

THE LUMINOSITY FUNCTION OF LATE-TYPE MAIN-SEQUENCE STARS IN THE
DIRECTION OF THE NORTH GALACTIC CAP

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As a result of the recent discussion concerning the luminosity function of late-type main-sequence stars (Weistrop 1976 and references therein), a program of photoelectric photometry of all red stars in a field near the North Galactic Pole was undertaken. The sample is complete for stars redder than $(B - V) = 1.40$ magnitude for the following apparent magnitude and area limits: $V = 12.0$ - 14.0 magnitudes, 13.5 square degrees; $V = 14.0$ - 15.0 magnitudes, 3.0 square degrees; $V = 15.0$ - 17.5 magnitudes, 1.0 square degree. Observations in BVRI have been obtained for the 44 stars in the sample. Giants and dwarfs are distinguished by their location in the $(B - V)$ - $(V - I)$ diagram or from published proper motion data, where available. The absolute magnitudes of the dwarfs are determined from the M_R - $(R - I)$ relation,

The density distribution perpendicular to the galactic plane of the dwarfs is consistent with the distribution for K giants found by Oort (1960). The derived luminosity function does not differ significantly from that determined by Wielen (1974) for stars close to the Sun. The local space density for stars in the interval $M_V = 8.5$ - 14.0 magnitudes is 0.099 stars pc^{-3} . The corresponding stellar density derived from Wielen's luminosity function is >0.066 stars pc^{-3} . Sixty-six percent of the density derived here is contributed by two stars with absolute magnitude in the range $M_V = 13.0$ - 14.0 magnitudes.

These conclusions are not significantly altered if all the stars redder than $(B - V) = 1.40$ magnitude are assumed to be dwarfs.

A complete treatment of the observations and results summarized here will be submitted to THE ASTROPHYSICAL JOURNAL,

REFERENCES

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Wielen, R.: 1974, in G. Contopoulos (ed.), *Highlights of Astronomy*,
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