A POPULATION DISCRIMINANT IN M-DWARF SPECTRA

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Abstract. The CaH bands in the λ 6385 region of the spectra of M dwarfs have long been known; they become visible in the late K's and show a gradual increase in strength to later types. However, Greenstein and Eggen have noted that there is a substantial strengthening of all the hydride bands, including CaH, in high-velocity dwarfs (notably G95-59), and one of us (W.P.B.) has also seen this effect in suitable Warner and Swasey Observatory objective-prism plates of the rather low-velocity subdwarfs Ross 730 and 731. In a recent southern-hemisphere survey with the Curtiss Schmidt, Smethells has discovered nearly 200 late K and early M dwarfs, for all of which estimates of CaH-band strength were made. He found a considerable variation of the CaH-band strength in stars of the same (TiO-band) spectral type, and a slight tendency for the CaH/TiO band ratio to increase with increasing tangential velocity. A fuller account of this work will appear elsewhere.

DISCUSSION

McCarthy: My congratulations on the possible new metal abundance discriminant reported here. There are two other luminosity criteria available as discriminants, Na D lines (as discovered by W. Luyten in 1923) and MgH. Can you tell us if any correlations have been made with these?

Bidelman: CaH and MgH behave very similarly. As far as the D lines are concerned, we have used their strength as the primary discriminator between giants and dwarfs, but in view of their confusion with a strong TiO band I would think it difficult to use these for any other purpose.

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