EFFECTS OF HEAVY-ELEMENT ABUNDANCE ON CLASSIFICATION OF G-TYPE GIANTS

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Abstract. Five stars, including ζ Cyg, which had been classified as G6 II to G8 II bright giants, were found by O. C. Wilson to have K-line luminosities close to those of class III giants. These stars show enhancement of the lines of Ba II and other heavy-metal ions also. To eliminate the serious effect of this abundance anomaly on the spectroscopic luminosities new luminosity criteria involving only intercomparisons of lines of elements of the fourth period (Ti, Fe, etc.) were applied on 9 Å mm^{-1} Coudé spectrograms taken by O. C. Wilson. This Coudé classification gave luminosity classes near IIIa for these stars, implying absolute magnitudes considerably below those of bright giants but somewhat above Wilson's M_K values.

Another advantage of Coudé classification is the possibility of estimating luminosities for individual barium stars. From Wilson's plate of HD 205011 a luminosity class of III-IIIa is derived. This is consistent with the mean value of $M_V = -0.4$ derived from statistical parallaxes by MacConnell, Frye and Upgren (*Astron. J.* 77, (1972), 384) for the barium stars.

The detailed account of this investigation will be published elsewhere.

DISCUSSION

Williams: Do you have any comment on the luminosity of the prototype BaII star ζ Cap, which appears from Wilson's M_V (K) to be very luminous?

Keenan: I have no spectrograms of this star, and have no reason to think that it may not be as bright as $M_V \approx -3$.

B. Hauck and P. C. Keenan (eds.), Abundance Effects in Classification, 147.