

BERKELEY STUDIES OF FAINT STARS AT HIGH LATITUDES

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Several Lick 3-m prime-focus plates of Selected Areas 57, 68, and 51 (taken by I. King) in B, V, and R have been measured for stellar magnitudes down to the plate limit by L. Hinrichs and King, and are currently being measured by Chiu for proper motions (several hundred stars per plate) with the Berkeley PDS microdensitometer. Prime-focus plates are also available from the Hale 5-m and Mayall 4-m telescopes, giving an overall baseline of 20 years. Work so far indicates that on the Lick plates stars brighter than $V = 19$ can be measured to within one micron standard error; the error becomes unacceptably large for stars fainter than $V = 20$. A large number of stars bluer than $B-V = 0.4$ show proper motion and are therefore excellent candidates for white dwarfs. For $0.4 \leq B-V \leq 0.8$, the proper motion stars are expected to be predominantly subdwarfs.

The frequency distributions of the stars in V and B-V for the three fields are being analysed by Brooks; the fields are advantageously placed for study of the density distributions in both the disk and the halo. These data should allow the halo stars to be studied out to a distance of 10 to 15 kpc, as well as a determination of the degree of flattening of the halo. Also, a study will be made of the z and ϖ density gradients in the disk, and the luminosity function of disk stars.

In a separate study by Kron and H. Spinrad, image tube scans have been obtained for ten of the faintest and reddest stars on the proper motion list of Murray and Sanduleak, stars which have been suggested to have low velocities. The strength of the MgH 5211 + Mg "b" blend is shown to be correlated with velocity dispersion for M dwarfs; according to this band strength, the Murray-Sanduleak stars are spectroscopically similar to old-disk M dwarfs. Only two of the ten stars have H α emission. Generally, there is no evidence for a dominant, young population among these stars.