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HD 91948 IS NOT A Be STAR

Goraya and Padalia (1984) have recently suggested that HD 91948 is a Be star. This suggestion is based on a single spectral scan that shows that the hydrogen lines of HD 91948 are missing or filled in by emission, a poorly documented measurement of B-V (Padalia 1980), and the similarity of the color variations of HD 91948 observed on one night by Padalia (1980) to those of the Be stars 88 Her and Pleione. We wish to point out that their conclusions conflict with the published data on this star and offer an alternate interpretation.

Gorza (1971) obtained $37\ 12\ \text{\AA}\ \text{mm}^{-1}$ spectrograms of HD 91948 during the period 1969-1971. He tentatively classified the star F6V. This is consistent with Perry's (1969) uvby photometry and the S2/68 ultraviolet fluxes (Thompson et al. 1978). These data show no evidence of either reddened or unreddened continuum radiation from a source hotter than 6500 K. We also note that the energy distribution of HD 91948 shown in Figure 2 of Goraya and Padalia (1984) appears to be somewhat redder than that of their FOV comparison star.

Padalia (1980) measured $B-V=+0.016$, and suggested that HD 91948 is an AOV star. His wording suggests that he does not attach a great deal of weight to this suggestion because he lacks U observations. However, Goraya and Padalia (1984) claim that 'From his photoelectric observations he determined its spectral type to be AOV.' It is not clear from the text of Padalia's (1980) note how the B-V measure was calibrated. The wording implies that it is based on adopted colors for the comparison star, but these are not documented. Since there are better photometric data which conflict with this measure, we believe that it should be ignored.

The similarities of the color variations of HD 91948 to those of some Be stars is a very weak argument for the Be classification. There are many types of small-amplitude photometric variables that have larger variations in the ultraviolet. Thus the case for the Be nature of HD 91948 rests

solely on the apparent hydrogen emission observed by Goraya and Padalia in their spectrum scan of 29 April 1984. In view of the data cited above, it is clear that a Be model is untenable and some other explanation must be sought.

We considered the possibility that Goraya and Padalia observed the wrong star, but we can find no obvious candidate for a misidentification. One of us (CTB) examined all of Gorza's spectra and found no evidence for any emission. This suggests that the emission appears infrequently. Since no information is given on the instrumental configuration used to obtain the observations, it is also possible that the emission observed by Goraya and Padalia is due to the visual companion. Since it is at least 3' away from the primary along a line perpendicular to the slit, it would not have contaminated any of Gorza's spectrograms, but a wider slit may have been used for the scanner observations.

The visual companion is estimated to be slightly more than 4 mag fainter than HD 91948, which would give it a spectral type near M0 if it forms a physical system with HD 91948. The unseen spectroscopic companion could also be a dM star. Goraya and Padalia's observations suggest that one of these stars is a flare star. The observed emission (or absence of absorption) in the spectrum scan and the color and time dependences of the photometric variations can all be accounted for if one of the companions occasionally flares by 3-4 mag for a few hours. These would be large flares, but they fall within the range of behavior observed in the dMe stars.

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