

NOTE ON THE MOTION OF BD + 8 : 4 1 2 2

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The spectral class of this tenth magnitude BD star ($19^{\text{h}}26^{\text{m}}2 + 8^{\circ}18'$ for 1900) was determined as B1Ia by Hiltner and Iriarte (Ap. J. 122:185, 1955) and an absolute magnitude of -7.0 was indicated by them. This puts the star at a distance of ten thousand parsecs and one thousand parsecs south of the central plane of the galaxy but since an object of this high luminosity does not have a long life-expectancy, it would seem likely that the star was ejected from the central regions of the galaxy with very high velocity. Consequently we thought it would be of interest to determine its proper motion.

The star occurs on two plates in the Toulouse section of the Carte du Ciel, viz. as N° 633 on plate 146 in the $+9^{\circ}$ zone (1898.57) and as N° 101 on plate 147 in the $+8^{\circ}$ zone (1933.53). Four more plates were taken with the 36-inch reflector of the Steward Observatory and the position of the star was measured on these relative to fourteen comparison stars occurring on both Toulouse plates. The resulting relative proper motion was found to be $+0''0183 \pm 0''004$ in R. A. and $-0''0066 \pm 0''008$ in declination. With comparison stars of the twelfth photographic magnitude and at this distance from the solar apex we estimate the correction to absolute motion to be $+0''0017$ and $-0''0042$, respectively, yielding for the absolute motion of BD +8:4122 the values of $+0''020$ and $-0''011$, or, referred to galactic coordinates $0''000 \pm 0''008$ in longitude and $-0''023 \pm 0''005$ in latitude. That the motion should turn out to be all south in latitude is probably fortuitous, considering the size of the errors, but if we may, for the moment, accept this at face value we can deduce that the linear velocity of the star is around 1100 ± 250 km/sec and hence, if the star had its origin in the central plane of the galaxy it may have taken only $9 \pm 2 \times 10^5$ years to get where it is now. All of these values appear reasonable but we hope that a more accurate determination of the proper motion will soon be made in order to check these deductions.

As an incidental result of our measures the proper motion of the neighbouring star BD + 8:4123 was found to be $+ 0''004$ in R. A. and $-0''054$ in dec. (absolute values).

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