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Mu Serpentis: A Doubled-Lined Spectroscopic Binary

For high dispersion spectroscopists who are studying elemental abundances, the discovery that a star one is studying is a double-lined spectroscopic binary can substantially increase the difficulty of analysis. But to those researchers who are more concerned about other stellar properties, the star then gains a new usefulness. With the use of electronic detectors capable of obtaining high signal-to-noise spectra, the discovery of the lines of companions to many known single-lined spectroscopic binaries should be possible. This is important for understanding the frequencies of systems with large mass ratios.

The Bright Star Catalogue (Hoffleit 1982) indicates that μ Ser (= HR 5881 = HD 141513) (spectral type A0 III; Gray and Garrison 1987) is a spectroscopic binary. Campbell and Moore (1928) suspected that this star might be double-lined. Frost, Barrett, and Struve (1929) found a variable radial velocity and noted that μ Ser might be a spectroscopic binary.

Lambert, McKinley, and Roby (1986) noted that their spectrum of μ Ser shows "C I profiles to contain a sharp and a broad component, a likely signature of a double-lined spectroscopic binary". Our spectra confirm this result. In Figure 1 we illustrate one section from the three spectra we obtained with the coude spectrograph of the 1.4-m telescope of the Dominion Astrophysical Observatory with a reciprocal dispersion of 4.3 \AA mm^{-1} using a 1872 element bare Reticon. We estimate that the rotational velocities of the two components are 8 and 90 km s^{-1} . By comparison Slettebak (1954) found $v \sin i = 80 \text{ km s}^{-1}$. We hope that this example will encourage other high dispersion spectroscopists to report their discoveries of lines due to companions.

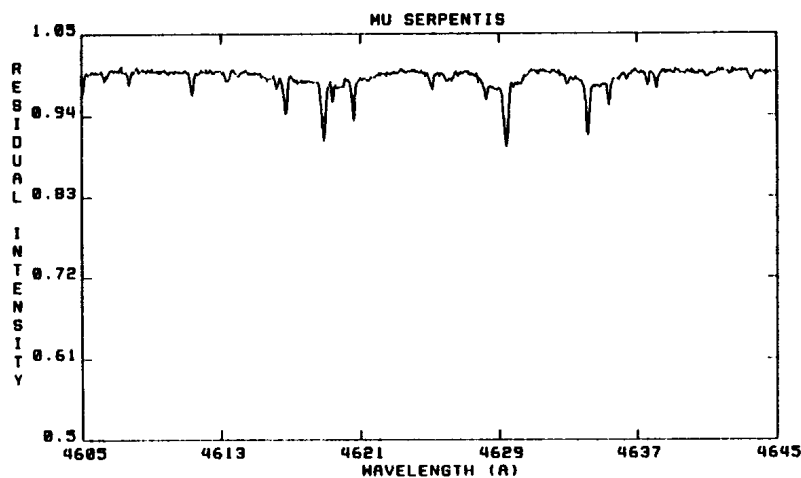


Fig. 1. A section of the spectrum of μ Ser obtain with the coude spectrograph of the DAO at 4.3 \AA mm^{-1} . Lines of two different widths produced by the components of this spectroscopic binary are evident.

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References:

- Campbell, W. W., and Moore, J. L. 1928, *Publ. Lick Observatory*, 16,
229
- Frost, E. B., Barrett, S. B., and Struve, O. 1929, *Publ. Yerkes
Observatory*, 7, 1
- Gray, R. O., and Garrison, R. F. 1987, *ApJS*, 65, 581
- Hoffleit, D. 1982, *The Bright Star Catalogue*, 4 th edition (New
Haven: Yale University Observatory)
- Lambert, D. L., McKinley, L. K., and Roby, S. W. 1986, *PASP*, 98, 927
- Slettebak, A. 1954, *ApJ*, 119, 146