Precise Mg abundances in the metal-rich disk

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Goal: understanding the evolution of thin-thick disk populations

Sample: AMBRE:HARPS observational data (R ~ 115000) - 2210 stars - mostly dwarfs in solar neighborhood

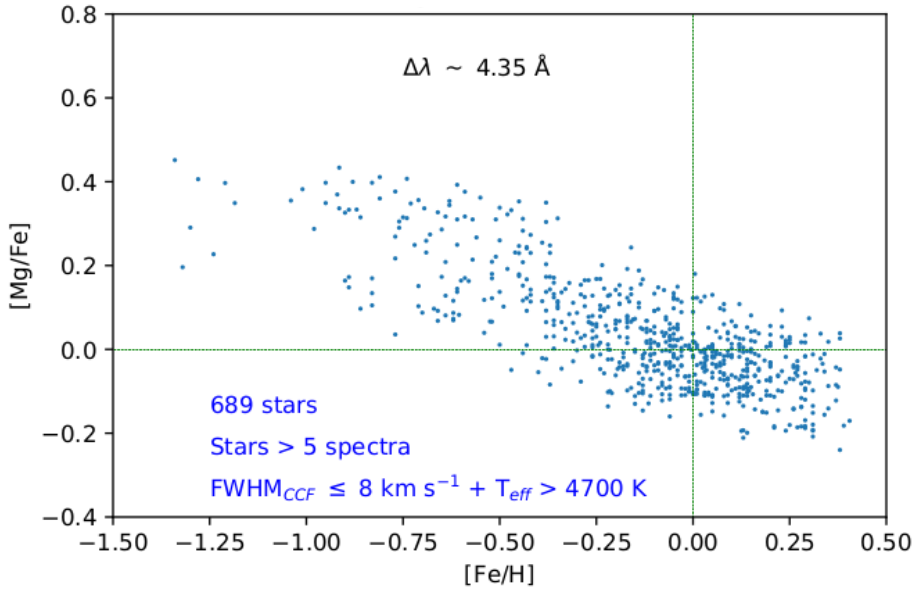
Method: automatic spectral synthesis code GAUGUIN

		MgIb triplet				Strong	Weak		
Mg I (Å):	*4730.04*	5167.3	5172.7	5183.6	5528.4	*5711.09*	*6318.7*	*6319.24*	*6319.49*

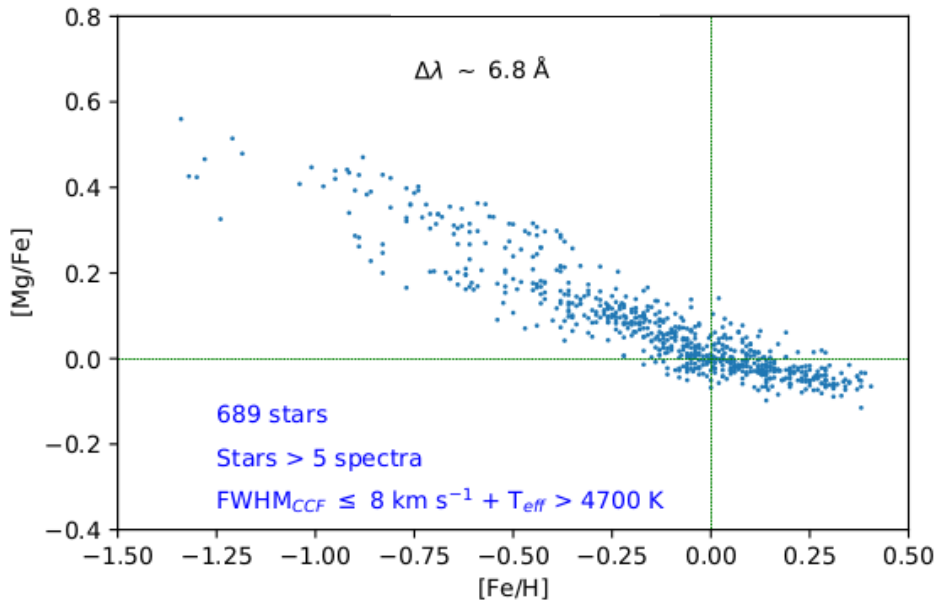
Results:

1. Importance of lines selection → different behavior and precision with the line intensity

***4730.04* Å**

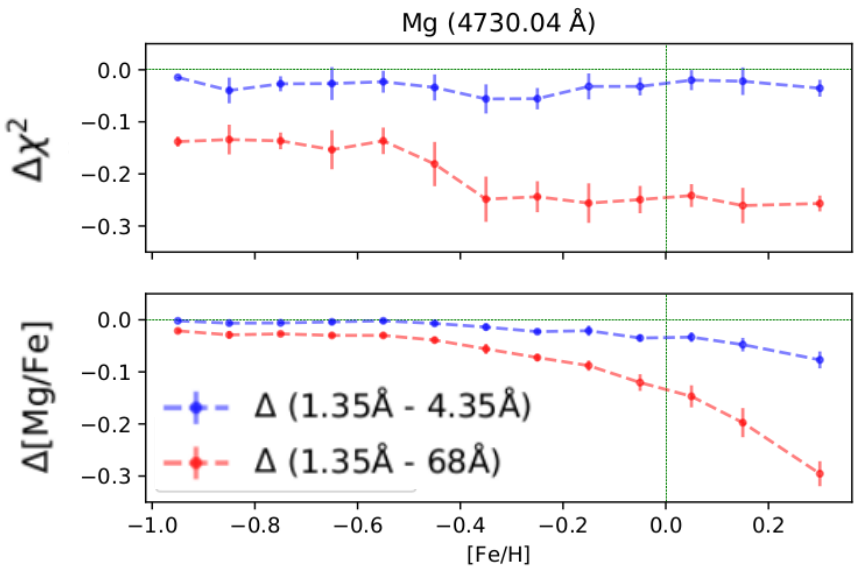


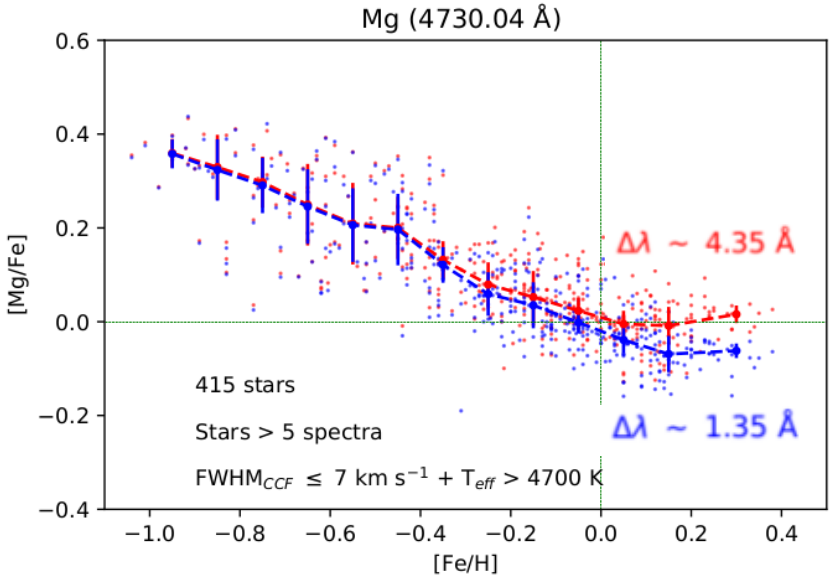
***5172.7* Å**



Strong lines are less sensitive to rotational velocity and present more precise thin-thick disk sequences

2. Normalization problems → the choice of the continuum placement has a direct impact on the abundance





The normalization procedure needs to be optimized depending on the stellar type (Teff, [Fe/H])

3. Most precise Mg abundances in the Gaia era:

Chemodynamical studies on the Galaxy are constrained by the abundance precision.

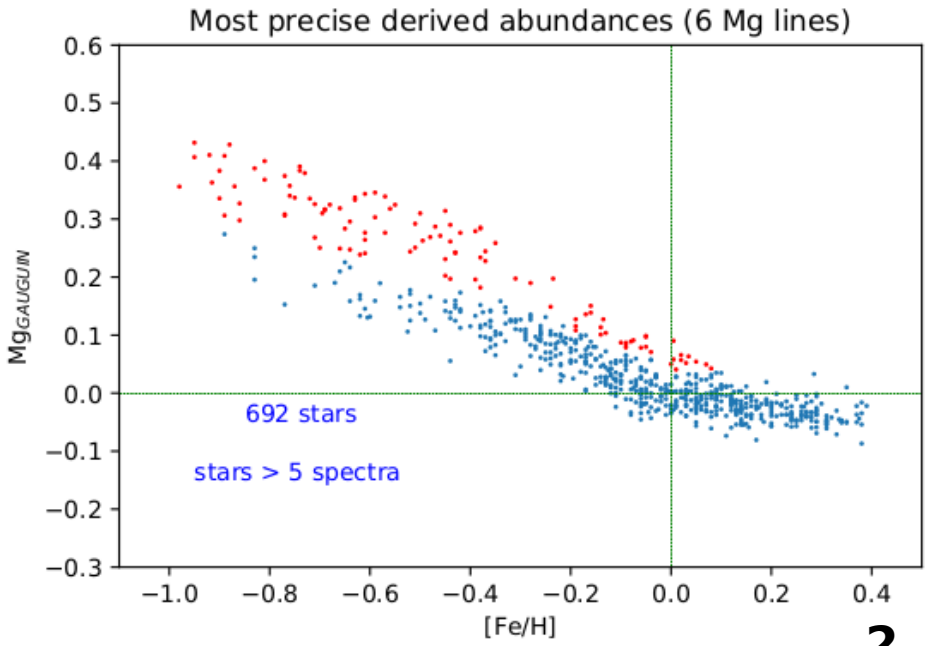
Precise chemical abundances + Gaia distances/kinematics

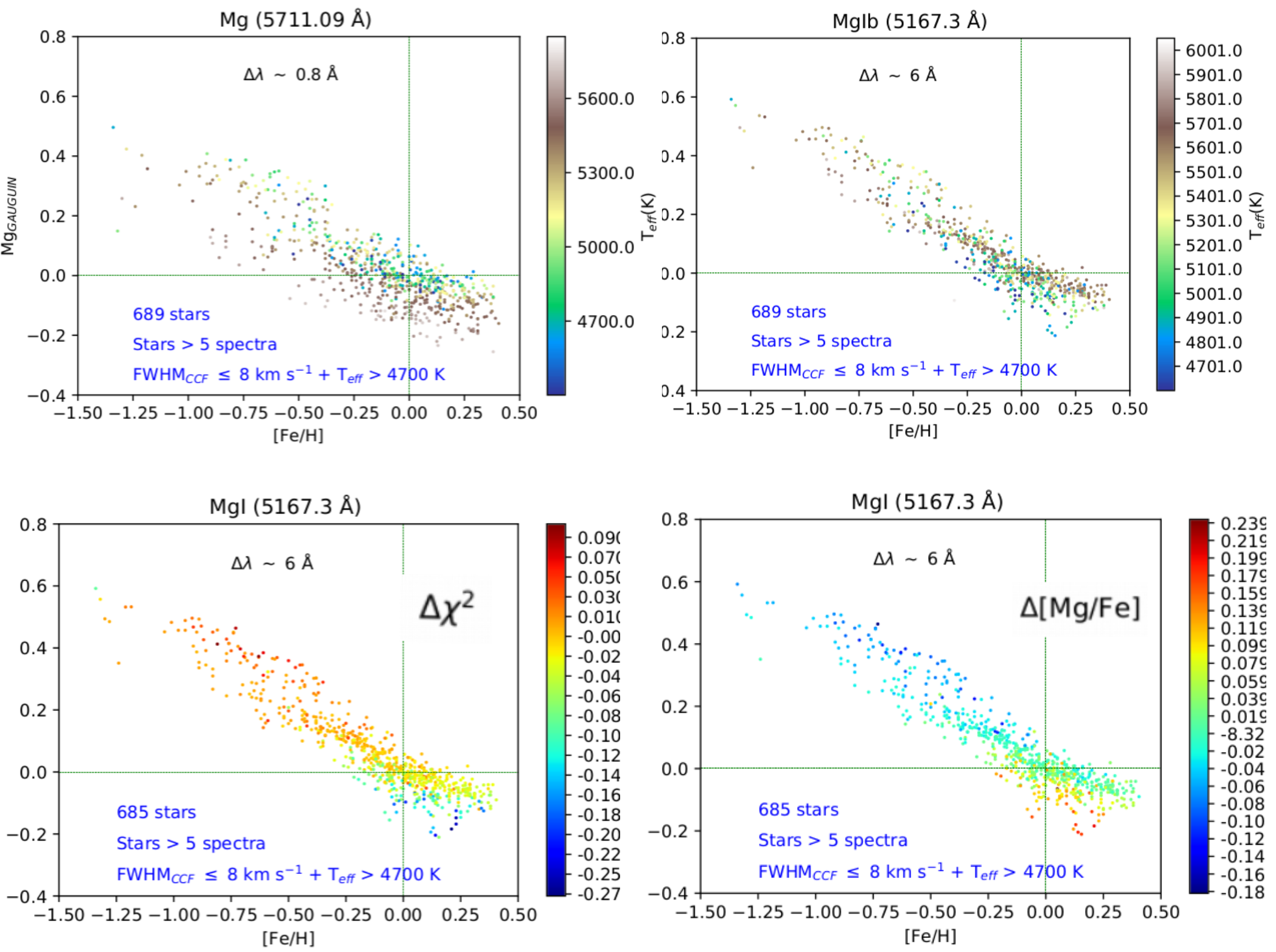
(of different stellar populations)

⇓

light on chemodynamical relations

(migrated stars contribution / thin-thick disk distinction)




Mg (5711.09 Å)
Δλ ~ 0.8 Å
689 stars
Stars > 5 spectra
FWHM$_{CCF}$ ≤ 8 km s^{-1} + T$_{eff}$ > 4700 K
Mg$_{GAUGUIN}$
[Fe/H]
MgIb (5167.3 Å)
Δλ ~ 6 Å
689 stars
Stars > 5 spectra
FWHM$_{CCF}$ ≤ 8 km s^{-1} + T$_{eff}$ > 4700 K
T$_{eff}$(K)
[Fe/H]
MgI (5167.3 Å)
Δλ ~ 6 Å
Δχ^2
685 stars
Stars > 5 spectra
FWHM$_{CCF}$ ≤ 8 km s^{-1} + T$_{eff}$ > 4700 K
[Fe/H]
MgI (5167.3 Å)
Δλ ~ 6 Å
Δ[Mg/Fe]
685 stars
Stars > 5 spectra
FWHM$_{CCF}$ ≤ 8 km s^{-1} + T$_{eff}$ > 4700 K
[Fe/H]