

CURVE-OF-GROWTH ANALYSIS OF A RED GIANT IN M 67

R. GRIFFIN

Cambridge University, U.K.

Abstract. A coude spectrogram of a red giant (IV-202) in M 67 has been analyzed with respect to Arcturus by the differential curve-of-growth method. The overall metal abundance is found to be approximately twice that in Arcturus, i.e. half the solar value. The error limits exclude the interpretation that IV-202 is 'super-metal-rich'. According to other observational evidence, IV-202 is quite typical of the red giants in M 67.

Reference

Griffin, R.: 1975, *Monthly Notices Roy. Astron. Soc.* 171, 181.

DISCUSSION

Bidelman: Could you give us a more conventional or more respectable designation for this object?

Griffin: It is BD + 12° 1919.

Williams: Could you tell us a bit more about your determination of the temperature of this star – particularly whether you have any feel for the line temperature (e.g. $\Delta\theta_{ex}$) and how it compares with α Tau.

Griffin: First I derived a rough value of $\Delta\theta_{ex}$ from partial curves of growth. (I had to assume that differential excitation and effective temperatures would be identical). Then, accepting the value $\Delta\theta = +0.11$ for (α Tau – α Boo) given recently by van Paradijs and Meurs, I turned to Eggen's photometry and interpolated to find the corresponding differential temperature for IV-202.

Osborn: What is the approximate bolometric magnitude of this star?

Griffin: The value given by Eggen is -1.75 .

Spinrad: Indeed, M 1465 = IV-202 in M67, from ST scans still has the visual M 67 anomaly-strong resonance lines of Ca, Mg, Na I. These lines are stronger than the normal field giant of a similar red colour.

Griffin: I believe the enhancement of such lines might be expected in a star that is both as cool and as luminous as IV-202; its estimated spectral type is K3 or K4, luminosity class II-III.