\[ \pi = 0.010. \] The separation at \( M = +3.0 \) is clearly indicated by the minimum in the frequency distribution according to absolute magnitude. Determination of spectroscopic parallaxes for K stars for which the trigonometric parallax gives \( M \) near \(+3.0\) would be useful and interesting.

H-R diagrams were constructed from the corrected parallaxes, separately for intervals of \(0.010\) in \(\pi\) through \(0.069\); parallaxes \(\geq 0.070\) were taken together in one diagram.

For the parallaxes smaller than \(0.020\) the plotted points were systematically high in the H-R diagram. This was especially noticeable for stars in the A and K spectral classes. While this indicates that a larger positive correction than that applied to the smallest parallaxes may be required, an observational selection effect may have contributed to the displacement.

An objection to the use of the formula is that it presupposes a normal distribution of the observational errors in the data. Finally, the circumstance that the parallax material used is a collection of determinations of very different accuracy complicates the problem. It is hoped that some improvements of the compilation may be introduced before the printing of the new catalogue.

References


**SOME FEATURES OF GALACTIC STRUCTURE IN THE NEIGHBORHOOD OF THE SUN**

By W. W. MORGAN, STEWART SHARPLESS, and DONALD OSTERBROCK

The distribution in space of the nearer regions of ionized hydrogen has been investigated by spectroscopic parallaxes determined with the 40-inch Yerkes refractor. The regions north of \(-10^\circ\) declination occur in two long, narrow belts similar to the spiral arms observed by Baade in the Andromeda nebula. The nearer arm extends from galactic longitude \(40^\circ\) to \(190^\circ\) and passes at its nearest point about 300 parsecs distant from the sun in a direction opposite to that of the galactic center. The observed length of the arm is about 3000 parsecs; its width is of the order of 250 parsecs. Among the constituents of this arm are the nebulosities in the neighborhood of P Cygni, the North American nebula, the \(\xi\) Persei nebulousity, the Orion nebula and loop, and the \(H\) II regions near \(\lambda\) Orionis and S Monocerotis.

A second arm can be traced from galactic longitude \(70^\circ\) to \(140^\circ\). This arm is parallel to the first and is situated at a distance of about 2000 parsecs from it in the anti-center direction. There is some evidence for another arm located at a distance of around 1500 parsecs in the direction toward the galactic center. This is defined by the series of condensations of O and B stars from galactic longitude \(253^\circ\) in Carina to \(345^\circ\), the small cloud in Sagittarius. The data are so fragmentary, however, that more observations from the southern hemisphere will be necessary before a definite conclusion can be reached.

Both arms are inclined with respect to the normal to a radius vector by approximately \(25^\circ\); when this tilt is combined with the known direction of galactic rotation the arms are found to be trailing.

The dimensions of the \(H\) II regions are similar to those observed by Baade in the Andromeda nebula; the width of the arms is also similar, as is the frequency of \(H\) II regions along the arms.

The structure described above is also shown by the blue giants, O - A5 stars having \(M_{vis}\) brighter than \(-4.0\) mag. The great aggregates of early-type stars, Perseus double cluster, P Cygni region, Orion, are condensations in the arms similar to the condensations observed by Hubble in the Andromeda nebula.

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