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ORBITS OF THE SPECTROSCOPIC COMPONENTS OF BOSS 5173

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This star ($\alpha=20^h 06^m$, $\delta=+26^\circ 37'$, magnitude 5.46, type A) was announced a spectroscopic binary by Adams in *Publications of the Astronomical Society of the Pacific*, June, 1915. He stated that the hydrogen lines showed great variations in width and intensity due probably to the presence of two spectra, there being a relative displacement of the lines of 150 km. on the first plate. On our taking up the determination of the star's orbit, Professor Adams kindly furnished the measures of three plates which are given below.

The star has been one over which the writer has expended a great deal of time, due in part, and possibly wholly, to the uncertainty of the measures. The period and general form of the velocity curves were readily obtained in the autumn of 1916, but when it came to a determination of the elements there appeared to be a difficulty. In these cases where both spectra are recorded, two curves are obtained for which the period, eccentricity, velocity of the system, and periastron passage must be identical and the longitudes of periastron must differ by 180 degrees. With the exception of the velocity of the system all the elements agreed, but in the case of this element there was a difference of some 10 or 15 km. as derived from the two curves. Of course a kind of agreement could be forced when a common value for the γ -velocity was adopted, but it was so very much inferior to the agreement when distinct values were adopted that it was felt that there was something wrong. Several least-squares solutions were put through, but the discrepancy persisted, and it was felt that more observations should be secured. In all, some 75 plates have been secured, but on about a dozen the lines are so hopelessly bad that the plates were discarded, and only 62 have been used in the final determination. The later observations minimize to some extent the discrepancy, but cannot be said to remove it entirely. However, when one reviews the plates and sees what ill-defined lines the velocities are based upon and, further, considers that for about half the period the lines are partially superposed, making measurement impossible, it would appear that the best of agreement cannot be hoped for. Consequently, since a system with different values for γ for the two components would be physically impossible, it seems better to go on the assumption of a common velocity and derive the best elements possible, even though better agreement can be secured when different values for each are used.

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