

RECENT RESULTS ON THE TURN-OFF OF ω CENTAURI

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It is now well established that there is a wide range of surface chemical composition among the evolved stars of ω Centauri, and that this causes exceptional scatter on the red giant branch in the V, (B-V) C-M diagram. However, different atomic and molecular species vary in different ways and it is not clear how much of the variation should be attributed to mixing during evolution and how much if any is primordial.

Earlier photographic photometry of a sample of faint ω Cen stars by Cannon and Kontizas (1974) was not sufficiently accurate to discuss the intrinsic width of the main sequence. More recently, better photographic photometry has been obtained by Norman Stewart of Edinburgh University for some 300 of the same stars, using four plates in each colour taken at the prime focus of the Anglo-Australian 3.9 m Telescope. The resulting C-M diagram shows a skew distribution in (B-V) colour across the main sequence, with a well-defined blue boundary but a long tail towards the red.

The main peak and the blue edge of this distribution are well fitted by a Gaussian containing about 70% of the stars, with a dispersion equal to that expected from measuring errors alone. A further 20% of the sample are field stars, on the basis of both star counts and their flat distribution in colour. The remaining 10% of the stars lie in a well-defined band about 0.1 mag to the red of the main sequence defined by the majority of the stars, and appear to be cluster members. The simplest explanation for this distribution is that the slightly evolved main sequence stars exhibit the same sort of metallicity variations as do the highly evolved stars, i.e. a range of about 1 dex in [Fe/H] but with the majority of the stars having relatively low metal abundances. Thus it appears that there may be significant primordial abundance variations using the stars in ω Cen.

One other recent result indicates that differential reddening is probably not a significant cause of scatter in the colours of ω Cen stars. Ultra-high contrast prints of very deep IIIa-J and IIIa-F plates taken on the UK 1.2 m Schmidt Telescope have been made by B.W. Hadley and C.K. Barclay in Edinburgh. These photographs show a considerable amount of new filamentary foreground nebulosity extending westwards from the main nebulosities found by Danziger, Dennefeld and Schuster (1976), but none in front of ω Cen itself.

REFERENCES

- Cannon, R.D. and Kontizas, M.: 1974, *Mon. Not. Roy. Astr. Soc.* 167, 50P.
Danziger, I.J., Dennefeld, M. and Schuster, H.E.: 1976, *Astron. Astrophys.* 48, 479.