

A PHOTOMETRIC STUDY OF ARA OBI

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ABSTRACT

Photoelectric and photographic UBVR photometry have been obtained for over 700 stars in the field of Ara OBI, including many in the central cluster NGC 6193. Association members were identified mainly on the basis of their reddenings. The association sequence is well populated blueward of $(B-V)_0 = -0.10$, $(U-B)_0 = -0.35$. Beyond this "turn-up" point stars lie only above the ZAMS. There are clear gaps in the color magnitude diagrams just redward of the turn-up points. The width of these gaps is 0.07 mag. in $(U-B)$. They cannot be easily explained by pre-main sequence models involving only gravitational contraction or by those involving ${}^3\text{He}$ burning. The difficulty of identifying the faint pre-main sequence stars (if they exist) amidst the field stars is discussed and a limiting luminosity function for the association is derived.

DISCUSSION

BUSCOMBE: The determination of radial velocities for stars in this association would be particularly useful, both for internal dispersion and differential galactic rotation. The published data are as yet only for a few Radcliffe spectrograms because the Mount Stromlo observations were made in a season when the thermal stability of the spectrograph and reliability of the comparison source were unsatisfactory. A considerable number of binaries and possible spectrum variables deserve more attention from spectroscopic observers. High-resolution data in interstellar absorption lines would be of very great interest at this galactic longitude.

HAVLEN: I am presently working on velocities for a number of the early B stars in NGC 6193, but I agree that a much more extensive study is needed especially in order to understand the interaction of the stars with the enveloping dust and gas.

WARREN: Have you looked for evidence of the possible existence of subgroups in the Ara OBI association by dividing the group into inner and outer regions and constructing separate diagrams?

HAVLEN: Our attempts along that line were unsuccessful.