

## Li Abundance in Evolved Stars of NGC 6397

D.M. Allen<sup>1</sup>, B.V. Castilho<sup>1</sup>, L. Pasquini<sup>2</sup>, B. Barbuy<sup>1</sup> and P. Molaro<sup>3</sup>

(1) *Departamento de Astronomia, Instituto Astronômico e Geofísico, Universidade de São Paulo, Caixa Postal 3386, 01060-970, Brazil*

(2) *European Southern Observatory, Karl Schwarzschild Strasse 2, D-85748 Garching bei München, Germany*

(3) *Osservatorio Astronomico di Trieste, Via G.B. Tiepolo 11, I-34131 Trieste, Italy*

**Abstract.** Five giants and 11 subgiants of the metal-poor globular cluster NGC 6397 are analysed. In this Poster we present the lithium abundances derived. The present Li abundances and those of turnoff stars by Pasquini & Molaro (1996) are complementary in terms of stellar evolution stage, and show the Li abundances decreasing off the main sequence along the red giant branch.

### 1. Introduction

The globular cluster NGC 6397 is among the most metal-poor clusters in the Galaxy with  $[\text{Fe}/\text{H}] \approx -2.0$  and it is the second nearest to us (2.2 kpc). We have gathered high-resolution ( $R \approx 30000$ ) spectra for five giants and eleven subgiants, in the spectral range  $\lambda\lambda$  4800-7500 Å. The observations of the giants were carried out with the CASPEC spectrograph at the ESO-3.6 m telescope and the subgiants with the EMMI spectrograph at the ESO-NTT. We present a detailed analysis of the 16 stars, providing their atmospheric parameters ( $T_{\text{eff}}$ ,  $\log g$ ,  $[\text{Fe}/\text{H}]$ ) and lithium abundances.

In the present work, we derive temperatures using  $\text{H}\alpha$ , and several photometric systems and calibrations, and discuss the inferred metallicities. Li abundances are very sensitive to effective temperatures. A decrease of Li abundance with evolutionary stage is clearly shown.

### 2. Stellar Parameters

For the 5 cool giants we gathered in the literature available colours, including (B-V), (V-K) and (J-K). The temperatures were derived by using colour-temperature relations by Lejeune, Cuisinier, & Buser (1998), McWilliam (1990), Buser & Kurucz (1992), Blackwell, Lynas-Gray, & Petford (1991), and Gratton, Carretta, & Castelli (1996).

For the subgiants we used the  $\text{H}\alpha$  profile, using both the ATLAS and MARCS models, as well as (b-y) Strömgen colours using calibrations by van-

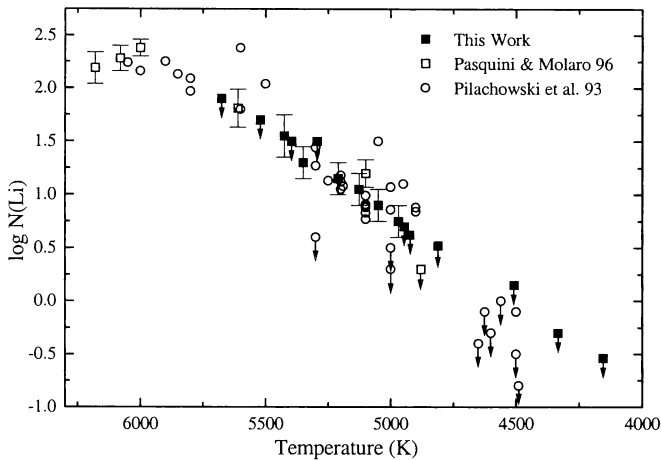


Figure 1. Li abundances vs.  $T_{\text{eff}}$  for the NGC 6397 stars (filled squares, this work; open squares, Pasquini & Molaro 1996), and a subsample of the field subgiants from Pilachowski et al. (1993) (open circles). The arrows mean upper limit values.

denBerg & Bell (1985), Bergbusch & vandenBerg (1992), and Gratton et al. (1996).

For the giants there is reasonable agreement between different colours (except B-V) and calibrations. However there is strong discrepancy between different methods for the subgiants. For the present calculations we have adopted a mean of the derived temperatures. We obtain a mean metallicity of  $[\text{Fe}/\text{H}] = -2.0$ .

### 3. Li Abundances and Conclusions

The lithium abundances are derived by fitting synthetic spectra to the observed  $\text{LiI } \lambda 6707.8 \text{ \AA}$  line.

A decrease of the Li abundance with effective temperature is clearly seen in Figure 1 as expected by internal mixing and consequent Li destruction.

### References

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