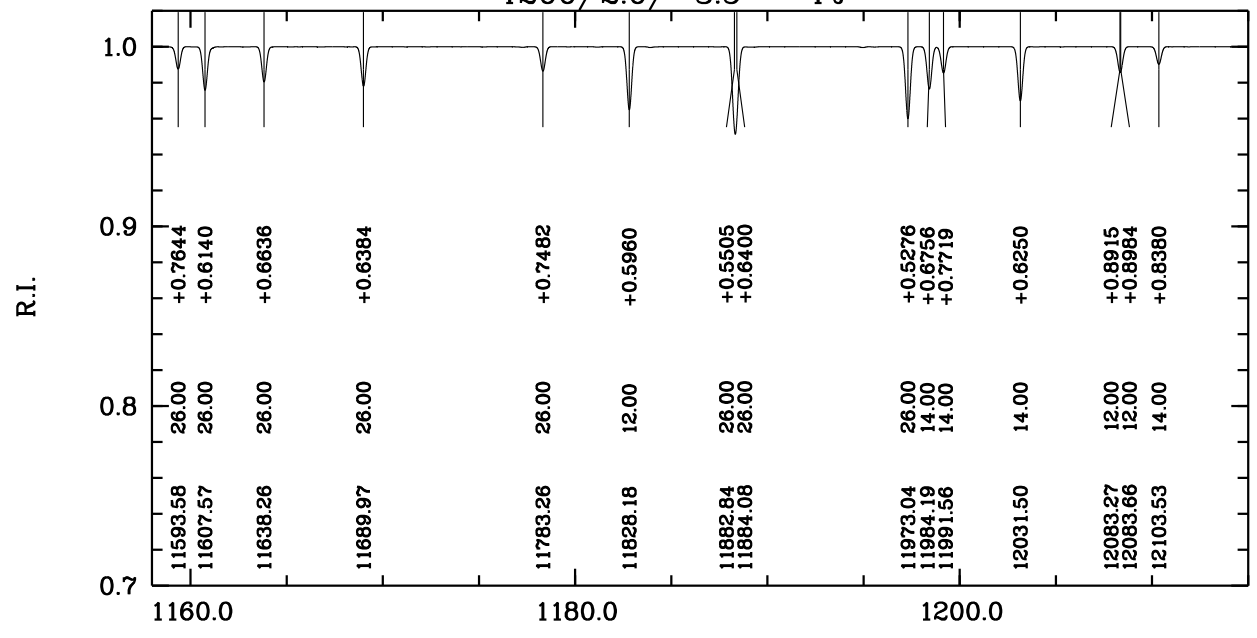
- Not many cleaned lines in the spectrum
- Possible to derive abundance of  
Mg, Si, S, Fe, Sr
- molecular bands strong

# What can we expect from a Metal-Poor Giant?

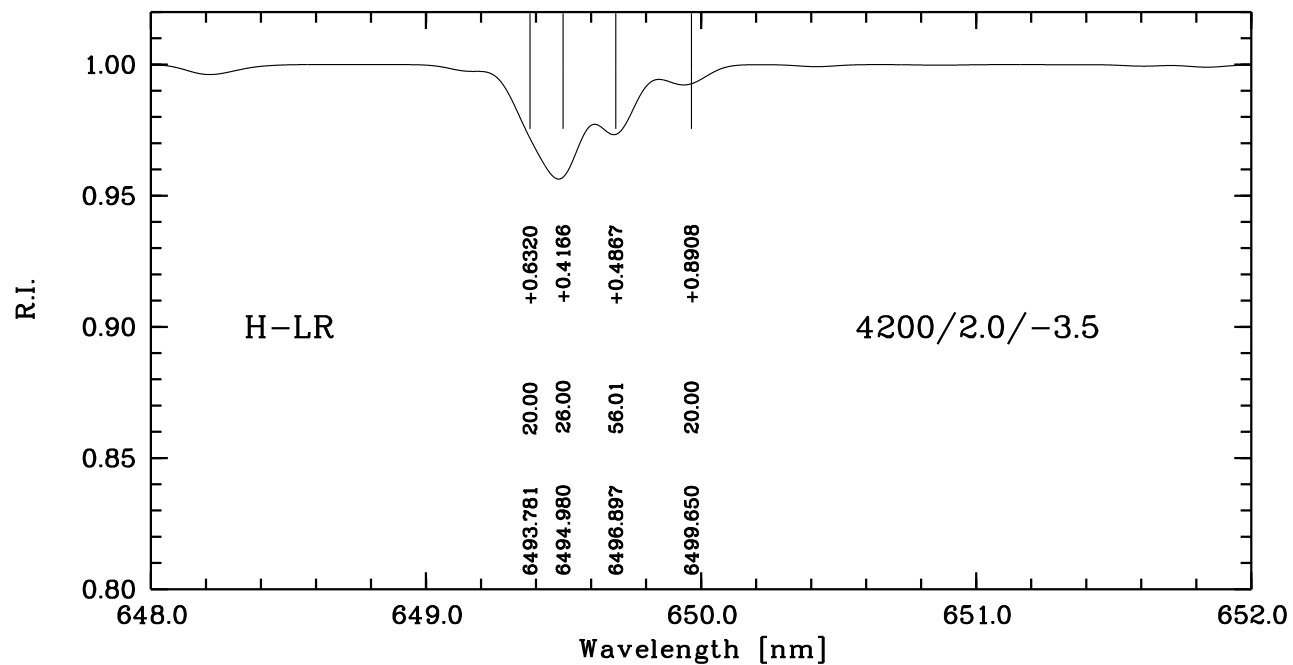
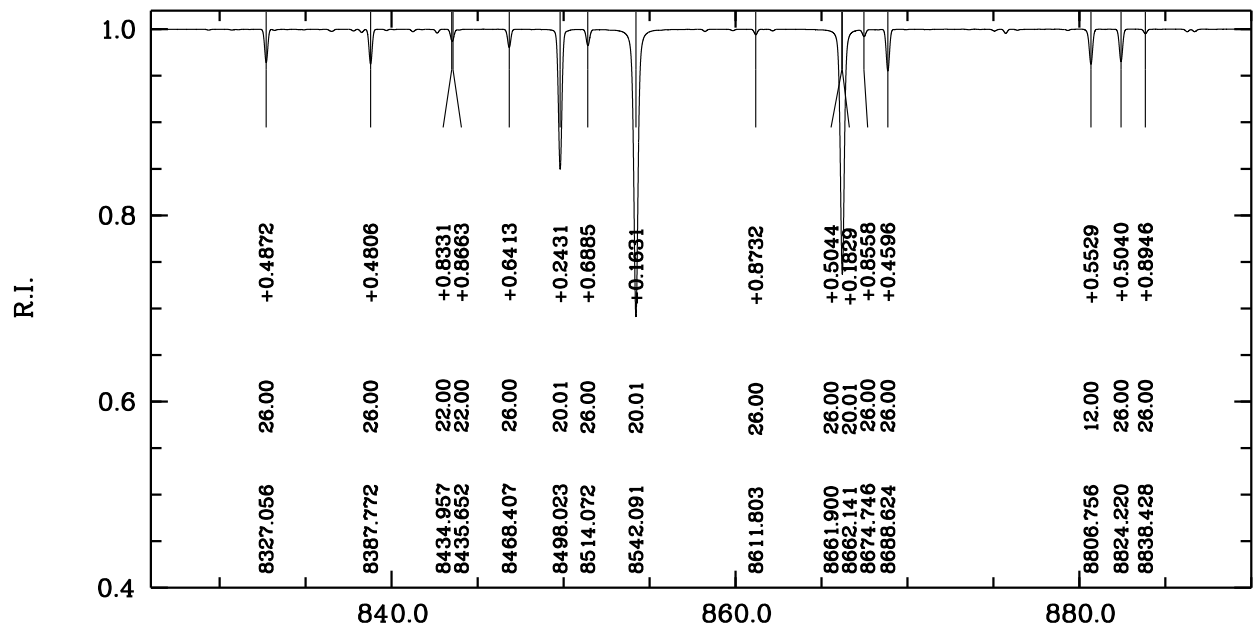
4200/2.0/-3.5

- **YJ High-Resolution** 0.934-1.350  $\mu\text{m}$
- synthesis **ATLAS+Synthe** with 4200/2.0/-3.5
- at high S/N ratio Si, S, Fe

4200/2.0/-3.5 - YJ



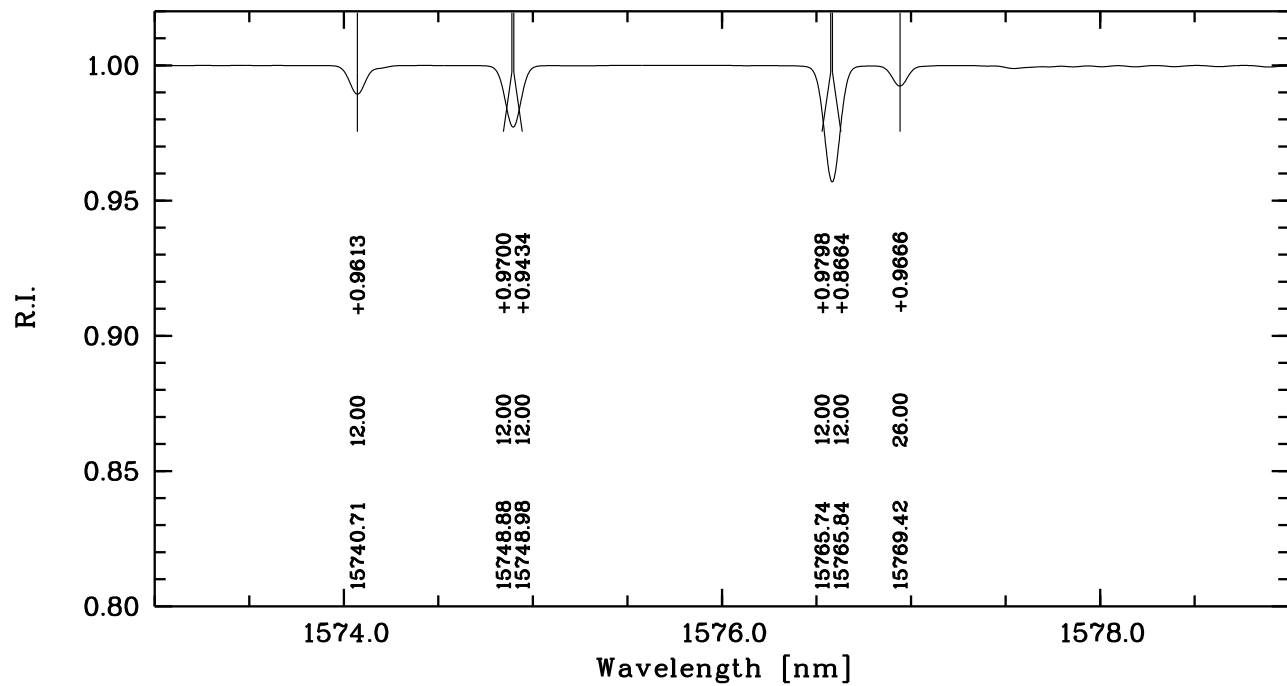
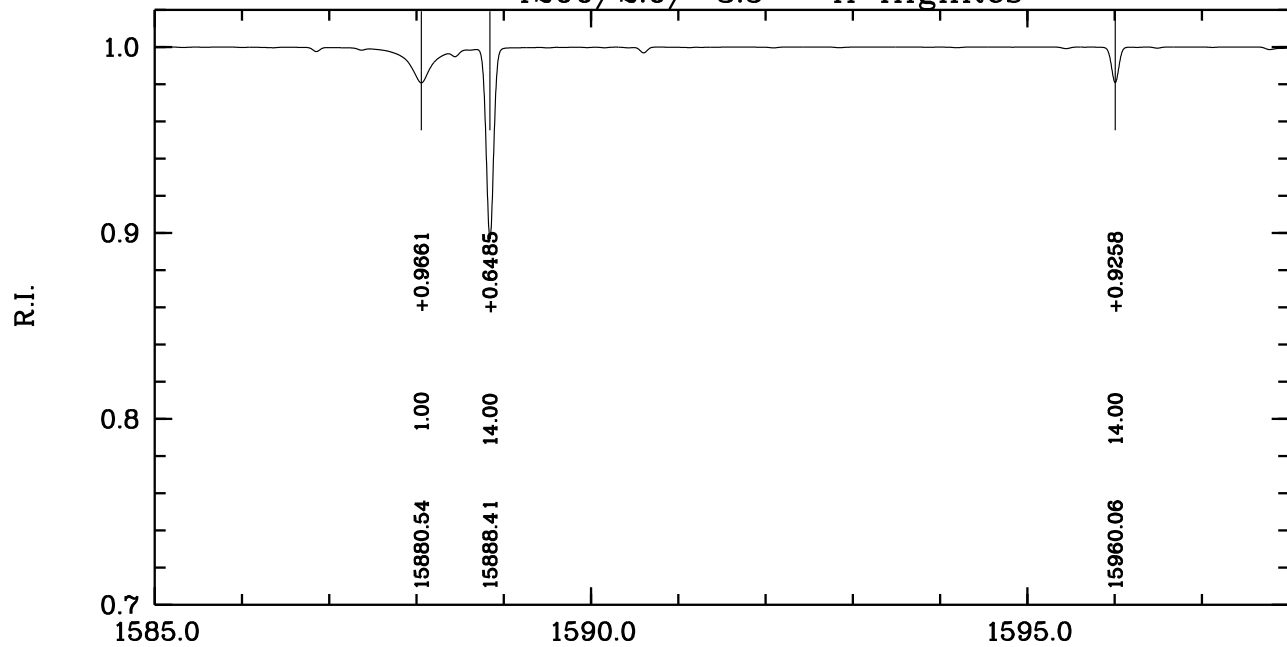
- **RI Low-Resolution** 0.647-0.955  $\mu\text{m}$
- synthesys **ATLAS+Synthe** with 4200/2.0/-3.5
- Ca good indication for metallicity



- **H High-Resolution** 1.521-1.641  $\mu\text{m}$
- synthesys **ATLAS+Synthe** with 4200/2.0/−3.5
  - elements detectable Mg, Si

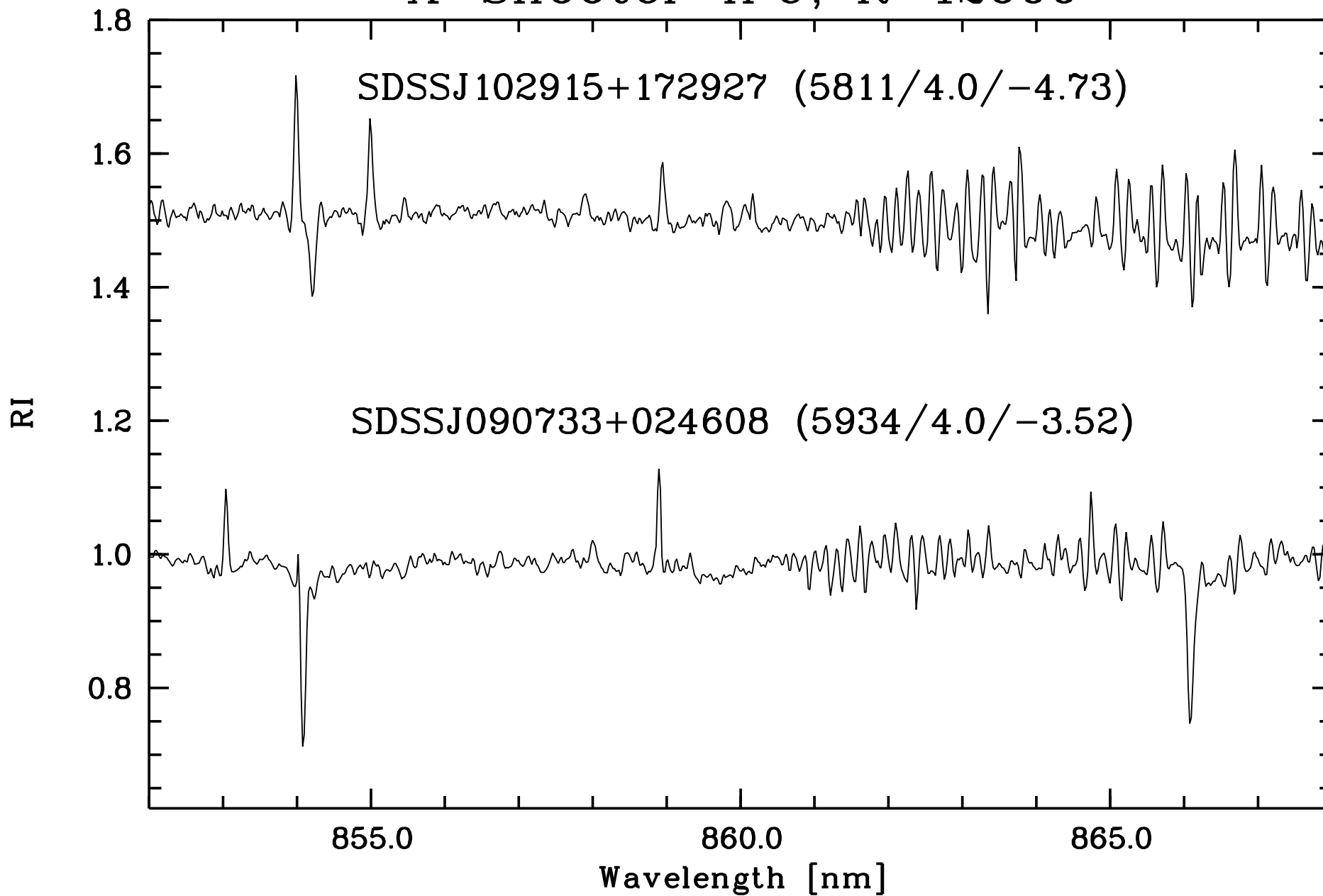


4200/2.0/-3.5 - H HighRes



- Wide wavelength ranges in the three bands
- Several atomic lines detectable in dwarf stars
- Possibility to select EMP

# X-Shooter IFU, $R \sim 12600$



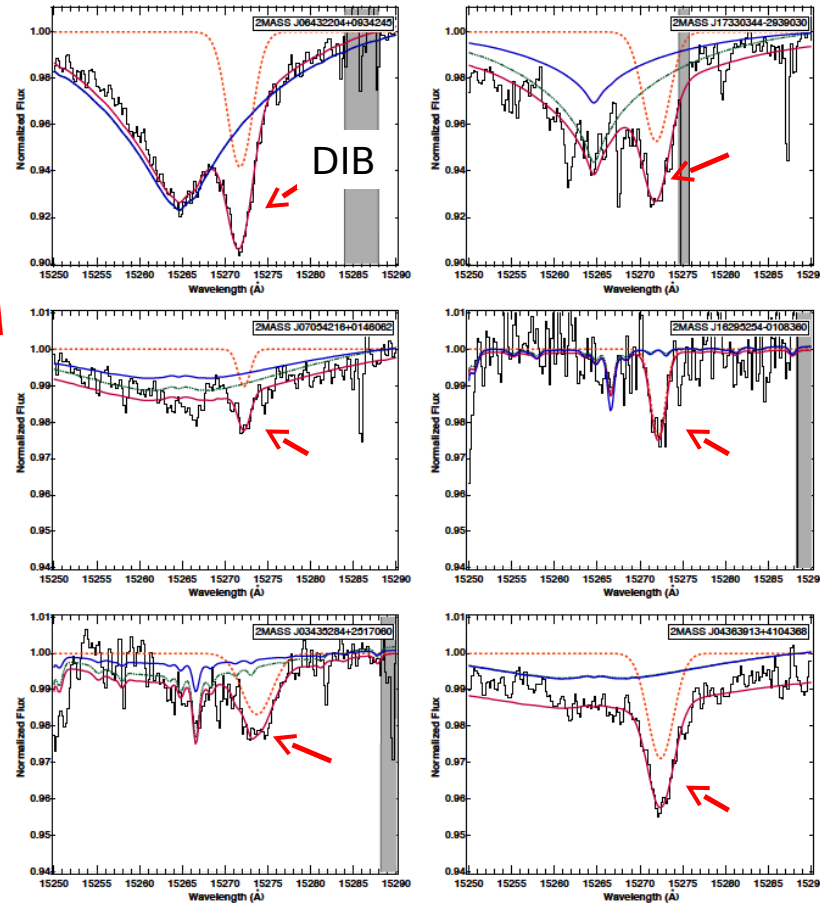
# Absorptions par le MIS

## Bandes interstellaires diffuses (DIBs)

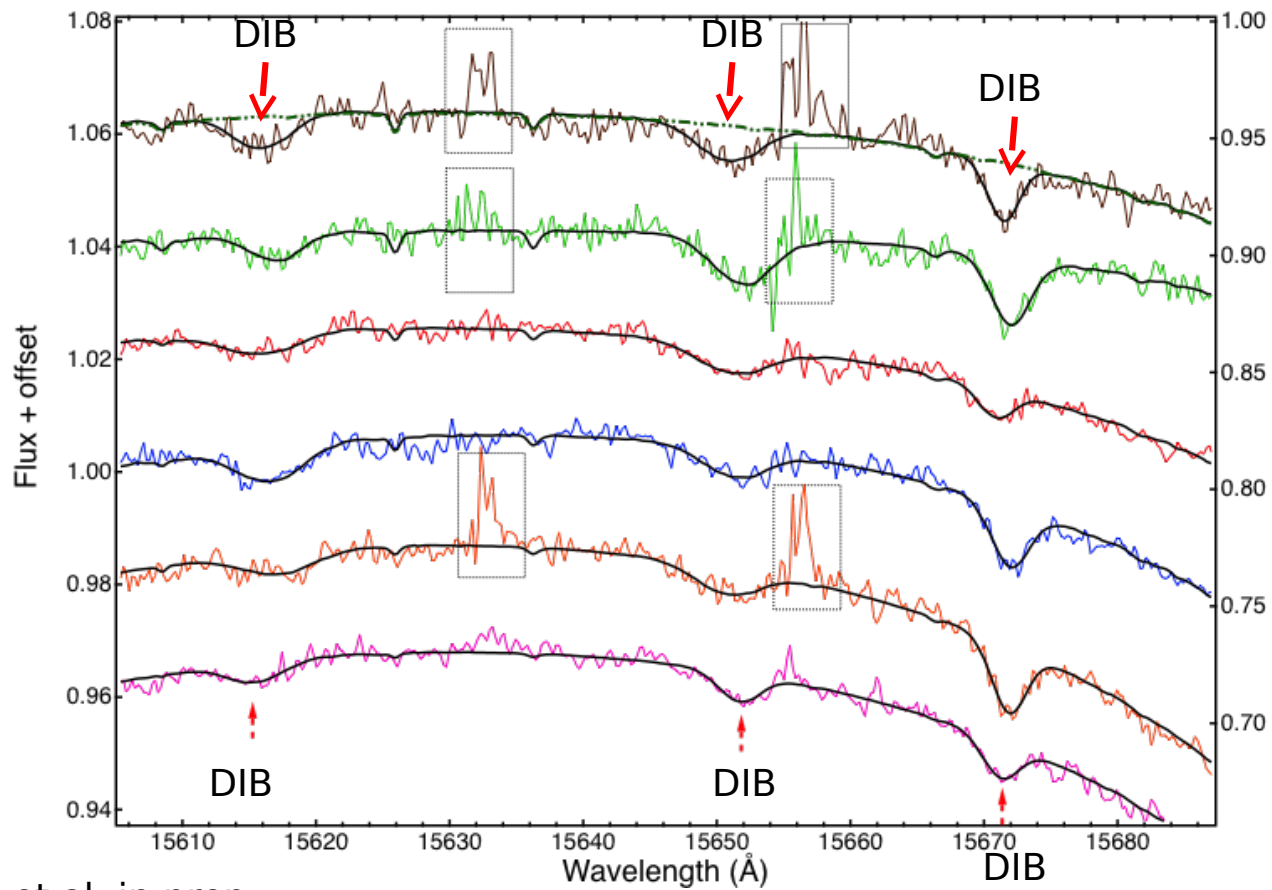
Example: the 1.5273 micron DIB

1.5273  $\mu$  DIBs were extracted from almost all spectra from the SDSS/APOGEE Survey (Zasowski et al, 2015)

DIBs in 6 APOGEE calibration stars (from the catalog of 7,000 absorptions of ElYajouri et al, 2016)



# Other NIR DIBs



IYajouri et al, in prep