

OBSERVATIONAL STUDY OF CONVECTION
RELATED PHENOMENA IN COOL MAIN
SEQUENCE STARS (K-F-G)

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In this work we are interested in analyse phenomena highly correlated with dynamo and convective processes in cool stars (K, G and F). This includes chromospheric activity, longitudinal magnetic field, the lithium depletion problem and their possible correlation with the exo-planetary presence. To do this, we use spectro-polarimetric data, collected with the HARPS [Mayor et al. 2003], NARVAL and ESPaDOnS instruments [Petit et al. 2014]. We selected spectra from a sample of 60 cool main sequence stars, with effective Temperatures (Teff) ranging between 5098 to 6365 K. This sample contains stellar systems with, and without reported exoplanets. We exploit the full wavelength range from 380 to 900 nm in order to obtain chromospheric indexes (e.g. Ca II H&K S-Index, Ca II IRT and H α). For the chromospheric indexes, I followed Amazo-Gomez et al. [2014] and Alvarado-Gomez et al. [2015]. We used circularly polarised profiles (Stokes V) to estimate the longitudinal magnetic field (B_ℓ) in each star. Furthermore, we measured the lithium abundance A(Li), using a standard Local Thermodynamic Equilibrium (LTE) analysis, using spectral synthesis with the MOOG code. The atmospheric parameters (Teff, Log g, Vsin, Fe/He, Vmic) are taken from a grid of Kurukz, ATLAS9 and VALD3 atmospheres. The comparisons between Li abundance and magnetic field, are performed in terms of A(Li) vs B_ℓ and chromospheric indexes. By considering these parameters, we are trying to determine the influence on the magnetic field and activity in the abundances of lithium, as these are usually related with the age of the system [Herbig, 1965, Simon et al., 1985] and more recently, with the high Li depletion as an indicator of exoplanet presence [Israelian et al.2004].

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