have very low chromospheric activity. The central depths of the Ca II profiles of VB 64 are smaller than those of the first stars indicating a substantial difference in chromospheric activity, hence in age, between VB 64 and the other three stars.

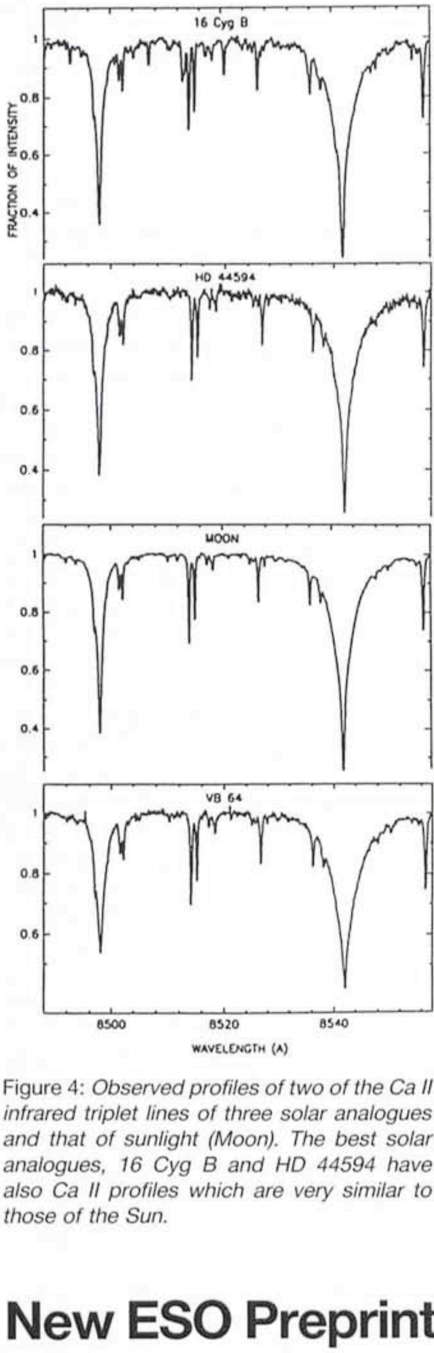

Figure 4: *Observed profiles of two of the Ca II infrared triplet lines of three solar analogues and that of sunlight (Moon). The best solar analogues, 16 Cyg B and HD 44594 have also Ca II profiles which are very similar to those of the Sun.*

SMR Disk Stars Versus SMR Bulge Stars

New spectroscopic CCD and Reticon observations have confirmed the existence of nearby G and K stars with metallicities higher than those of the Hyades, the so-called SMR (super metal rich) stars. A good example of them are the stars in the binary system α Cen A and B, our nearest neighbours (see in Table 2 the values of their [Fe/H]).

A few years ago, we determined with the help of the [Fe/H] Catalogue (Cayrel de Strobel 1992), the "turn-off age" of a sample of slightly evolved SMR subgiants. We found a great spread of age between the oldest and the youngest SMR stars. We constructed for these SMR subgiants an age versus [Fe/H] relation, and found that the slope of the relation was slightly negative for younger ages of SMR stars. This could be an indication that the SMR phenomenon was more active in the past than it is now, but has always existed in the Thin Disk Population. The discovery by Withford and Rich (1983) of a group of very metal rich stars in the Bulge of our Galaxy with metal abundances more than 3 times that of the Sun, may support the existence of a very metal rich population of stars in the Galactic Bulge (Rich 1990a, Rich 1990b).

Conclusion

In this article, after having briefly introduced the concept of galactic subsystems or stellar populations, we have discussed Disk stars, belonging to the solar neighbourhood. The physical parameters: chemical composition, effective temperature spectroscopic gravity, microturbulence, have been determined in a very homogeneous way and are based on excellent observational material, of which more than half comes from ESO observations. The results show that the solar neighbourhood is populated with a great variety of objects. We hope that by combining space observations with ground-based observations and improving our methods of reduction and interpretation, the physical status of some of the above-discussed stars will be known in a detail that is comparable to that available for the Sun.

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A Study of T Tauri Stars and Li-Rich Giant Star Candidates

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We have recently started a programme to analyse low veiling T Tauri stars. Earlier work was done on the basis of data obtained in 1986 by U. Finkenzeller (Finkenzeller and Basri, 1987) at the 3.6-m ESO telescope, while we computed synthetic spectra of molecular bands (Batalha, Gregorio-Hetem and Barbuy, 1992).

We are now studying T Tauri stars listed in the paper by Gregorio-Hetem et al. (1992) who used the IRAS Point Source Catalogue to select candidates to be T Tauri stars by means of special colour criteria. These candidates were systematically observed in the Laboratório Nacional de Astrofísica (LNA), Brazil, in the Hα + Li wavelength region. We also used the 1024×640 ESO # 9 CCD and the short camera at the 1.4-m CAT telescope to observe a few T Tauri stars in various wavelength ranges. In particular, we observed Henize 1, a high galactic latitude T Tauri star, located far from any star-formation site; one of the interests of the LNA survey is to look for isolated groups of T Tauri stars, like the TW Hya group (de la Reza et al., 1989).

In these studies, we intend to compute molecular bands and contribution functions to better understand the atmospheric structure of these stars, to better define stellar parameters and to understand, for example, the reasons for their high Li-abundances (in some cases higher than in the ISM).

Another interesting object we observed is CPD −55° 395, located close to Hen 1, a Li-rich metal-poor giant. In order to learn whether this star, which shows a strong Li line and Hα and [OI] lines in absorption, might be a post T Tauri star or a Li-rich giant, we observed it in several wavelength ranges and carried out a detailed analysis. We have obtained its parameters, [Fe/H] ≈ -1.0 and $^{12}C:^{13}C \approx 10$, i.e. typical of an asymptotic giant branch (AGB) star. It shows a Li abundance of log ε(Li) ≈ 1.3. If its AGB nature is confirmed, then this Li abundance must be considered very high. H. Lindgren measured the radial velocity with Coravel and found $V^r = 71$ km s^{-1}, at the lower limit of what can be considered a halo star.

In order to better understand Li-rich giants, we have plotted the IRAS colours of the Li-rich giants given in the literature: the result is that they are indeed confined in a small range of colours. Further studies may indicate the possible cause of the Li enrichment in these stars, and the evolutionary stage where this occurs. This might allow us to understand the Li-enrichment in our Galaxy. We recall that a controversy exists concerning the identification of the cosmological lithium abundance and