

OXYGEN ABUNDANCES FROM PERMITTED AND FORBIDDEN LINES

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Oxygen overabundances in metal-poor stars were first derived by Conti et al. (1967, ApJ, 148, 105) and Sneden et al. (1979, ApJ, 234, 964), who give a value $[O/Fe] = +0.6$ for the most metal-poor stars. Controversies on the absolute value of the oxygen overabundance were started with the works by Gratton & Ortolani (1986, A&A, 169, 201) and Barbuy (1988, A&A, 191, 121), who claimed that the overabundance should be $[O/Fe] \approx 0.4$, and constant in the halo. The controversy was then aggravated by the results of Abia & Rebolo (1989, ApJ, 347, 186) who claimed that $[O/Fe] = 1.0$ to 1.5, increasing for decreasing metallicities.

The main issue in the last few years has been the inadequacy of the permitted lines (Kiselman 1991, A&A, 245, L9).

In order to further settle the question of the oxygen abundances derived from permitted and forbidden lines, in the present work we study a series of observations of both lines in the same stars.

CCD BVRI PHOTOMETRY OF STARS IN THE GALACTIC BULGE

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The nuclear bulge of the Galaxy contains a stellar population that does not conform to the old ideas we had about its origin and physical characteristics.

Most papers, up to now, claim a high value for the metallicity of the stars of the galactic bulge; it is the authors' belief that the high metallicity stars which have undoubtedly been observed observed in low absorption fields are members of the disk population, either in the foreground or co-occupying the same physical space as those stars that belong to the pure bulge population.

Further studies of the stellar population of the galactic bulge will help in establishing whether these stars are rich or poor in metals, young or old, etc. Once we have their photometric and spectroscopic properties well established we could proceed to the construction of stellar synthesis models for other bulge-like systems for which individual stars may not yet be resolved. These results could also be used in trying to find an appropriate scenario for the formation of the bulge of our own galaxy.

From the preliminary results presented in this paper we may conclude the following:

(i) There is a substantial number of disk stars in the low absorption windows through which the galactic bulge is usually studied. Allowance for their presence must always be made.

(ii) In agreement with the results found in the bright IR; in the bright visual magnitude range ($V \leq +18$) bulge sources must have on the average red colours ($V-I \geq +2.0$) which, after dereddening $[(V-I)_0 \geq +1.21]$ imply spectral types later than G8 III.

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DETECCION DEL P III EN HD 153919

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Sobre un total de 32 espectros de región ultravioleta, tomados con el *IUE*, los cuales se encuentran distribuidos a lo largo de un ciclo orbital completo, se detectaron líneas en $\lambda\lambda 1344, 1380$ y 1502 \AA que fueron identificadas como P III correspondientes a los multipletes 1, 7 y 6 del ultravioleta. En las longitudes de onda $\lambda\lambda 1344$ y 1502 \AA las líneas presentan características de perfiles P Cygni.

ON THE ABSOLUTE MAGNITUDE OF THE METAL RICH RR LYRAE STAR V9 IN 47 TUC

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We present new data on the metal rich RR Lyrae star V9 in the globular cluster 47 Tucanae and preliminary results from a Baade-Wesselink analysis of these data. Optical lightcurves based on approximately 300 *B* and *V* CCD frames has been acquired at the 1-m telescope at Las Campanas and the CCD data reduced using the DoPHOT code developed by M. Mateo and P. Schecter (Carney, Storm, & Williams 1992, PASP, submitted). An infrared *K* band light curve based on 1060 individual IR imager frames from the 1.5-m telescope at CTIO has been acquired as well to provide temperatures as a function of phase on the basis of the (*V-K*) index. Finally, a radial velocity curve has been compiled on the basis of 71 observations with the radial velocity scanner CORAVEL at the Danish 1.54-m telescope at ESO.

The analysis has been improved with respect to the procedure described in Jones et al. (1992, ApJ, 386, 646) by using χ^2 -fitting techniques and

by performing the fit directly to the K-band data, enabling us to take the observational uncertainties more rigorously into account which proves to be crucial for the successful analysis of these faint objects.

The interpretation of the data is not straight forward, however, since the star appears to be significantly bluer than expected for its metallicity leading to very high temperatures. We hope to be able to resolve this problem and its subsequent detailed analysis.

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STUDY OF THE IR EXCESS IN EARLY TYPE STARS. AN EXPANDING ATMOSPHERIC MODEL WHICH INCLUDES A CHROMOSPHERIC REGION

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We constructed an expanding atmospheric model where we have assumed the existence of a chromosphere. We applied the Feautrier elimination scheme in order to solve the continuum radiative transfer equation assuming a spherically symmetric medium in LTE. We made a detailed analysis of the different continuum opacity sources that contribute to the emergent flux and we determined the continuum formation regions. Further, we found that when the IR continuum formation region contains the chromosphere, the standard limb-darkening law fails.

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CATALOGUE OF OB TYPE STARS

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This catalogue was essentially carried out to analyze observational properties of OB-type stars from both, broad band photometry and spectroscopic classification.

We compiled a selection of photometry, spectral classification and other quantities (when available) such as rotational velocities, binarity, visual variability, and suspicions about both binarity and variability. However a question about data quality deserves some words.

We have made a data selection based upon single papers from well ranked observers (a very subjective sense) and, on the other hand, a lot of data were extracted from available catalogues. But this is fully insufficient to guarantee that homogeneity is kept constant across the overall catalogue. Although we have put special emphasis on this aspect we are aware that a lot of problems remain yet.

Handling information is a prominent and dramatic problem when related to the sources of the data because sometimes one must sacrifice quality to get quantity. One has a lot of sources of information in the case of very bright stars (e.g., at V above 7th magnitudes) so a possible selection of authors (once again, many times under a very subjective position) may be easily made. But in the case of the faintest stars the restrictions in the list of available authors are really strong and no more than a few authors remain. The overall catalogue covering a magnitude range from $V = -1$ to $V = 14$ magnitudes is not uniform (there are many authors for bright stars, a few ones for the faintest ones). In an attempt to give information about data reliability we include the number of different nights each star was observed, but this is not always possible because many authors do not inform about this.

POLARIMETRIC STUDY OF THE IC 2944 STELLAR AGGREGATE

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IC 2944 is a compact stellar aggregate centered on HD 101205 ($l = 294.8^\circ$, $b = -1.7^\circ$), which is embedded in an extensive H II region. Within the Galaxy it is located at the inner border of the Carina spiral feature.

We present multicolor polarimetric measures for 30 stars in $UBVRI$ bandpasses, belonging to the rich stellar aggregate IC 2944. This study intends to determine the amount and direction of the linear polarization towards the aggregate. By observing the amount of the interstellar polarization in those bandpasses, the wavelength of maximum polarization is computed and then analyzed its relation to the optical properties and characteristic particle-size distribution of the grains responsible of the polarization.

The 30 stars observed polarimetrically were selected among those observed photometrically by Ardeberg & Maurice (1980, A&AS, 39, 325).