

THE SMC CLUSTER LINDSAY 11

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This small cluster is situated in the western region of the SMC at $\alpha = 0^{\text{h}} 26^{\text{m}} 13^{\text{s}}$, $\delta = -73^{\circ} 1', 20''$ (1950) and has been chosen for study in the initial post-launch period of the Hubble Space Telescope. This preliminary study was made using data obtained using a CCD camera on the SAAO 1 m telescope in October 1984.

The data consist of CCD exposures in B, V and R giving a total integration time of 2900s, 3000s and 1700s respectively.

The small size of the cluster and its crowded core would present severe problems but for the analytical routines using star profile-fitting techniques developed by A. J. Penny. The routines are very effective too in dealing with background luminosity gradients.

By concentrating on the stars within an annulus of $1.3'$ centred on the core, we ensure a cluster to field star ratio of at least 5:1. Field star contamination, a serious problem in earlier studies (Kontizas, 1980), is therefore minimized.

Our photometry is such that for $19 < R < 20$ our rms error in R is 0.075 and in V-R is 0.12, these uncertainties increasing in the range $20 < R < 21$ to 0.12 and 0.17 respectively.

We present here the CMDs for the cluster and the field in R vs V-R. The cluster, Figure 1, shows a strong RG branch and a clumpy horizontal branch. The HB of the cluster occurs at approximately $V = 19.5$ giving a distance modulus of 18.9 (assuming that $M_V(\text{HB}) = 0.6$). The integrated magnitude in V of this cluster within an annulus of $51''$ is 13.96. Grindlay (1978) obtained 14.04 photoelectrically using the same sized aperture.

We independently report the discovery of a presumed carbon star with $R = 15.5$ ($V = 17.4$) and $V-R = 1.8$ (with a corresponding B-V of 2.7). This was previously identified as a photometric carbon star by Mould and Aaronson (1982), and it lies just outside the core, $\sim 10''$ to the south east.

The CMD of the field, Figure 2, has many similarities to that of the cluster. This, in part, will be due to the similar ages of both populations (van den Bergh, 1981; Hawkins and Bruck, 1984). The presence of genuine cluster stars in the surrounding field will, however, contribute to this similarity.

REFERENCES

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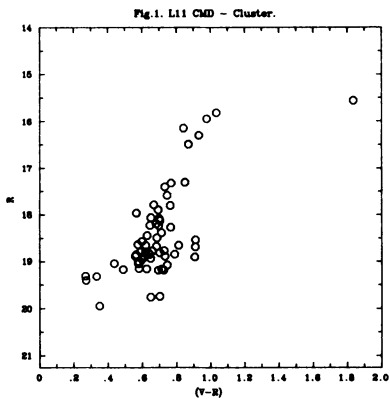


Fig. 1. CM Diagram
for Lindsay 11.

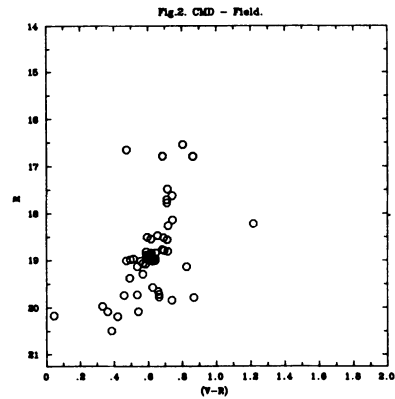


Fig. 2. CM Diagram
for field.