# WELL DETERMINED ATMOSPHERIC PARAMETERS FROM HIGH S/N RETICON SPECTRA OF FOUR G AND K DWARFS WITHIN 10 pc OF THE SUN

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**ABSTRACT.** The detailed analysis of high resolution, high signal-to-noise spectra of four G and K dwarfs lying within 10 pc of the Sun is presented. This analysis is part of a project aiming at building up a homogeneous set of reliable atmospheric parameters for all F, G and K stars nearer than 10 pc according to the Gliese catalogue.

High resolution ($\Delta\lambda \simeq 0.13$Å), high signal-to-noise (S/N > 200) spectra in four spectral intervals centered at $\lambda$ 6165, 6560, 6715 and 8520 Å have been obtained for four G and K dwarfs lying within 10 parsecs of the Sun, HD 115617, HD 125072, HD 156274 and HD 156384, using the coudé Echelle Spectrograph (CES) fed by the 1.4m coudé Auxiliary Telescope (CAT) at ESO. The stars were chosen at random among those of the 69 non-degenerate stars of the Gliese catalogue (1969) with $T_{eff} > 4000$ K and $\pi > 0.''100$, which have not yet been analysed in detail. The following results were derived.

The detailed analysis of the spectra in the $\lambda$ 6165, 6560 and 6715Å intervals, based on atmospheric models of Gustafsson (Gustafsson et al. 1975, Gustafsson, 1981), has provided the well determined atmospheric parameters of the stars, given in Table I.

Table I. Relevant data for the program stars

| | HD 115617 | HD 156274 | HD 125072 | HD 156384 |
|---|---|---|---|---|
| Sp.T. | G6V | G8V | K3V | K3V |
| V (mag.) | 4.74 | 5.53 | 6.66 | 6.10 |
| $\pi''$ | 0.113 | 0.133 | 0.106 | 0.140 |
| $T_{eff}$ (K) | 5585 | 5295 | 4965 | 4930 |
| $\sigma_{T_{eff}}$ (K) | ±30 | ±60 | ±60 | ±100 |
| log g | 4.5 | 4.5 | 4.5 | 4.5 |
| $\sigma_{\log g}$ | ±0.2 | ±0.2 | ±0.2 | ±0.2 |
| $\xi_t$ (kms$^{-1}$) | 1.0 | 0.5 | 0.5 | 0.5 |
| $[Fe/H]^*_\odot$ | −0.02 | −0.35 | +0.26 | −0.59 |
| $\sigma_{[Fe/H]^*_\odot}$ | ±0.03 | ±0.07 | ±0.09 | ±0.08 |

The range of metallicity obtained for a very small randomly selected sample is surprisingly large : $[Fe/H]^*_\odot$ from −0.59 to +0.26 dex.



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A check for chromospheric activity was provided by the analysis of the two lines of the Ca II infrared triplet, lying in the $\lambda$ 8520 Å interval. For the three stars observed in this interval, HD 115617, HD 125072 and HD 156274, the depth of the two Ca II lines, as compared with the filled in lines of the very active solar-type Hyades dwarf VB 64 (Cayrel et al. 1983), is indicative of low chromospheric activity.

From the analysis of the lithium feature in the $\lambda$ 6715 Å region, it is derived that no lithium feature is apparent in the four stars.

More detailed results will be published in Astronomy and Astrophysics.

## REFERENCES

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