

## CARBON STARS IN THE SMALL MAGELLANIC CLOUD: POSITIONS, FINDING CHARTS AND SPECTROPHOTOMETRY

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A survey for carbon stars in the Small Magellanic Cloud (SMC) has been carried out with the triplet camera at the prime focus of the ESO 3.6 m telescope using a Grism giving a dispersion of 2200 Å/mm. 13 circular fields of 0.78 sq. degrees each, partially overlapping, cover the main body of the SMC (Rebeiro et al. 1987).

By combining a IIIa-J emulsion with a Schott GG435 filter the spectral range obtained on the plates is 4350-5300 Å, thus keeping the number of overlaps as low as possible. Exposures of 5 min and 60 min allowed us to survey, even in the most crowded regions, the SMC carbon stars up to the limiting magnitude  $m_{pg} \sim 20$ ; see for instance the field of the globular cluster NGC 419 (Azzopardi et al. 1986).

Visual inspection of the plates resulted in the identification of 1707 carbon star candidates. Comparison of our "green" spectral survey with the "near infrared" one by Blanco et al. (1980), for the regions that we have in common, shows that we have achieved a reasonable degree of completeness. This has been carefully discussed by Westerlund et al. (1986), McCarthy (1987), and Blanco and McCarthy (1990). The structure of the SMC derived from this carbon star survey has been shown by Azzopardi and Rebeiro (1991).

All the identified carbon stars have been scanned individually on the 60 min Grism plates with a PDS microdensitometer. The two dimensional displayed image of each Grism spectrum and of its surrounding region helped us in selecting some central scan lines ( $\sim 10$ ) to be averaged and normalized in order to obtain the related one-dimensional spectrogram. Density-to-intensity transformation, and data calibration using medium resolution slit spectroscopy of selected carbon stars, allowed us to get the following quantities for most of them (see Westerlund et al. 1986):

- a magnitude  $m_1 = m(5220)$ ,

- a colour index,  $m_3 - m_1 = m(4850) - m(5220)$ ,

- two measures of the strength of the C<sub>2</sub> band at 5165 Å, namely the equivalent width and the depth of the band below the pseudo-continuum at  $m_2 = 5030$  Å.

The positions (Eq. 2000.0) for the 1707 carbon stars that we have discovered in the SMC are listed in a catalogue as well as the spectrophotometric measurements, remarks and cross-identifications, when available. Finding charts (2 arcmin sq. each) for all of them are provided (Rebeiro et al. 1992).

### References

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