

Li enrichment in cool stars in open clusters

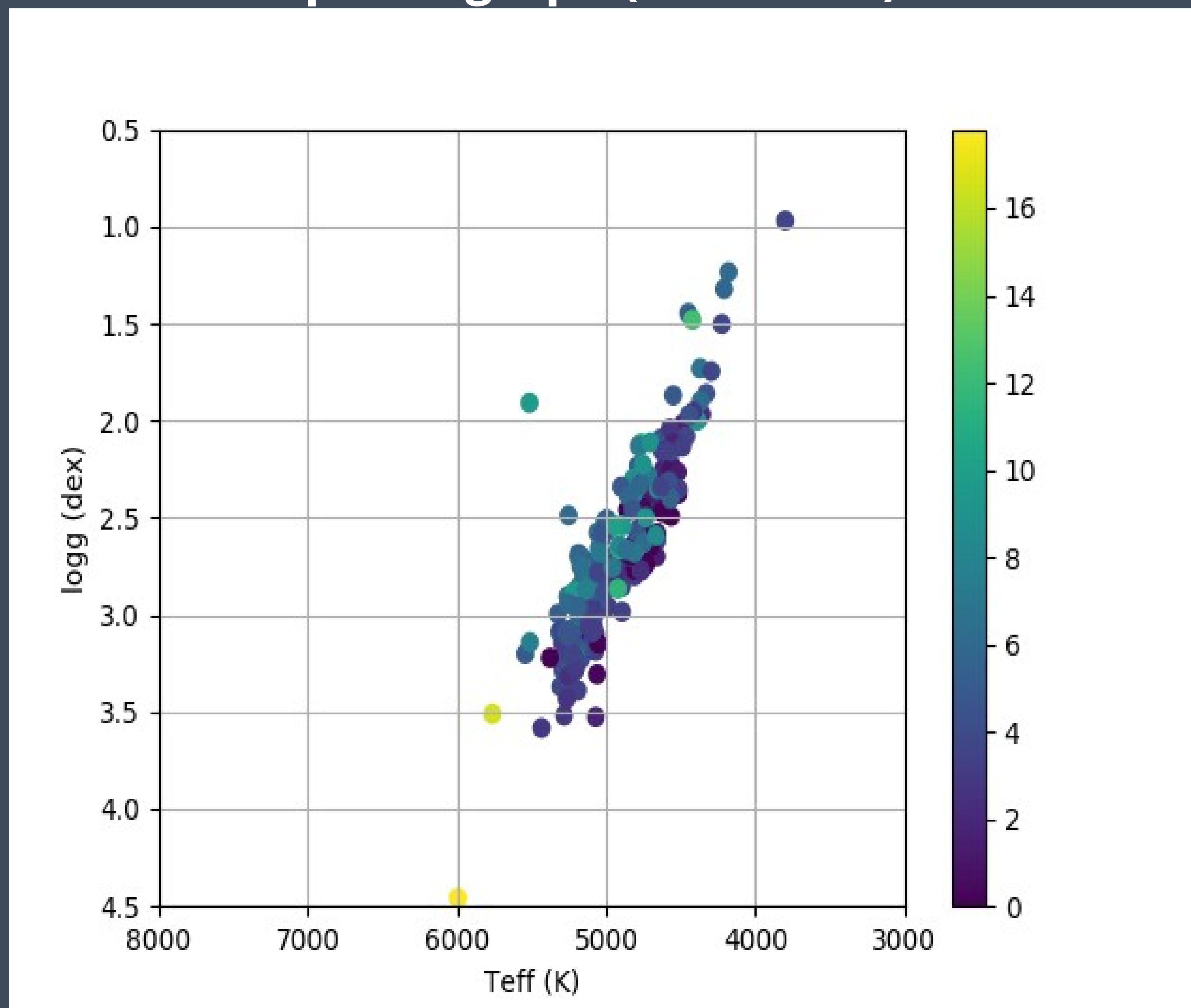
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Intoduction

We study Li abundances in the atmospheres of giants for a sample of open clusters (OCs) where planets have been searched, thus we can investigate the scenarios to explain Li enrichment, such as planet engulfment using a proper comparison sample of stars without detected planets.

The baseline sample is from Lovis & Mayor (2007), Delgado-Mena (2016), and new spectra from recent ESO observing runs. The sample is composed of **247 evolved stars in 34 different OCs observed with the HARPS spectrograph (R=115 000).**



Teff-logg diagram for the 247 stars in our sample. The plot is color coded to the rotation velocity in km/s.

Li abundances

We derived LTE lithium abundances by performing spectral synthesis with FASMA (Tsantaki et al. 2018) which uses the radiative transfer code MOOG with MARCS model atmospheres and the line list taken from Ghezzi et al. (2009).

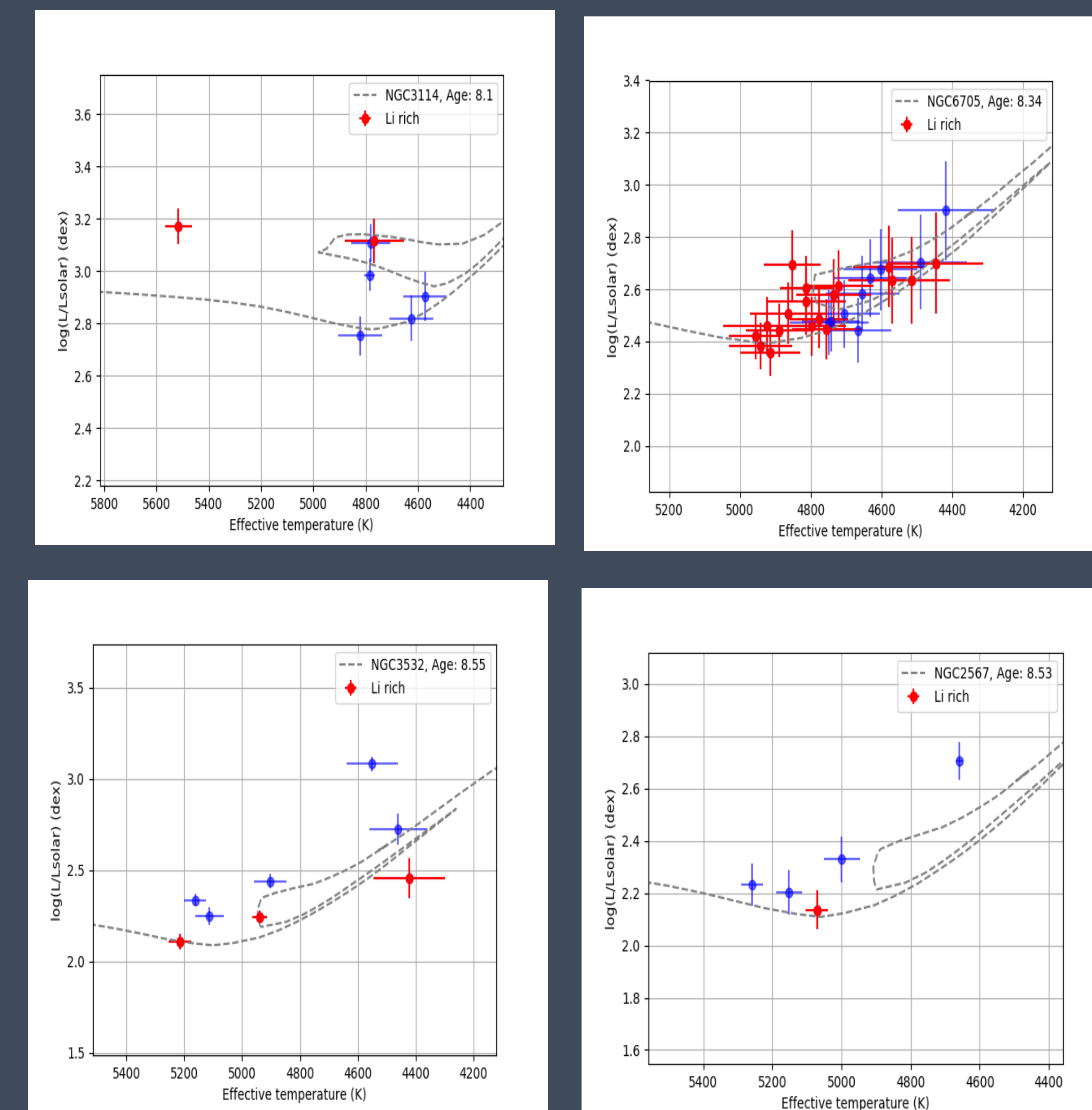
Finally, we have found 18 Li-rich stars with $A(\text{Li}) > 1.5$ dex in LTE or 47 stars, if we consider the NLTE corrections.



An example of the Li line fit for a giant star from our sample. The synthetic fit is in green and the observed spectrum in black.

Results

Below we report some examples of interesting cases of Li rich giants plotted in HR diagrams. In our work (Tsantaki et al., in prep.) we are examining the possible mechanism of Li enrichment in these clusters by well constraining their evolutionary stage following the procedure of Bossini et al. (2018). This procedure is based on isochrone fitting on the Gaia magnitudes.



References

Delgado-Mena et al. 2016 A&A
Bossini et al. 2019, 623 A&A